

City of Salem
Water Advisory After-Action Assessment

Final Report

September 2018



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September 14, 2018

Mr. Steve Powers
City Manager
City of Salem
555 Liberty Street SE
Salem, OR 97301

Dear Mr. Powers:

We are pleased to provide you with the After-Action Assessment regarding the City's 2018 Water Advisory. The report lays out a timeline of what happened during the event as well as an assessment of what worked well, what did not, and lessons learned.

It is commendable that the City is conducting an after-action review of the Water Advisory, and that it is committed to learning as much as possible from the event. It is also important to recognize that the City was voluntarily testing the water which demonstrates a commitment to public health. This report is based on information provided to our consultants by the City Council, City staff, and external partners involved in the Advisory. We believe that this review will clarify recent events for all involved as well as augment the City's ability to perform well during the next critical incident it faces.

Thank you for the opportunity to serve the City of Salem.

Sincerely,

Julia D. Novak
President

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Executive Summary

For more than 80 years, the City of Salem has been getting its drinking water from Detroit Lake, a reservoir fed by the North Santiam River. From the 1930s through mid-2018, the water was treated using a natural, slow sand filtration process, and the quality of the water supply is a point of pride.

Detroit Lake experienced regular blooms of blue-green algae during the summer months of 2018. This resulted in a recreation advisory for the Lake on May 23 by the Oregon Health Authority due to levels of harmful cyanotoxins in the water. Despite this, the City of Salem's drinking water remained unaffected. On Friday, May 25, however, the Salem Public Works Department received an initial test result indicating levels of cyanotoxins in its drinking water above recommended United States Environmental Protection Agency (EPA) thresholds for vulnerable populations. This led the City to issue an advisory against drinking the water for certain populations, including small children and the elderly. The Advisory was issued on May 29, lifted on June 2, and re-imposed on June 6 after tests again showed higher-than-threshold toxin levels in the water. The Advisory was lifted again on July 3.

Staff from across the City did incredible work during the response to the Advisory, showing a commitment to do what it takes to ensure that residents could trust the quality of their drinking water again. However, the response to the Advisory also highlighted some areas that need improving.

When the City issued the first Advisory, it failed to anticipate the impact that it would have on the public, or on public trust in City government. The result was that the Advisory became a communications crisis. During the second Advisory, the City better understood the situation and convened a team of staff to manage public outreach.

The Advisory also highlighted deficiencies in the City's ability to respond to an emergency and the community's lack of preparedness. Despite testing for cyanotoxins since 2011, there was no plan of action in place for the City to follow as a response to positive testing. The two water tank vehicles owned by the City had not been properly maintained and were unfit to transport potable water. The City had no mechanism in place to communicate urgent messages to residents and multiple missteps occurred by relying on other governmental partners to provide that communication.

Ultimately, however, the City kept everyone safe. It now has the opportunity to learn from its response and to take steps to ensure that it is better prepared to handle future events. This report assists in that effort by laying out the events and the roles of the participants, and by sharing what went well and what did not. It closes with lessons learned and recommended next steps.

Recommendations and lessons learned focus on the importance of two areas: professional communications and emergency preparedness. The City has a proud culture of valuing technical competence, and this event heightens the significance of skilled communications as a critical competency for government. The lack of communications expertise significantly exacerbated the public's response to the Advisory. The deficiencies in emergency preparedness exposed by this response provide an opportunity for the City to ensure it has the plans and resources in place to effectively respond to the next event it faces.

The timeline on the following page lays out the sequence of major events during the Advisory.

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	No Advisory 5/23 – 5/28				First Advisory 5/29 - 6/2					No Advisory 6/3-6/5	Second Advisory 6/6 - 7/3					
	Wednesday May 23	Friday May 25	Saturday May 26	Sunday May 27	Tuesday May 29	Wednesday May 30	Thursday May 31	Friday June 1	Saturday June 2	Monday June 4	Wednesday June 6	Tuesday June 19	Wednesday June 20	Wednesday June 27	Friday, June 29	Tuesday July 3
City of Salem	Director of Public Works (DPW) informs City Council of Oregon Health Authority (OHA) Recreational Advisory ¹ City issues press release – City water safe to drink	Enzyme Linked Immuno-sorbent Assay (ELISA) result shows presence of toxins ² DPW decides to hold advisory; informs City Manager (CM) ³	Liquid chromatography tandem mass spectrometry (LC-MS/MS ⁴) data confirms ELISA results; DPW informs CM PW takes steps to reduce toxin levels ⁵	Water main breaks, mixing surface and ground-water and diverting attention of PW staff	2 pm: Meeting held with PW Staff, Communications Manager, Emergency Manager (EM) and OHA, EPA - DPW decides to issue advisory EM notifies School District and other partners 2:15 pm: School District notifies parents before Advisory is released 4:30 pm: “Do Not Drink the Water” Advisory released following OHA review; press release developed by PW with Communications Manager City Council informed of situation 5:15 pm: Emergency Manager requests that Marion County send an Integrated Public Alert and Warning System (IPAWS) alert about the advisory PW activates a Department Operations Center ⁶	City holds contentious press conference	New results come back showing toxin levels still high PW Ops Manager returns; assumes Incident Commander (IC) role	9 am: Water stations open (instead of 7 am) Special Council Meeting held to discuss issue	Advisory is lifted after several days of results below EPA threshold	City holds after-action meeting with crisis communications firm	Tests again show toxin levels above EPA threshold; advisory re-issued ⁷ JIC is activated ⁸ PW Engineers begin designing pre-treatment solution		High test reading comes in (ultimately found to be a fluke); staff debates the reading	City begins same-day tests on its own ELISA system		Advisory is lifted (JIC stays operational until July 9)
Oregon Health Authority (OHA)	OHA releases recreational advisory for water directly from Detroit Lake	Recommend they follow EPA guidance for when to issue advisory. Staff receives LC-MS/MS test results				OHA activates its Incident Management Team and Joint Information Center (JIC)								OHA issues temporary statewide cyanotoxin rules		
Marion County					Marion Area Multi-Agency Emergency Telecom is unable to send IPAWS message; County contacts Office of Emergency Management (OEM)		County activates its Emergency Operations Center (EOC)				County alerts residents that distribution centers are available					
Office of Emergency Management (OEM)					OEM has issue accessing IPAWS; contacts FEMA for assistance 8:30 pm: Incorrect message is sent to phones across three counties; receivers warned of unspecified "civil emergency" 9:00 pm: Corrected message is sent Total time between IPAWS request and sending of the correct IPAWS message: 3.75 hours		Governor declares State of Emergency; National Guard troops distribute water					National Guard troops withdraw ⁹				

¹ DPW informs Council that PW will combine surface and groundwater for City water; groundwater less likely to be affected by toxins

² Levels of cyanotoxins were above the recommended Environmental Protection Agency (EPA) threshold for vulnerable populations. Enzyme Linked Immunosorbent Assay (ELISA) test later confirmed (6/26) with liquid chromatography-mass spectrometry (LC-MS/MS).

