Frequently Asked Questions About Lead
2/22/17

Goal: To share information about the Portland Water Bureau's existing program to reduce lead exposure from all sources.

Background

Is there lead in Portland's water?
Water-related lead exposure in Portland is linked to building plumbing and fixtures, not to lead in our water or distribution system. Portland's drinking water comes from two high-quality sources – the Bull Run Watershed and Columbia South Shore Well Field. Our source waters meet or exceed all federal and state drinking water standards.

What are the sources of lead in drinking water in Portland?
In Portland, the greatest source of lead in water is household plumbing. Portland has never used lead service lines and has removed all known lead service connectors also known as pigtails or goosenecks (short 2-3' pipes).

How can customers test their drinking water for lead?
The Portland Water Bureau offers free test kits. Contact the LeadLine at www.leadline.org or calling 503-988-4000.

How does lead get in drinking water?
For elevated levels of lead to be present in drinking water there must be a source of lead, usually found in building plumbing or fixtures. The water in these pipes or fixtures generally needs to be in contact with the source of lead for several hours for the lead to be absorbed in the water. Hot water can absorb lead faster and at a higher level than cold water.

How many homes are at risk for lead in water?
There are potentially up to 15,000 homes in Portland that were built between 1970 and 1985. These homes are more likely to have lead solder.

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What homes are most at risk for lead?
In Portland, the homes most at risk for lead in water are homes with copper pipes joined with lead solder. These were generally built or plumbed between 1970 and 1985. However, the homes with the greatest risk for exposure to lead are those with lead-based paint. Homes built before 1960 are most likely to have lead-based paint.

What can customers do if their home plumbing is contributing lead to their drinking water?
There are several common sense steps people can take to reduce their exposure to lead through drinking water:

- Run your tap for 30 seconds to 2 minutes before using the water for drinking or cooking after it has been standing for several hours. Tests have shown more than 85% reduction of lead in water from this simple step.
- Use a filter certified to remove lead from water. Be sure to maintain and replace a filter device in accordance with the manufacturer's instructions to protect water quality.
- Contact your local plumber to evaluate the possibility of replacing your plumbing.

Could my home have a lead service line?
No. Service lines are the pipe that connects the drinking water mains in the streets to homes and buildings. Portland has never used lead service lines. Prior to 1940, lead pigtails, short 2-3' pipes connecting the service line to the main, were used on some homes. Portland finished removing all known pigtails from the system in 1998.

What are other sources of exposure to lead?
In Portland the greatest source of exposure to lead is lead-based paint. Homes older than 1960 are most likely to have high levels of lead-based paint. To learn more about ways to reduce your exposure to all sources of lead contact the LeadLine at www.leadline.org or 503-988-4000.

PORTLAND WATER BUREAU
FROM FOREST TO FAUCET

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Health Effects from Lead

What are the health effects of lead?
Lead can cause serious health problems if too much enters your body from drinking water or other sources. It can cause damage to the brain and kidneys, and can interfere with the production of red blood cells that carry oxygen to all parts of your body.

The greatest risk of lead exposure is to infants, young children, and pregnant women. Scientists have linked the effects of lead on the brain with lowered IQ in children. Adults with kidney problems and high blood pressure can be affected by low levels of lead more than healthy adults. Lead is stored in the bones, and it can be released later in life. During pregnancy, the child receives lead from the mother's bones, which may affect brain development.

Who is most at risk for lead in water?
Children under six and pregnant women are most at risk for lead exposure, particularly if they live in homes with lead solder in their plumbing. These homes were typically built or plumbed between 1970 and 1985.

How can I test my child for lead exposure?
You can have your child tested by your pediatrician or through the LeadLine. Dates and times of free blood lead testing clinics can be found at www.leadline.org.

Multnomah County is the public health agency that tracks lead levels in blood. Of the over 19,000 blood lead level tests conducted by the County and its partners between 2014 and 2016, elevated lead levels were found in 184 children in Multnomah County. No cases were traced to lead in drinking water.

What resources are available to help reduce my exposure to lead?
As part of our lead hazard reduction efforts we partner with community organizations and governmental agencies that conduct lead hazard reduction education and outreach services in the Portland-area. Contact the LeadLine at www.leadline.org or 503-988-4000 for more information, or visit our Lead Hazard Reduction Program page to learn more about the organizations.

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How the Portland Water Bureau Monitors and Treats for lead in water

What is the Lead and Copper Rule?
The Lead and Copper Rule is the federal regulation that determines how water systems should treat drinking water to reduce lead and copper exposure from drinking water.