³ CM does not inform Council; Mayor is out of town

⁴ Liquid chromatography combined with mass spectrometry testing, which provides a more specific reading than ELISA

⁵ Including shutting down intake, opening wells, and getting water from the City of Kaizer

⁶ The Communications Manager coordinates communications. The PW Operations Manager would have served as Incident Commander (IC) but was at a funeral; he designates the Utility Operations Manager as IC in his absence

⁷ On Friday, June 8, the CM, in consultation with DPW, IC, and Councilors, decided to leave the advisory in place for at least two weeks

⁸ Led by Lead PIO for Fire and staffed by employees from across the City, as well as staff from external agencies like OHA, the Salem-Kaizer School District, and the Oregon Military Department

⁹ City staff temporarily delays National Guard troops from leaving because of fluke high result; one soldier overhears that the water may be toxic and alerts friend

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Methodology

In July 2018, the City of Salem retained the services of The Novak Consulting Group to conduct a Water Advisory After-Action Assessment. The purpose of this study was to evaluate the actions taken by the City following the discovery of toxins in its drinking water.

To accomplish this evaluation, The Novak Consulting Group reviewed documents and press reports and conducted interviews with involved staff from relevant City departments, as well as elected officials and external partners who assisted in managing the Water Advisory. In total, more than 20 staff participated, along with members of the City Council and representatives from external groups.

The Novak Consulting Group also requested and analyzed background information provided by staff related to the incident. Evaluation of staff's own notes and debriefs surrounding the incident and other relevant information resulted in a thorough review of the City's preparedness for and response to the Water Advisory.

Assessment

The following section lays out the roles of the City and major partners in the response to the Advisory, what went well during the response, what did not go well, critical learning opportunities, and recommendations for next steps to improve the City's preparedness for the next crisis it faces.

Roles

The State

The two State entities primarily involved in response to the Advisory were the Oregon Health Authority (OHA) and the Oregon Office of Emergency Management (OEM). The Governor issued a State of Emergency on May 31 that allowed the Attorney General to investigate potential cases of water price gouging in Salem (the investigation is ongoing) and allowed the Oregon National Guard to be deployed to dispense water. National Guard troops were stationed in Salem until June 19. Staff from the Oregon Military Department (OMD) also participated in the City's Joint Information Center (JIC).

Oregon Health Authority

OHA is responsible for maintaining water quality across the state. On May 23, it issued a recreation advisory for Detroit Lake citing high levels of cyanotoxins caused by an algae bloom. The advisory cautioned against consuming water directly from the Lake but stated that municipal water, like that in Salem, was still safe.

On Friday, May 25, City staff alerted OHA that an Enzyme Linked Immunosorbent Assay (ELISA) had shown levels of cyanotoxins in its drinking water above recommended Environmental Protection Agency (EPA) thresholds for vulnerable populations. On May 26, staff also alerted them to LC-MS/MS¹⁰ results confirming the levels. OHA had no official rules in place on cyanotoxins in drinking water. Unofficially, OHA staff concurred with City staff's decision to hold off on issuing an advisory until further test results were received. In lieu of official rules, OHA staff cited EPA guidelines on cyanobacteria. Under OHA staff's interpretation of EPA guidelines, the City had a 10-day period in which to confirm and mitigate the test results before drinkers' health would be adversely affected.

On Tuesday, May 29, City staff discussed whether to issue a drinking water advisory with OHA and EPA staff. Although OHA was again barred from providing an official opinion, OHA staff concurred with City staff's decision to issue the advisory. Although OHA had no oversight into whether the City decided to issue an advisory, OHA did assert a role in review of the advisory language prior to its release. OHA provided City staff with two water advisory templates from the EPA: one for a blanket "do not drink" advisory and one specifically for vulnerable populations (see Attachments A and B). OHA reviewed and approved the language used in the draft advisory the City submitted prior to its release.

OHA activated its Incident Command Center on May 30, operating out of Portland (although one member of the staff was eventually dispatched to Salem to assist the City's JIC). Initially, OHA required that the Authority approve all City communications before they were sent, but this practice was ended on May 30 because it slowed the flow of information. During the Advisory, OHA supplied information on its website (providing backup when the City's website went down). OHA also coordinated with the Oregon

¹⁰ Liquid chromatography combined with mass spectrometry testing, which provides a more specific reading than ELISA

Department of Agriculture to issue guidance for Salem farmers on watering their fields and coordinated with the City to provide information to business owners. OHA also has a standing contract with the regional 2-1-1 system, allowing them to push messages through 2-1-1 upon request. OHA activated this contract during the Advisory and paid for 2-1-1 to distribute information about the situation to residents calling in or accessing the 2-1-1 website.

Finally, on June 29, OHA issued temporary statewide rules on cyanotoxin testing for drinking water. These temporary rules close a gap in the current regulations and will remain in place through December 27, 2018. OHA plans to establish a rules advisory committee that will begin developing permanent testing rules through a public process in the fall.¹¹

Office of Emergency Management

During incidents that take place at the local level, such as Salem’s Water Advisory, OEM’s role is to assist all partners in providing a coordinated response. During the Advisory, OEM coordinated messaging among various groups to ensure that the public received a cohesive message about what was happening. The Department facilitated regular calls with all partners throughout the incident. It did not work directly with the City for the most part; OEM’s structure required it to instead coordinate with Marion County. However, OEM staff did participate in the City’s JIC.

On May 29, Marion County, acting on behalf of the City, requested that OEM send out an Integrated Public Alert and Warning System (IPAWS) notice to those affected by the Water Advisory. OEM agreed to send an alert advising vulnerable populations not to drink Salem municipal water. OEM has the ability to send IPAWS alerts, but it is not a function it commonly performs. This inexperience likely contributed to a delay (OEM was initially locked out of the system and required assistance from the Federal Emergency Management Agency to get access) followed by an erroneous message sent to residents of three counties. Instead of a water advisory, recipients were warned of a “Civil Emergency” in their area and advised to “Prepare for Action.” This led to a flood of 9-1-1 calls that overwhelmed emergency systems. OEM was unable to issue a corrected message for 31 minutes. The OEM Director then posted an apology video on the Office’s Facebook page. The correct message was sent approximately four hours after the City made its initial request to Marion County.

Marion County

Marion County includes the bulk of the City of Salem, as well as several areas outside of the City that are also served by Salem Water. Although Salem is located in both Marion and Polk Counties, it is primarily located in Marion County. Polk County was not involved in the Advisory response.

Marion County worked closely with the City in coordinating its response. The County’s Public Information Officer (PIO), who is based out of the Board of Commissioners’ Office, spent time at the City after the first advisory was issued, as well as during the second advisory when the JIC was formed. The PIO assisted in crafting and coordinating messages to the public. After the second advisory was issued on June 6, the County also used its emergency alert system to send automated phone messages shortly after 10 pm to alert County residents that water distribution centers were open for use.

Marion County Emergency Management also participated in the response. Unlike the City, the County activated its Emergency Operations Center (EOC) during the incident. The County EOC facilitated coordination between the State and the City. It also helped distribute water by staffing water distribution

¹¹ <https://www.oregon.gov/oha/ERD/Pages/OHAFilesTemporaryCyanotoxinTestingRules.aspx>

points, delivering packaged water to non-mobile residents, and assisting the Oregon Department of Corrections in providing water to inmates.

Staff from the Marion County Department of Health participated in the response as well. Department staff conducted outreach and triaged requests for assistance in the EOC. Staff also reached out to large retail stores in the area to ensure they had adequate supplies of water and was the primary point of contact for local restaurants and other businesses. Furthermore, staff visited water distribution sites to approve the setups and ensure that the nozzles were handled in a sanitary manner.

The Salem Emergency Manager reached out to the County Emergency Manager on Tuesday, May 29, asking the County to send an IPAWS alert about the Advisory since the City lacked the capability. The County engaged Marion Area Multi-Agency Emergency Telecommunications (METCOM), an intergovernmental agency providing emergency telecommunications services in the area, to send the message. METCOM, however, was locked out of the IPAWS system and could not send the message. The County, with approval from the City Emergency Manager, then requested OEM send the message.

City of Salem

Although the response to the Advisory largely rested with the Department of Public Works, the City ultimately realized that the scale of the event required participation from staff across the City.

Department of Public Works

The Department of Public Works is responsible for maintaining safe drinking water. It operates the Geren Island Water Treatment Facility, where water from Detroit Lake is treated using a slow, sand filtration system. It is also responsible for testing the water to ensure it remains safe to drink. In 2011, staff began testing the municipal water supply for cyanotoxins, even though this was not a federal or state requirement. On Friday, May 25, staff received the results of an ELISA test showing levels of cyanotoxins above the recommended EPA threshold for vulnerable populations for water collected on May 23¹². Upon consultation with staff, OHA, EPA, and the City Manager, the Public Works Director decided to hold off on informing the City Council and issuing an advisory until the results could be confirmed and staff had a chance to try to mitigate the problem. OHA staff cited EPA guidelines that gave a 10-day advisory period for this level of toxins, because adverse health effects are unlikely to occur over a 10-day period. Staff understood these guidelines to mean that even vulnerable populations were in no imminent risk and they had 10 days to mitigate the problem before they needed to issue a public advisory.

On Saturday, May 26, the more specific LC-MS/MS test confirmed the presence of cyanotoxin levels above the EPA threshold on May 23. The Director of Public Works informed the City Manager of the results, and the Department instituted a number of measures to mitigate the problem. They had already started drawing from groundwater (less likely to be contaminated with cyanotoxins) along with surface water after OHA found high cyanotoxin levels at Detroit Lake. After the May 25 and 26 results, the Department also shut down the intake at Geren Island, began drawing from all four of its available wells, and worked with the City of Keizer to open a connection with their water system (which is not fed by Detroit Lake).

Staff believed that these efforts would likely mitigate the problem before the 10-day period elapsed. However, on Sunday, May 27, one of the two transmission mains from Geren Island sprung a major leak. In addition to draining staff time and resources, it meant that the City had to rely on more surface water

¹² The City was using an out-of-state lab for its tests. Since the water was shipped to the lab, this resulted in a lag of several days between water collection and receiving the results. The City has since purchased its own ELISA system.

than anticipated. On Tuesday, May 29, when staff were back in the office following the Memorial Day holiday, the Public Works Director consulted with staff, the City Emergency Manager, the City Communications Manager, the City Manager, the Fire Chief, and OHA, and decided to issue an advisory against drinking the water for vulnerable populations, including children under six, the elderly, and people with health issues.

OHA provided the Department with two EPA template advisories. One was a blanket “do not drink the water” advisory, intended to be issued when water was unsafe for anyone to drink. The second was an advisory specifically directed at vulnerable populations. Staff did not know if the toxin levels would rise and, because of the delay of several days between when water was sampled and when results were received, were concerned about underreporting the problem in case it became more significant. They therefore decided against using the “vulnerable populations” template, and instead combined the two templates. The result was an advisory that, while directed at vulnerable populations, bore the headline “DO NOT DRINK THE TAP WATER (see Attachment C).”

There was no response plan in place for managing a City-wide Water Advisory. After issuing the Advisory, the Department convened a Department Operations Center (DOC), its common practice for coordinating incident response. The DOC was largely confined to staff from within the Department, and it lacked many of the formal structures that would have been in place during an EOC. There was no designated PIO, for example. The Department has a designated Incident Commander (IC) to head its DOCs. However, its IC, Public Works Operations Manager Mark Becktel, was out of town for a funeral. He had designated Utility Operations Manager Dwayne Barnes to serve as IC in his absence. However, Mr. Barnes was also coordinating efforts to reduce toxins in the water. It was not reasonable to expect him to have the capacity to serve in both the critical coordination role of IC as well as mitigate the technical response. The DOC, therefore, was not fully operational until Mr. Becktel returned on May 31. Mr. Becktel served as IC for both the first and second advisories.

Public Works staff also participated in a press conference on Wednesday, May 30, fielding questions from reporters on what had happened and why the City had waited so long to issue the advisory if they had known since May 25.

Along with coordinating continued water testing and efforts to reduce cyanotoxin levels, the DOC coordinated water distribution. However, when the Department checked on its two water tanks, it discovered that both tanks’ interiors were rusted, making them unusable for potable water. One tank, only a year old and frequently used for non-potable water, had its lid left open in the rain. The other tank was not on a maintenance schedule and did not receive any regular maintenance, and therefore deteriorated over time. The City relied on mutual aid, as well as on the National Guard, for its water distribution tanks.

On Saturday, June 2, after several days of clean tests, the City Manager lifted the Advisory. On Monday, June 4, Public Works staff, along with staff from the Police Department, Fire Department, and City Administration, took part in an after-action meeting discussing lessons learned from the incident and what could go better the next time around. They were thus more organized when the Advisory was put in place again on Wednesday, June 6, after another test result showed levels of toxins above EPA thresholds. The City Manager, in consultation with the Public Works Director, the IC, the Police and Fire Chiefs, and Councilors, decided to leave the Advisory in place for at least two weeks. A broader and more formal DOC was convened for the second Advisory. Mr. Becktel again served as IC, but the team was expanded to include more staff from other parts of the City.

The Department continued to test water daily during this period, although results were delayed by several days because samples had to be shipped to a lab in Ohio for processing. This delay impacted public trust in testing, as initially there was no way for the City to tell them the current water quality. During the second Advisory, the Department purchased its own ELISA system for same-day results. All results were released to the public, although there was some disagreement when results received on June 20 showed very high levels of cyanotoxins, high enough to affect anyone drinking the water. Staff suspected it was a false result, and many argued against releasing it. The designated PIO for the JIC, Gabriel Benmoussa of the Fire Department, felt that they had made a commitment to transparency and therefore the results must be released. The results were slated to be released but before they were published, retests showed it was indeed a false result.

After the second Advisory was issued, Engineering staff became engaged to develop a solution to reduce cyanotoxins in the water and prevent the situation from reoccurring. The Department took advantage of a standing contract with Carollo Engineers for additional assistance. In less than a month, Engineering staff and consultants developed, tested, and implemented a plan to add powdered-activated carbon to the filters. The carbon system is now in place, although it cannot be fully implemented because the carbon clogs the slow sand filters. However, the microorganisms in the sand filters have also developed the ability to digest the cyanotoxin on their own. The City is currently evaluating options for upgrading its water treatment system in the future.

The second Advisory was lifted on July 3, after more than 10 days of clean results.