Does Portland treat drinking water to reduce lead?
Yes. Since 1997 the Portland Water Bureau has been adding sodium hydroxide, also known as caustic soda, to increase the pH of its drinking water. This has reduced the lead in water levels in the most at-risk homes by up to 70%.

What are the pH and alkalinity of Portland's water?
Since 1997 Portland has adjusted the pH of its drinking water to reduce the corrosion of lead. Since 2005 it has been adjusted to 8.0, and will be increased to 8.1 in February of 2017 with a likely increase to 8.2 later in 2017.

Portland's main source of water, the Bull Run Watershed, has an average alkalinity of 11 mg/L. Our secondary source, the Columbia South Shore Well Field, has an average alkalinity of 101 mg/L.

Is Portland in compliance with the Lead and Copper Rule?
Yes. Since 1997, the Portland Water Bureau has been in compliance with the Lead and Copper Rule.

What is the federal standard for lead in public drinking water systems?
The Lead and Copper Rule set the federal action level for lead at 15 parts per billion (ppb) to evaluate the effectiveness of corrosion control treatment. This means that if ten percent of water samples from Tier 1 Homes (see below) have lead levels of over 15 ppb, a water provider is required to take actions. These actions include reviewing corrosion control treatment and informing the public of steps to take to prevent exposure to lead in water.

In the most recent round of testing in Fall of 2016, more than 10 percent of samples, 14 of 112, from high-risk homes exceeded the action level for lead. As a

result, the Portland Water Bureau is informing the public and working with regulators to identify ways to further reduce levels of lead in water.

What is the federal standard for lead in schools?
In addition to the action level of 15 ppb for drinking water systems, the EPA has recommended that schools and daycares use a lead in water level of 20 ppb to identify locations that are contributing to lead in water.

This difference in standards is due to differing sampling methods used to identify faucets and fixtures in schools that contribute to high lead in water, versus testing for system wide corrosion control effectiveness. The State of Oregon has also developed a Healthy School Facilities program that includes new rules for lead testing in Oregon schools.

How does Portland comply with the Lead and Copper Rule?
The Portland Water Bureau meets the requirements of the Lead and Copper Rule with a unique comprehensive lead education, outreach, testing and remediation program, the Lead Hazard Reduction Program. This program is comprised of four components:

- Corrosion Control Treatment
- Lead in Water Education and Testing
- Education and Outreach for all sources of lead exposure
- Lead paint remediation

How does Portland monitor for lead in water?
The Portland Water Bureau monitors for lead in water in the highest-risk homes in the bureau's service area. These homes, referred to as Tier 1 homes, were built or plumbed from 1983-1985 and are confirmed to have lead solder in their household plumbing. These homes are sampled every 6 months by testing the water after it has been sitting in the home plumbing for at least 6 hours, which is expected to represent the highest likely occurrence of lead.

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What is a Tier 1 Home?
"Tier 1 Home" is a regulatory term that is defined as a home with a lead service line or a home built or plumbed between 1983 and June 30, 1985, that has lead solder. There are potentially 1,200 Tier 1 homes in Portland's service area.

Are some homes more at-risk for lead in water than others?
Homes with copper pipes and lead solder are more likely to have elevated levels of lead in drinking water than other homes. In Portland these high-risk homes tend to be homes built between 1970 and 1985.

How many at-risk homes potentially exceed the federal action level?
Based on the Water Bureau's testing, up to 10% of the at-risk homes (those built between 1970 and 1985) may have elevated levels of lead that could exceed the federal action level of 15 parts per billion (ppb). These are homes the Portland Water Bureau targets with its Lead in Water Education and Testing Program. Customers in at-risk homes are encouraged to test their water for lead.

What do Portland's lead in water results mean?
Monitoring for lead in water from Tier 1 Homes is intended to capture a snapshot of the highest lead levels in the highest-risk homes as a way of monitoring the effectiveness of the bureau's corrosion control treatment. These results do not indicate the level of lead likely to be found in the vast majority of homes in our system.

What does Portland do to reduce exposure to lead in water?
The Portland Water Bureau has a comprehensive corrosion control program to reduce lead in water, including:

- Treating our drinking water with sodium hydroxide to reduce the potential for lead corrosion in home plumbing.
- Conducting extensive education and outreach to customers in the most at-risk homes.
- Providing information to all customers about simple steps they can take to reduce their exposure to lead in water.
- Offer free lead-in-water testing to all customers so they can better understand their exposure to lead in water.