Emergency Response and Preparedness

During the first Advisory, response was largely limited to Public Works staff, with the exception of the City's Communications Manager, Kenny Larson (part of the City Manager's Office), and the City's Emergency Manager, Greg Walsh. Both Mr. Larson and Mr. Walsh were fairly new to the City.

Mr. Larson and Mr. Walsh were both engaged in the incident response on Friday, May 25, when the Public Works Department received the initial results showing toxins. They participated in the discussion with OHA on May 25 and the call on Tuesday, May 29, about potentially issuing an advisory.

Following the discussion on May 29 but before a decision had been made about issuing an Advisory, the Emergency Manager alerted his counterparts at Marion and Polk Counties, Chemeketa Community College (which has an early childhood program), Salem Hospital, and the Salem-Kaizer School District about the possibility that the City would issue an Advisory. He told them of the situation but asked them to hold off notifying anyone until it was official. However, the School District sent out an alert to parents before the decision had been finalized (and before City Council had been notified). The City was unprepared to respond to the premature notification and both staff and elected officials were caught off guard.

After the Advisory was issued, the Emergency Manager also reached out to Marion County about issuing an IPAWS message to Salem residents about the advisory. Salem does not have IPAWS capability itself and less than 15% of residents have signed up for its voluntary alert system. When Marion County was unable to fulfil Mr. Walsh's request, he approved their plan to reach out to OEM.

The Communications Manager approved the language of the Advisory and fielded press inquiries. He coordinated a press conference on Wednesday, May 30 with the City Manager, Public Works staff, Mr.

Walsh, and others to try to provide the public with more information. However, the City did not have answers to many of the questions the reporters asked regarding the risks and potential health effects.

During the first advisory, it became clear how important communications were in managing the situation, and that it was beyond the capacity of one person. The City was flooded with inquiries from press and calls from the public. The City website crashed frequently due to the number of people trying to access water information. Furthermore, during the first Advisory, the City had difficulty accommodating the needs of its Spanish-speaking population. Press releases were translated, but the translations were often done off-site, delaying transmission for several hours.

The public response to the first advisory illustrated to staff how vital extensive, coordinated communications were for crisis response. The City's EOC and DOC structures both designate only one person to serve as PIO, but for the second advisory it was clear that a more extensive communications structure was necessary. During the second advisory, a JIC was convened with staff from around the City to address these issues. A JIC brings together a group of communications staff with particular areas of expertise in order to provide a coordinated crisis response. Gabriel Benmoussa, PIO in the Fire Department, led the JIC and served as PIO for the second Advisory. Members of the JIC included an IT Web Developer who kept the website online and updated the information available, Neighborhood Services staff who answered the public's questions and translated all information into Spanish in real-time, and staff from the City Manager's Office and Public Works Department. Staff from outside agencies, like OHA, OEM, OMD, and the Salem-Kaizer School District, also participated. The PIO remained active until July 9, seven days after the second Advisory was lifted.

Other City staff who were not part of the official response team assisted as well. Finance staff ensured that vital purchases could be made quickly and worked with Human Resources (HR) to authorize additional overtime pay for the staff working long hours at the water distributions centers, DOC, or filtration plant. Additionally, there is no single point of contact for members of the public, so staff from across the City were fielding questions about the situation. IT and JIC staff set up an intranet site to give staff answers to commonly-asked questions about the incident that they could pass on to any members of the public who reached out to them.

City Manager's Office

City Manager Steve Powers was notified of the test results on Friday, May 25 and concurred with the Public Works Director's decision to hold off issuing the advisory. He was also informed of the confirming results on Saturday, May 26, and took part in the discussions on Tuesday, May 29 on whether to issue the Advisory. Mr. Powers informed the City Council of the situation shortly before their scheduled 6:00 pm Council Meeting. No external notifications were to have been made prior to the City Manager informing the City Council; unfortunately, an error led to premature notification by the Salem-Kaizer School District and caught the City Council by surprise.

The City Manager participated in press interviews during both Advisories. During the first Advisory he took part in the Wednesday, May 30 press conference. During the second Advisory he served as the face of the City, often delivering information to the press. He also sent regular reports to the City Council.

The City Manager also authorized the steps taken in response to the Advisories. He approved major initiatives like the construction of the powdered-activated carbon system and major purchases like the ELISA system. He coordinated the City-wide response, authorizing staff to be removed from their normal duties to assist. It was also his decision that the second Advisory should last for a minimum of two weeks.

The Deputy City Manager was not involved until after the first Advisory was issued. He supervised the Communications Manager at the time (since then, the City Manager has decided that the Strategic Initiatives Manager should supervise the Communications Manager) and assisted by reaching out to EnviroIssues, a crisis communications firm the City had on retainer. The consultants emphasized the importance of communications in the situation and the need to be responsive and empathetic.

The Deputy City Manager assisted in setting up the JIC and also served on the JIC as a liaison to the City Council. He appointed a Spanish speaker to the JIC to provide real-time translations for the City's Spanish population. Furthermore, he worked with other staff to ensure that the City's water intranet site for staff was regularly updated.

Mayor and City Council

When the first Advisory was issued, the Mayor was out of the country and was therefore unable to participate fully in the response. Councilor Steve McCoid was serving as Acting Mayor until the Mayor's return.

Neither the Council nor the Mayor were made aware of the issue until shortly before the first Advisory went out on Tuesday, May 26. They convened a Special Council Meeting on Friday, June 1 to discuss the incident and the response.

During the Advisories, the Councilors and Mayor were updated regularly by the City Manager and Deputy City Manager and worked to ensure that their constituents understood the situation and had what they needed.

What Worked Well

The stakeholders interviewed pointed to a number of positives that came out of the incident response.

Salem's elected officials praised the City's response during the second Advisory, when the DOC was well-organized and there were frequent communications to the Council and the public. Several also noted how impressed they were by how quickly the powdered-activated carbon solution came together.

City staff were proud of their hard work during the incident. Most view the response as a team-building experience, allowing them to bond with colleagues in and out of their department. It also gave many a new appreciation for the diverse skillsets of those on their teams.

Externally, Marion County staff who worked in close coordination with the City found City staff to be accommodating and helpful. OHA staff appreciated the City's desire to be transparent and to do everything it could to protect the public.

Highlights of what worked well in the City's response are described in the sections below.

Environmental Health Leadership

The City has voluntarily tested for cyanotoxins for years, even though it is not a legal requirement, because it wants to do everything possible to ensure the safety of its water supply. The fact that OHA released rules on cyanotoxins following this incident highlights Salem's leadership on this issue. Thanks to Salem, water will be tested for cyanotoxins throughout the state, making Oregon's water safer to drink. This incident shows that Salem is a proactive leader in caring for community health.

Efficient Problem-Solving

In less than a month, Public Works Engineering staff, with outside consultants, conceived, designed, tested, and implemented a powdered-activated carbon filtering solution to help protect against cyanotoxins. Staff worked long hours for many days straight to build this system, which was also installed without any injuries or safety incidents. Although staff is still working to make the powdered-activated carbon fully operational, it remains an important safeguard against the next algae bloom. It also demonstrated the City's commitment and innovation in resolving this issue.