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Has Portland conducted corrosion control studies? When?
In 1994 Portland completed a corrosion control study that indicated raising the pH to 9.0 and adjusting alkalinity to 20 mg/L may provide additional reduction of lead in water. The Portland City Council directed the Water Bureau to look at alternative methods to reduce exposure to lead. The result is Portland's current compliance program.

After exceeding the action level for lead in water in 2013 and in anticipation of changes to the water system, the Portland Water Bureau secured funding to begin a Water Quality Corrosion Study in 2014. The data gathering phase of this study concluded in November 2016. Preliminary results indicate that treatment improvements would reduce the levels of lead in water. As a result, a corrosion control treatment pilot is being recommended to Council for consideration in March 2017.

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PORTLAND WATER BUREAU
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Corrosion Control Treatment Proposal
2/22/17

Goal: To share information about the Bureau's recommendation for improvements to Corrosion Control Treatment

What is being proposed?
In early March, the Portland Water Bureau will be asking for City Council approval to begin a corrosion control treatment pilot. This is the first step in the process of constructing additional treatment facilities for improved corrosion control.

Why is this needed?
The Portland Water Bureau's current compliance program, which includes partial corrosion treatment, has been in place since 1997. This program is in compliance with the requirements of the Lead and Copper Rule, and has reduced lead in water up to 70%. With recent exceedances of the action level for lead in water in Fall of 2013 and 2016, upcoming changes to our water system, and an increased understanding of health risks associated with low level exposure to lead, we have been evaluating the program. These corrosion control treatment improvements are an appropriate strategy for increased public health protection.

Why now?
After exceeding the action level for lead in water in the Fall of 2013 as well as changes to our drinking water system such as removal of the open reservoirs, the Portland Water Bureau began to look at ways to further reduce the levels of lead in drinking water. As a result, in 2014, the Portland Water Bureau began a Water Quality Corrosion Control Study. The results of that study indicate that enhanced treatment would be the most effective means to further reduce the levels of lead in water.

Why treatment improvements instead of replacing home plumbing?
Both the Environmental Protection Agency and Oregon Health Department have been clear that the replacement of home plumbing does not meet the compliance requirements of the Lead and Copper Rule. Even if it were an acceptable approach, a home plumbing program would be many times costlier to ratepayers than improved treatment, and would result in significant issues of equity and affordability for low-income homeowners and renters alike. Improved treatment

will provide all customers with any sources of lead in their household plumbing equal access to its benefits at a fraction of the cost.

What chemicals will be added to the water?
The main objective of the corrosion control treatment pilot is to determine what the most effective treatment chemicals would be for our system. The most likely approach will be to further adjust pH and increase the alkalinity of the water. This is commonly done with treatment chemicals such as sodium carbonate and CO2.

What are the benefits of treatment?
As we now know, exposure to even low levels of lead can result in lowered IQ and other developmental delays in young children. Fortunately, the amount of lead in water exposure can be reduced through corrosion treatment. We already provide some corrosion control; this project would add to our treatment to make it even more effective. This approach has been implemented successfully in cities across the country.

Will it change or impact the taste of the drinking water?
One of the objectives of the corrosion treatment pilot is to look at other water quality impacts associated with increased corrosion treatment including taste and odor. While we do not have any definitive answers, the potential changes to water quality parameters are similar to what is seen when blending groundwater with Bull Run. During these times some customers notice a slight difference in the feel of the water due to the increased alkalinity, while the change goes unnoticed to the majority of our customers.

How will this affect our large users such as breweries?
We have begun to reach out to many of our large users such as breweries, manufacturers, bakeries, dialysis clinics and bottlers to inform them of the potential changes. So far the potential impacts are not expected to significantly impact their operations.

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Have you notified the community?
In anticipation of the recent initial increase in pH as part of our interim lead reduction plan, the Portland Water Bureau notified our list of sensitive users. This list includes businesses, industrial users as well as residential customers interested in potential water quality changes. This messaging included information on the potential for long-term treatment changes. We have also been updating our website and will be including information in our annual Water Quality Report as well as working with the local media to help inform our customers.

When will these changes be made?
If approved by City Council, the current schedule calls for the improved treatment to be in place in five and a half years. We continue to work with our regulators to establish an appropriate schedule while maintaining compliance with the Lead and Copper Rule.

We are working with City Purchasing to find new and cost effective methods to integrate design and construction of the treatment facility. All plans must meet the City's specifications and be approved the Oregon Health Authority.