Emphasis on Communication

After the first Advisory, City and incident leadership quickly recognized that communication was vital to preserving public trust. They realized that a cross-departmental team with complementary skill sets needed to be in place to engage with the public in a variety of ways during an Advisory response. During the Advisories, people were reaching out and looking for information in person, over the phone, through the website, on social media, through community meetings, and in multiple languages. The JIC was able to meet all of these needs and more. Many self-proclaimed social media skeptics were convinced of its importance when they saw JIC staff use it to answer questions and correct misinformation. The JIC set a new standard of communications for the City, and helped many realize how important robust communication is, both during an incident and during day-to-day operations.

Dedicated Staff

The response to this incident shows what an asset Salem employees are to the City. Staff in Public Works, the JIC, and elsewhere showed incredible dedication during this incident. They worked long hours, cancelled vacations, and worked on days off to resolve this situation and to serve the public. Staff consistently showed a commitment to serve the City to the best of their ability and to do what was necessary to resolve the problem.

Some specific members of staff deserve special recognition:

- Water Quality Supervisor Lacey Goeres-Priest was responsible for water testing both before and during the Advisory. During the May 30 press conference, she gave clear answers to difficult questions. Her commitment to public health and safe water as well as her ability to clearly communicate technical information is laudable.
- IC Mark Bechtel played a vital role in managing the response and in establishing a clear chain of command that was instrumental in the successful response to the second Advisory.
- Emergency Manager Greg Walsh reached out to his counterparts at other organizations as soon as he started with the City which was three months prior to the incident. These established relationships were important assets during the Advisory and helped the City closely coordinate with, and receive assistance from, regional partners.

- PIO Gabriel Benmoussa and Strategic Initiatives Manager Courtney Knox Busch coordinated and ran the JIC. They also provided frank, honest opinions to City leadership and brought a different, needed, and underappreciated perspective that was key to turning around public relations.
- City Manager Steve Powers handled the situation with humility, taking accountability for the incident with the Council and the Public and expressing willingness to learn from the experience.

What Did Not Work Well

A great deal went well during the Advisories, and the City succeeded in its ultimate goal to keep its residents safe. However, as in any response, there are aspects that did not work as well.

Nearly all of the City's elected officials would have liked to have been informed earlier in the process about the possibility of an Advisory. Many also felt that the messaging during the first Advisory was ineffective, specifically the May 30 press conference and the Advisory message with a blanket "DO NOT DRINK THE TAP WATER" headline.

Many City staff felt that the City's response to the first test results and Advisory was an underreaction; they failed to anticipate how much of an impact the Advisory would have on the public. This underreaction, plus a general reluctance to rely on other departments meant that not enough staff (and different perspectives and skill sets) were brought in right away. Several people shared an observation that City culture emphasizes hard skills like technical ability over softer skills like communication, and this initially meant that not enough attention was given to how to message the incident. Some noted that the event exposed a lack of preparedness, both in City government and among residents. For example, the City did not have any potable water tanks available during the Advisory and less than 10% of residents had any water stored. Finally, many felt let down by external partners. Specifically, City staff felt OHA was unable to give them clear direction, the School District sent out information on the situation too early, and OEM and Marion County were unable to send out the IPAWS message quickly and correctly.

Marion County staff would have liked more direction from OHA on how the toxin levels would translate into actual health impacts. They also felt that the City's decision not to activate its EOC meant that the structure of County and City responses was very different, and it was therefore difficult to coordinate.

At the State level, OHA staff felt that their hands were tied in many ways because of the lack of rules on cyanotoxin levels. This meant that they were unable to provide clear guidance in many cases. OHA staff also would have liked a clearer system in place to coordinate messaging between the many agencies responding to the incident.

In general, aspects that could have worked better are described in the sections below.

First Advisory

As previously noted, the City was initially unprepared for how much of an impact the Advisory would have on residents. Although the City had tested its water for cyanotoxins for years, there was no plan in place for how to respond if the tests showed high levels. Staff looked to the OHA for guidance, but because there was no rule in place, the OHA was unable to provide specific direction. The test result was also uncharted territory; no other municipality in the State had ever had to respond to cyanotoxin levels above EPA thresholds.

A number of external factors worked against the City as it tried to manage the first Advisory. Several key individuals were out of the office, including the designated Public Works IC and the Mayor. The erroneous OEM texts and the early School District communication made cohesive messaging impossible during the first day.

Although the IC's absence was unavoidable, other options should have been explored for who would serve as IC in his place. Mark Becktel had designated Dwayne Barnes to serve as IC in his absence, but it quickly became clear that Mr. Barnes needed to focus on operational challenges and should not have been tasked with the additional responsibility of IC. It was several days into the Advisory, when Mr. Becktel returned, that someone was able to fully focus on the IC role.

Communication Missteps

The Public Works Department did not anticipate or appreciate the community reaction to such an advisory and kept the response largely in-house at first, viewing it as a Public Works response to a Public Works issue. This impacted the communication strategy. During the initial phase, no PIO was designated. While the Communications Manager participated in the response, his lack of experience and emergency communications training left the City ill prepared to effectively manage public communications during the first Advisory.

During the first Advisory, therefore, there were no staff with the emergency experience necessary to make effective communication decisions. This lack of experience turned the Advisory into a public communications crisis. The "DO NOT DRINK THE TAP WATER" headline set the tone for the public's reaction. The public's distress was later compounded by the OEM message warning of a "civil emergency" in the area. Furthermore, although some did well in the May 30 press conference, staff were largely unprepared for the questions or the emotional response from the public. This resulted in a press conference that was ineffective and ultimately contributed to the public's confusion and lack of trust in the City.

The City lost valuable time during Memorial Day weekend when it could have been preparing for this Advisory. When the toxin levels were confirmed on Saturday, May 26, the City did not convene a team of experienced communications staff (like what later became the JIC) to begin coordinating what the messaging would look like if the Advisory was issued. The "underreaction" followed by the emotional "DO NOT DRINK THE TAP WATER" headline jolted public confidence.

The City also learned that internal communications need to be a higher priority during such an event. The Emergency Manager did admirable work building up relationships with external partners, but the focus should have been on informing internal staff what was happening before external stakeholders. Many internal staff were unprepared to participate in the response to the Advisory because they had no idea the Advisory was taking place until it was issued (or after, in some cases). The School District, Community College, and other stakeholders knew the situation in advance of key City staff and elected officials. Line staff started getting calls from the public about the issue before they were informed of how they should respond. The City eventually improved its internal communications, setting up an intranet site with regularly-updated information, but its initial lack of prioritization left many staff exposed.

Furthermore, the City Council would have liked to have been informed earlier. The decision to brief them immediately before the Advisory was issued left them little time to process the information before the public response began. Furthermore, external partners like the School District were informed of the situation several hours before the Council. The School District sent its message to parents soon after it

was informed of the situation; parents in the community, therefore, knew about the situation well before members of the City Council. The elected officials' connection to the community could have provided a valuable perspective on the community reaction and represents a missed opportunity during this event.

Critical Lessons Learned

There are many silver linings to the Advisory. Most importantly, it exposed many critical gaps in the City government and community's emergency response capacity without actually putting anyone in danger. There are opportunities to learn valuable lessons from the response that will help keep people safe in the future.

Community Preparedness

This event exposed how unprepared the community is for a disaster. Before the Advisory, only an estimated 8% of households had water stored for an emergency. This contributed to the run on stores which happened shortly after the first Advisory was issued, as well as to the reported price gouging and the high demand for water distribution. Furthermore, only 24,000 residents were signed up for the City-wide alert system, less than 15% of the population.

The City now has an opportunity to educate its residents on how to be better prepared for the next critical incident. The Emergency Manager is working on developing a one or two-hour course available to the public on how to prepare for and respond to an emergency. It will be important to follow through on this plan and to continuously offer education and outreach on emergency preparedness.

City Preparedness

The City government was also unprepared for the incident. Part of the reason for the initial disorganization was the City's failure to activate its EOC; if they had, there would have been more procedures in place that may have helped with the thoroughness of the response. However, a number of other issues would have posed a challenge no matter how well the City organized itself to respond to the Advisory.

The City had no plan in place to respond to cyanotoxin levels above the EPA threshold. Even though it was something that was regularly tested for, no thought was given to what would happen if the level actually exceeded the threshold. Furthermore, while the Public Works Department and the City occasionally execute emergency drills, they had never drilled for a situation that relied so heavily on communications with the public and external stakeholders.

The City was unprepared for the Advisory in other ways as well. The email list for the Community Emergency Response Team, a group of approximately 600 active volunteers trained to help the City in an emergency, was nearly unusable. When the Emergency Manager tried to contact the Team, the vast majority of emails came back undeliverable. Furthermore, the City's two water tanks were unusable, one because it was not maintained and the other because it was left exposed to the elements. Without community partners, the City would have had no way to transport potable water. Although the City was able to use equipment from other jurisdictions, this may not have been possible in a larger-scale emergency.

The City was also unable to quickly contact its citizens in the event of an emergency. The City's text alert system is voluntary and has low participation. The City has not signed up for IPAWS, which would have pushed alerts to all phones and television and radio stations in the area. It took almost four hours from

the Emergency Manager's request to Marion County for an IPAWS alert until the correct alert was sent by OEM; this delay could have been devastating in a more serious emergency. Furthermore, although more than 20% of the population is Hispanic or Latino, and more than 10% is foreign-born, the City did not offer translated information until after the second Advisory was issued. The City also lacked a plan for reaching populations who may not be served by traditional communication methods.

The event has exposed deficiencies in the City's emergency planning that it has an opportunity to correct. More robust emergency planning and an improved communications infrastructure, in addition to maintenance schedules for every piece of equipment will help the City be more prepared in the future.

Communications

As already discussed, communications should have been prioritized during the first Advisory, and lack of experience in messaging helped transform the Advisory into a public relations crisis. Even though the creation of the JIC went a long way toward improving communications, of all the members of the JIC, only two do communications as their full-time job. For all others, it is only a small part of their official duties, if it is part of their job description at all. Communications is not an area where the City has invested resources.

Salem has only one communications professional in the City Manager's Office. This is thin staffing for a city of nearly 170,000. In comparison, Bend, Oregon, a city of less than 100,000, has four people in its Communications Department, and Boulder, Colorado, a city of approximately 108,000, has more than 20. As the response to this event shows, the quality and availability of communications expertise can have a significant impact on public trust and well-being and on the City's ability to carry out more technical functions. The City is underserved by its current communications structure.

Leadership

Staff at all levels worked long hours for many days straight during the response to the Advisory, and they were willing to do whatever was needed, including assuming roles outside of their normal job description. However, at times, operational staff were asked to step too far out of their expertise. For example, the Water Quality Supervisor took time away from her work sampling water to answer questions at the May 30 press conference. The Utility Operations Manager was expected to assume the role of IC while also working on reducing toxin levels. While these roles offered the opportunity for many to shine, it also added an unnecessary level of stress to people who should have been focused on solutions.

While many of these role changes and extra duties were likely the result of everyone pitching in and wanting to do as much as possible to fix the problem, leadership should step up to support employees in times such as these. While the Public Works Director could not do the work of the Utility Operations Manager, he could have stepped in to coordinate the initial DOC as IC and directly engage in the crisis, relieving staff of coordination and communication responsibilities.

Future Actions

The City made a great deal of progress during the second Advisory in recognizing and correcting what had gone wrong. However, there are a number of additional steps the City can take if it faces a similar situation again. The City can protect itself by taking measures to maintain the security of its resources and by making plans to ensure that the City is fully prepared to address its next critical event.

Develop Long-Term Plans for Ensuring Water Security

Salem is already taking steps to secure the future of its water system by considering the installation of an ozone filter. While the ozone filter and the powdered-activated carbon system make the water from Detroit Lake more secure, these measures do not address the underlying reality that Salem has only one source of drinking water. Although the City does have access to some wells, their output is not nearly enough to meet City demand. If something happened that compromised the Detroit Lake water supply, the City would be in a serious situation.

The City should develop long-term plans for ensuring water security, including developing a plan for redundancy should Detroit Lake be unavailable. The EPA¹³ recommends that emergency water plans include the following:

- A list of events that could be reasonably expected (e.g., an earthquake, train derailment) that could impact the City's water supply
- The number of people affected by and the duration of each event
- The point at which the local capacity to respond would be exhausted
- The most feasible potable water alternatives
- What resources would be needed from regional, federal, and state agencies
- How to implement the delivery of needed resources

Based on this planning, the City can identify where deficiencies exist and move to address them before the next water emergency occurs.

Prepare to Address Future Algae Blooms

Staff did admirable work in developing and implementing the powdered-activated carbon system in an incredibly short amount of time. However, the system has not been able to be implemented fully because the carbon settles on the bottom and clogs the filters. Fortunately, the microbes in the filter have developed an ability to consume the cyanotoxins and Salem water remains safe. However, the City must prepare for the next algae bloom, and the possibility that it is even more toxic than this bloom, or that the microbes are again unprepared to handle the toxins. The ozone filter being considered would likely not be installed for several years, so the City must ensure the plant can keep the drinking water safe in the meantime.

Staff should continue to work on powdered-activated carbon implementation so that it can be fully implemented during the next bloom. However, the City should beware the sunk-cost fallacy; even though a great deal of resources and staff time has been spent to develop and implement the powdered-activated carbon system, if it cannot be fully implemented, the City must be prepared to abandon it in favor of other solutions. The City should already be developing a plan for how they will protect the water in the short-term if the powdered-activated carbon solution does not prove to be successful.

Examine Enterprise-Wide Communications Staffing

As previously discussed, the City's communications structure was inadequate to handle public response to the Advisory and having only one dedicated communications professional on staff is unusual for a larger city. The City should explore making an investment in an enterprise-wide communications structure that

¹³ "Planning for an Emergency Drinking Water Supply." United States Environmental Protection Agency. https://www.epa.gov/sites/production/files/2015-03/documents/planning_for_an_emergency_drinking_water_supply.pdf

is adequate to address the needs of a diverse city of nearly 200,000. A team of dedicated communications staff will improve the response to the next emergency the City handles by not only assisting with communications during the event but by establishing relationships and communications channels with the community beforehand. Furthermore, communications staff will assist the City in accomplishing its day-to-day tasks by taking communications duties from operations staff and by helping get buy-in and input on City projects from the residents.