What is the total estimated project cost for improved corrosion control treatment facilities?
The total estimated project cost is between $15 and $20 million and includes the treatment pilot, design and construction costs. The project is not anticipated to result in a change to the forecasted water rates.

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Corrosion Control Treatment Options
2/22/17

Goal: The corrosion control treatment pilot will determine what the most effective treatment chemicals would be for our system. The two most common methods of corrosion control are **pH and/or alkalinity adjustment** and use of **phosphate based corrosion inhibitors**.

Definitions

pH and/or alkalinity adjustment works by adjusting water chemistry to make it less corrosive to lead components in premise plumbing materials.

Corrosion inhibitors work by forming a protective coating on the interior surface of pipes which helps prevent or inhibit lead from leaching into the water.

The corrosion control treatment pilot will evaluate both methods with respect to lead reduction, simultaneous compliance with other water quality regulations, compatibility with multiple sources of supply, impacts to sensitive and industrial users, discharge considerations, and cost.

Most commonly used corrosion control chemicals

Chemical Name	Corrosion control method	Other common uses	Other considerations
Baking Soda (sodium bicarbonate)	Alkalinity and pH adjustment	Baking leaveners, antacids, toothpaste	Most expensive of alkalinity adjustment chemicals
Carbon Dioxide	pH adjustment	Carbonated beverages	Lowers pH so would only be used in conjunction with other chemicals

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Corrosion Control Treatment Options
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Chemical Name	Corrosion control method	Other common uses	Other considerations
Caustic Soda (sodium hydroxide)	pH adjustment	Soap making, food processing	
Hydrated Lime (calcium hydroxide)	Alkalinity and pH adjustment	Food processing, calcium supplements	Labor intensive Operation & Maintenance
Soda Ash (sodium carbonate)	Alkalinity and pH adjustment	Soaps, detergents, glassmaking, water softening, food processing	
Orthophosphate (Phosphoric Acid)	Corrosion inhibitor	Carbonated beverages, cheese making, baking leaveners	Wastewater discharge concerns; compatibility with wholesale customers using other sources
Zinc orthophosphate	Corrosion inhibitor	Dental cement	Wastewater discharge concerns; compatibility with wholesale customers using other sources

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Corrosion Control Treatment Options
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Corrosion control treatment practices used by other utilities

Utility	Corrosion Control Method	Treatment Chemical
City of Salem (OR)	Alkalinity adjustment with moderate pH increase	Soda ash
South Fork Water Board (Oregon City, OR)	Alkalinity adjustment with moderate pH increase	Soda ash
Clackamas River Water (OR)	Alkalinity adjustment with moderate pH increase	Soda Ash
Eugene Water and Electric Board (OR)	pH adjustment	Sodium hydroxide
Lake Oswego-Tigard Water Partnership (Lake Oswego, OR)	pH adjustment	Sodium hydroxide
Joint Water Commission (Hillsboro, OR)	pH adjustment	Sodium hydroxide
North Clackamas County Water Commission (Oregon City, OR)	Alkalinity adjustment with moderate pH increase	Soda ash
*Tacoma Water (WA)	pH adjustment	Sodium hydroxide
City of Everett (WA)	Alkalinity adjustment with moderate pH increase	Soda ash
*Seattle Public Utilities (WA)	pH and alkalinity adjustment	Lime and carbon dioxide

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City of Bellingham (WA)	Alkalinity adjustment	Sodium bicarbonate
Metro Vancouver (Vancouver, BC)	pH and alkalinity adjustment	Lime and soda ash
East Bay Municipal Utility Dist. (Oakland, CA)	pH and alkalinity adjustment	Lime
Long Beach Water (CA)	Corrosion inhibitor	Orthophosphate
Santa Clara Valley Water Dist. (San Jose, CA)	Corrosion inhibitor	Orthophosphate
Kern County Water Agency (Bakersfield, CA)	Corrosion inhibitor	Orthophosphate
Los Angeles Dept. of Water & Power (CA)	Corrosion inhibitor	Zinc orthophosphate
DC Water (Washington, DC)	Corrosion inhibitor and pH adjustment	Orthophosphate and caustic soda
*Massachusetts Water Resources Authority (Boston, MA)	pH and alkalinity adjustment	Soda ash and carbon dioxide
Great Lakes Water Authority (Detroit, MI)	Corrosion inhibitor	Orthophosphate
Southern Nevada Water Authority (Las Vegas, NV)	Corrosion inhibitor	Zinc orthophosphate
City of Chicago (IL)	Corrosion inhibitor	Orthophosphate
Providence Water (RI)	pH and alkalinity adjustment	Lime
Milwaukee Water Works (WI)	Corrosion inhibitor	Orthophosphate

*Unfiltered water system

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PORTLAND WATER BUREAU
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Corrosion Control Treatment Stakeholder Outreach
2/22/17

Goal: To share information and solicit feedback from key stakeholders about the benefits and impacts of the project.