The structure of Boulder's Communication Department is one model that may work well for Salem. Boulder, Colorado has 23.5 full-time equivalents (FTEs) in its Communication Department (18.5 FTEs if the staff responsible for running the City's television channel are excluded).¹⁴ The structure of the Department is a hybrid of both centralized and decentralized models. Of the 15.5 FTEs devoted to Media and External Communication, 10.75 are based and budgeted out of various City departments, including: Public Works, Community Planning and Sustainability, Community Vitality, Parks and Recreation, Open Space and Mountain Parks, Energy Future/Climate Action Plan, Human Services, Housing, and Police and Fire. However, they all report to the Communication Director who coordinates messaging across the entire City. In addition, two centralized staff are devoted to web content and social media, and one is devoted to internal communication.

Salem's communications team need not be as large as Boulder's, but its model of basing communications staff in different departments is a way to ensure that the communications staff has technical knowledge as well as communications expertise. During the Advisory, although Public Works and Communications staff collaborated, a communications expert who was based out of Public Works, and who therefore had in-depth knowledge of the workings of that Department, would have been invaluable. Dedicated communications staff for social media and internal communication would also be valuable to the City. The Advisory showed how important social media is as a tool for connecting to residents, and the internal communication may not have suffered if there was a staff person present from the beginning who is dedicated to ensuring employees have the information they needed.

Engage More Robust Emergency Operations Procedures

Many staff feel strongly that the City was correct in not activating its EOC during the Advisory. However, there would have been benefits to a more structured approach. If the City followed EOC procedures, fewer things would have fallen through the cracks. For example, there would have been a dedicated person to record events as they happened and create a record that would have been a valuable learning tool. Marion County would have also found communications with the City easier through an EOC.

The City activates its EOC infrequently. There have only been two activations in the last 15 years. However, the City should examine whether this is the correct approach. Activation of the EOC not only ensures that there is a built-in structure for the response team but also helps keep emergency response skills fresh. The City should consider what the benefits of activating its EOC during the Advisory would have been, as well as the negative impacts. It should also look back on past major events where the EOC was not activated, such as the recent blizzard, and consider whether there would have been a benefit to activating the EOC at that time. Based on these considerations, the City should develop specific criteria for when to activate its EOC.

The City should also consider the structure and roles in its EOC and ensure that the communications structure is adequate. The Water Advisory showed that a single PIO is not enough to manage

¹⁴ "Communication Department." City of Boulder, Co. <https://bouldercolorado.gov/communications>

communications in many cases. The structure of the EOC should include a JIC, and the emergency plan should designate staff to serve in the various communications roles. The City should also ensure that staff are trained and ready to serve in these positions as necessary.

Furthermore, the City should ensure that it has emergency plans in place for any situation that has a reasonable chance of occurring, and that its existing plans are completed and up-to-date. These plans should include specific communications elements, including how the City will disseminate information quickly to its residents and how it will conduct outreach to non-English-speaking populations. Based on the experience with IPAWS during this advisory, the plan for getting information out quickly may be dependent on the City signing up as an authorized IPAWS user. All plans should also specify what equipment is needed in the response. If the City already possesses the equipment, it should ensure it is on a set inspection and maintenance schedule. If the City does not possess the equipment, the plan should include information on how it will be obtained.

To reinforce these plans, the City should conduct regular emergency drills for various types of events. It is vital that these drills include participation from external partners like the School District and Marion County (and others as relevant). Any emergency affecting the City will involve those stakeholders as well, and this Advisory showed the importance of a coordinated communication and response strategy.

Finally, the City should continue with its efforts to ensure its community is better prepared for disaster. Aside from offering information and education to the general public, the City should also target large businesses and multiple-household dwellings to ensure that they have emergency plans in place. Furthermore, the City should conduct targeted outreach to non-English-speaking populations to ensure that they receive training on emergency preparedness and know how to get information from the City in the event of an emergency.

Conclusion

This After-Action Assessment was undertaken to lay out the events and actions that took place as part of Salem's response to its Drinking Water Advisory, as well as to identify opportunities for learning and next steps. This report builds on the City's own assessment of the events, and the improvements it made to its response during the event. The purpose of the assessment is not to place blame, but rather to provide an opportunity for each individual involved in the situation to learn how they might perform (even) better in the future.

Salem is fortunate to be staffed with employees who care deeply about their community and who were willing to work hard to mitigate the water issue at great personal sacrifice.

Furthermore, the fact that the City decided to undertake this assessment shows a strong commitment to learning and improving. Using this report as a guide, Salem can now further improve its communication and emergency preparation.

Implementation of these recommended next steps will take time and hard work to be successful. The challenge to the City is to make the decision to implement needed changes and complete implementation.

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Attachment A: EPA Cyanotoxin Advisory Template for Vulnerable Populations



DRINKING WATER ADVISORY

[CYANOTOXIN NAME] IS PRESENT IN [WATER SYSTEM NAME] INFANTS, YOUNG CHILDREN AND OTHER VULNERABLE INDIVIDUALS: DO NOT DRINK THE TAP WATER – [DATE ISSUED]

WHY IS THERE AN ADVISORY?

- [Cyanotoxin name], a toxin produced by cyanobacteria (formerly known as blue-green algae), was detected in the drinking water from [System name] on [date].
- Elevated levels of toxins have been detected in [source name] that supplies water to [geographic area: cities, counties, distribution system segments, etc.].
- [System name] is taking the following actions to reduce [cyanotoxin name] levels: [list actions such as adjusting treatment, changing source, etc.].
- Samples collected on [dates] show [cyanotoxin name] in the drinking water at [levels and/or ranges], which are above the U.S. Environmental Protection Agency's [cyanotoxin name] national drinking water Health Advisory for vulnerable populations (listed below) of [level].

WHAT SHOULD I DO?

- **The following vulnerable populations should Not Drink the tap water because they may be vulnerable to the effects of [cyanotoxin name]:**
 - Infants,
 - Young children under the age of six,
 - Pregnant women and nursing mothers,
 - Those with pre-existing liver conditions,
 - Those receiving dialysis treatment, and

- As a precautionary measure, the elderly and other sensitive populations should consider following these advisory instructions.
- **Vulnerable populations, listed above, should use [alternative sources of water] for drinking, making infant formula, making ice and preparing food and beverages.**
- **Do Not Boil the tap water.** Boiling the water will not destroy toxins and may increase the toxin levels.
- Individuals not considered to be in the vulnerable category, as listed above, may drink the water.
- Everyone may use tap water for showering, bathing, washing hands, washing dishes, flushing toilets, cleaning and doing laundry. However, infants and young children under the age of six should be supervised while bathing and during other tap water-related activities to prevent accidental ingestion of water.
- Vulnerable populations, as listed above, who drink water containing [cyanotoxin name] at levels exceeding the national drinking water Health Advisories are at risk of various adverse health effects including upset stomach, vomiting and diarrhea as well as liver and kidney damage. Seek medical attention if you or family members are experiencing illness.
- Animals may be vulnerable to adverse health effects of [cyanotoxin name] at the detected levels indicated above; consider providing animals alternative sources of water. Contact a veterinarian if animals show signs of illness.
- If you, your family members, or your animals have experienced adverse cyanotoxin-related health effects, please contact [State or local Health Department] to report the illness.