Key stakeholders	Milestone	Notes
City Commissioners	Feb 2017	Commissioner briefings
Public health leaders	Ongoing	Regular meetings with County Health, State Public Health
Large water users	Jan 2017	Brewers Siltronic Portland Bottling Company Other large water users in Business Industry and Government (BIG) program
Wholesale partners	Ongoing	Quarterly and monthly meetings
AWWA	Ongoing	Attend conferences and review with peer utilities
PUB and CUB	Feb 2017	Feb 7 PUB presentation, ongoing CUB meetings
Sensitive user groups	Jan 2017	Existing list of contacts including hospitals, dialysis centers, daycares, schools, etc.
Legislative delegation	Feb 2017	Meetings with interested or involved legislators to keep them apprised of efforts
Community and Environmental groups	Feb 2017	• Audubon Society • Center for Intercultural Organizing (CIO) • Clean Water Oregon/Portland • Columbia Riverkeeper • Elders in Action • Food and Water Watch • Immigrant and Refugee Community Organizing (IRCO) • Latino Network • Lead Safe America

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Corrosion Control Treatment Stakeholder Outreach
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		• Native American Youth and Family Center Upstream Public Health • Oregon Environmental Council • Oregon Public Health Institute • Physicians for Social Responsibility • Urban League of Portland • Willamette Riverkeeper
Bureau liaisons	Feb 2017	Representatives from BES, Housing, PDC, Government Relations
Internal staff and partners	Ongoing	

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PORTLAND WATER BUREAU
FROM FOREST TO FAUCET

Nick Fish, Commissioner
Michael Stuhr, P.E., Administrator

1120 SW 5th Avenue, Room 600
Portland, Oregon 97204-1926
Information: 503-823-7404
www.portlandoregon.gov/water

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IMPACT STATEMENT

Date: February 6, 2017

Council Date: March 1, 2017

Legislation Title: Authorize a contract with Confluence Engineering Group, LLC in the amount of $664,930 for the Corrosion Control Treatment Pilot Project (Ordinance)

Contact Name: Michelle Cheek, Senior Engineer
Contact Phone: 503-823-4790
Presenter Name: Michael Stuhr, P.E., Administrator
Gabriel Solmer, Deputy Director

Purpose of proposed legislation and background information:
The purpose of this legislation is to authorize a Professional, Technical, and Expert (PTE) contract with Confluence Engineering Group, LLC for the Corrosion Control Treatment Pilot (Project). The Project will require a treatment pilot be completed to evaluate treatment alternatives for improved corrosion control treatment to further reduce lead at customer taps and provide recommendations for full-scale implementation of improved corrosion control treatment. The Water Bureau plans to begin the Project in March 2017.

The Lead and Copper Rule (LCR) requires that large utilities serving more than 50,000 people maintain optimal corrosion control treatment (OCCT) and conduct lead and copper monitoring at high risk customer taps to determine if the 90th percentile of homes tested exceed the action levels of 15 parts per billion (ppb) or 1300 ppb for copper. In 1994, in compliance with the LCR, Water Bureau conducted an OCCT study. The study recommended raising the pH of the water to 9.0 and alkalinity to 20 mg/L.

In collaboration with the Oregon Health Division (Drinking Water Section and Environmental Epidemiology Section); the Multnomah, Washington and Clackamas County Health Departments; and the Oregon Childhood Lead Poisoning Prevention Program (Program), Water Bureau proposed a comprehensive Lead Hazard Reduction Program (LHRP) as an alternative to optimized corrosion control treatment requirements of the LCR. This program is based on local risk assessment data from state and county health departments, and recognizes that children are exposed to lead mainly from lead-based paint and dust. The Program establishes best practices to target children who are most at risk for lead poisoning. These interventions were

expected to have a greater public health protection from lead exposure in Portland's community than treatment alone.

The LHRP is a comprehensive lead reduction program. It includes four components:

1. Water treatment (currently raising the distribution entry point pH to 8.0) and monitoring water quality parameters quarterly and at Tier 1 homes (those with verified lead solder in plumbing) twice a year.