WHAT IS BEING DONE?

- [System name] is working closely with local and state public health and emergency response agencies to address the situation and quickly reduce [cyanotoxin name] levels in tap water.
- [System name] will post an updated advisory when: the [cyanotoxin] levels are less than or equal to the national drinking water Health Advisories, this Do Not Drink Advisory is lifted and/or if there are any changes to the conditions of this Do Not Drink Advisory.
- For more information please contact [contact information] or visit [website].

Please share this information with all the other people who drink this water, especially those who may not have received this notice directly (for example, people in apartments, nursing homes, schools and businesses). You can do this by posting this notice in a public place or distributing copies by hand.

Dated distributed: _____

Attachment B: EPA Cyanotoxin Advisory Template for All Populations



DRINKING WATER ADVISORY

[CYANOTOXIN NAME] IS PRESENT IN [WATER SYSTEM NAME] DO NOT DRINK THE TAP WATER – [DATE ISSUED]

WHY IS THERE AN ADVISORY?

- [Cyanotoxin name], a toxin produced by cyanobacteria (formerly known as blue-green algae) was detected in the drinking water from [System name] on [date].
- Elevated levels of toxins have been detected in [source name] that supplies water to [geographic area, cities, counties, distribution system segments, etc.].
- [System name] is taking the following actions to reduce [cyanotoxin name] levels: [list actions such as: adjusting treatment, changing source, etc.].
- Samples collected on [dates] show [cyanotoxin name] in the drinking water at [levels and/or ranges], which are above the U.S. Environmental Protection Agency's [cyanotoxin name] national drinking water Health Advisory of [level].

WHAT SHOULD I DO?

- **Do Not Drink the tap water.**
- [Alternative sources of water] should be used for drinking, making infant formula, making ice and preparing food and beverages.
- **Do Not Boil the tap water.** Boiling the water will not destroy cyanotoxins and may increase the toxin levels.
- Everyone may use tap water for showering, bathing, washing hands, washing dishes, flushing toilets, cleaning and doing laundry. However, infants and young children under the age of six should be supervised while bathing and during other tap water-related activities to prevent accidental ingestion of water.

- Drinking water containing [cyanotoxin name] at levels exceeding the national drinking water Health Advisories can put you at risk of various adverse health effects including upset stomach, vomiting and diarrhea as well as liver and kidney damage. Seek medical attention if you or family members are experiencing illness.
- Animals may be vulnerable to adverse health effects of [cyanotoxin name] at the detected levels indicated above; consider providing animals alternative sources of water. Contact a veterinarian if animals show signs of illness.
- If you, your family members or your animals have experienced adverse cyanotoxin-related health effects, please contact [State or local Health Department] to report the illness.

WHAT IS BEING DONE?

- [System name] is working closely with local and state public health and emergency response agencies to address the situation and quickly reduce [cyanotoxin name] levels in tap water.
- [System name] will post an updated advisory when: the [cyanotoxin] levels are less than or equal to the national drinking water Health Advisories, this Do Not Drink Advisory is lifted and/or if there are any changes to the conditions of this Do Not Drink Advisory.
- For more information please contact [contact information] or visit [website].

Please share this information with all the other people who drink this water, especially those who may not have received this notice directly (for example, people in apartments, nursing homes, schools and businesses). You can do this by posting this notice in a public place or distributing copies by hand.

Datedistributed: _____

Attachment C: May 29 Water Advisory

DO NOT DRINK THE TAP WATER – MAY 29, 2018

INFANTS, YOUNG CHILDREN, AND OTHER VULNERABLE INDIVIDUALS

Applies to City of Salem, City of Turner, Suburban East Salem Water District, and Orchard Heights Water Association

WHY IS THERE AN ADVISORY?

- Low levels of cylindrospermopsin and microcystin (cyanotoxins) have been found in treated drinking water. These toxins are created by algal blooms in the source of City of Salem drinking water, Detroit Reservoir.
- To ensure the greatest quality of drinking water, City of Salem voluntarily samples for such toxins during algal events. Samples were collected on May 23, 2018 and May 25, 2018. Results confirmed the presence of cyanotoxins in the drinking water at levels above the U.S. Environmental Protection Agency's Cyanotoxins National Drinking Water Health Advisories.
- Levels of toxins have been detected in the City of Salem water system that supplies water to City of Salem, City of Turner, Suburban East Salem Water District, and Orchard Heights Water Association.
- Children under the age of six, people with compromised immune systems, people receiving dialysis treatment, people with pre-existing liver conditions, pets, pregnant women or nursing mothers, or other sensitive populations should follow this advisory. At this time, people not on this list may continue to drink the water unless additional messaging is received. Please visit cityofsalem.net for the most up to date information.
- City of Salem is continuing to adjust treatment operations to reduce concentrations of cyanotoxins as quickly as possible.

WHAT SHOULD I DO?

- **Do Not Drink the tap water if you are under the age of six, have a compromised immune systems, are receiving dialysis treatment, have a pre-existing liver condition, pregnant or nursing, or have other sensitivity concerns.**
- **Bottled water should be used for drinking, making infant formula, making ice and preparing food and beverages.**
- **Do Not Boil the tap water.** Boiling the water will not destroy cyanotoxins and may increase the toxin levels.

- Most water filters and purifiers will not remove this toxin from drinking water. See manufacturer's recommendation for water filtration capabilities.
- Everyone may use tap water for showering, bathing, washing hands, washing dishes, flushing toilets, cleaning and doing laundry. However, infants and young children under the age of six should be supervised while bathing and during other tap water-related activities to prevent accidental ingestion of water.
- Drinking water containing cyanotoxins at levels exceeding the national drinking water Health Advisories can put you at risk of various adverse health effects including upset stomach, vomiting and diarrhea as well as liver and kidney damage. Seek medical attention if you or family members are experiencing illness.
- Animals may be vulnerable to adverse health effects of cyanotoxins at the detected levels indicated above; consider providing animals alternative sources of water. Contact a veterinarian if animals show signs of illness.
- If you, your family members or your animals have experienced adverse cyanotoxin-related health effects, please contact your health care provider.

WHAT IS BEING DONE?

- City of Salem is working closely with local and state public health and emergency response agencies to address the situation and to quickly reduce Cyanotoxin levels in tap water.
- City of Salem will post an updated advisory when: the Cyanotoxin levels are less than or equal to the national drinking water Health Advisories, this Do Not Drink Advisory is lifted and/or if there are any changes to the conditions of this Do Not Drink Advisory. **Updates will be provided Thursday, May 31, 2018 via the City of Salem web page, CityofSalem.net; [City of Salem Alert System](#); local media; [City of Salem social media](#). Residents can sign up on CityofSalem.net to receive emergency alerts from the City.**
- For more information please visit CityofSalem.net or call 503-588-6311.
- [See the Environmental Protection Agency's Frequently Asked Questions about Harmful Algal Blooms and Cyanotoxins](#)
- [Sign up for City of Salem Emergency Alerts](#)