2. Lead-in-water education and testing with free lead-in-water tests available to all Portland and wholesale customers.

3. Public education and community outreach on all sources of lead.

4. A home lead hazard control program which focuses on lead paint remediation in homes.

The 1994 OCCT study estimated that Portland's compliance lead levels, collected at Tier 1 homes with verified lead solder in plumbing, would be reduced by 70-85% from pre-treatment levels by treating to pH 9.0 and alkalinity 20 mg/L. With the current treatment (pH of 8.0), Portland has seen significant—up to 70%--reductions in lead levels at these worst-case homes. Additional treatment is expected to provide further reductions in lead levels.

In 2014, after exceeding the action level for lead in water and in anticipation of changes to the water system, the Water Bureau received City Council approval to begin a water quality corrosion study. This study included a year-long sampling effort that was completed in November 2016. The data collected has provided further information regarding the mechanisms of lead release in the Water Bureau's system and is helping to inform the treatment alternatives to be evaluated in the Project.

On October 11, 2016, Water Bureau held a workshop with City Council to discuss corrosion control treatment. On November 4, 2016, Oregon Health Authority (OHA) approved the Water Bureau's proposed schedule to implement improved corrosion control treatment. OHA considers this schedule a compliance schedule with submission of the Corrosion Control Pilot Study Plan to OHA required by September 30, 2017. Other key dates in the compliance schedule may be accessed at https://yourwater.oregon.gov/enforce.php?pwsno=00657&group=all&open=x.

A formal Request for Proposal (RFP WTR 00000462) in support of the Corrosion Control Treatment Pilot was conducted in accordance with Chapter 5.68 of the Code of the City of Portland and one proposal was received that was submitted by Confluence Engineering Group, LLC. An evaluation committee reviewed the proposal and deemed their proposal responsive and recommended Confluence Engineering Group, LLC be selected to perform the work for the Project. A notice of intent to negotiate and award a contract was posted to the City of Portland BuySpeed on January 5, 2017.

The work performed by Confluence Engineering Group, LLC will be divided into two phases. Phase 1 will conclude with development of an experimental plan for the Treatment Pilot. Phase 2 will conclude with recommendations for full-scale implementation of improved corrosion control treatment, final report preparation and presentation. Confluence Engineering Group, LLC and their sub-consultants each possess the required expertise and equipment necessary to perform a corrosion control treatment pilot. The Water Bureau anticipates starting work on the Project in March 2017.

The Water Bureau recommends approval of the Corrosion Control Treatment Pilot as a first step in a multi-phase project that would ultimately include design and construction of a corrosion control treatment facility to implement additional treatment. Over the next two years, the Water Bureau plans to appear before City Council for other ordinances and reports relating to this Project.

Financial and budgetary impacts:
The contract term is approximately two years. The not to exceed amount for the contract is $664,930. Funding for the services required under the contract are available in the FY 2016-17 Budget and will be requested in the FY 2017-18 and FY 2018-19 Budgets.

Approximately $2,900,000 has been requested for CIP Planning as part of the Support Program for FY 2017-18 and $14,500,000 has been requested in the 5-year Capital Improvement Program, FY 2017-18 to FY 2021-22. The proposed action will not result in a change in the forecasted water rates.

Community impacts and community involvement:
The proposed legislation provides needed water quality and engineering services for completion of the Project. This Project is part of the Water Bureau's ongoing efforts to help determine what additional treatment improvements should be made to minimize the corrosion of lead in household plumbing while continuing to maintain compliance with other water quality parameters.

The Water Bureau has several public involvement mechanisms and opportunities to provide information to, and gather information from, our customers. Information about this study will be shared with wholesale customers, industrial and sensitive users such as beer brewers, dialysis clinics, and others who have signed up to be informed when the Water Bureau makes any adjustments to our treatment or source water. The Water Bureau also uses social media and other communication tools such as the Annual Water Quality Report, press releases, and outreach brochures. A comprehensive outreach plan with more than a dozen key stakeholders representing industry, environment, and community members has been developed for this project and is being implemented.

Budgetary Impact Worksheet

Does this action change appropriations?

☐ **YES**: Please complete the information below.
☒ **NO**: Skip this section

Fund	Fund Center	Commitment Item	Functional Area	Funded Program	Grant	Sponsored Program	Amount

Michael Stuhr, P.E., Administrator — Date: 2/10/17