Parsons, Susan

From: Kate & Chris <samsa@pacifier.com>
Sent: Thursday, May 28, 2015 1:56 AM
To: Council Clerk – Testimony
Cc: Hales, Mayor; Commissioner Fritz; Commissioner Fish; Commissioner Novick; Commissioner Saltzman
Subject: LU 14-218444-HR-EN Testimony of Katherin Kirkpatrick 2015-05-28 -- Email 1 of 11
Attachments: LU 14-218444-HR-EN Testimony of Katherin Kirkpatrick 2015-05-28 -- Legal Brief.docx; LU 14-218444-HR-EN Testimony of Katherin Kirkpatrick 2015-05-28 -- Exhibit A.docx; LU 14-218444-HR-EN Testimony of Katherin Kirkpatrick 2015-05-28 -- Exhibit B.pdf; LU 14-218444-HR-EN Testimony of Katherin Kirkpatrick 2015-05-28 -- Exhibit C.pdf; LU 14-218444-HR-EN Testimony of Katherin Kirkpatrick 2015-05-28 -- Exhibit D.pdf; LU 14-218444-HR-EN Testimony of Katherin Kirkpatrick 2015-05-28 -- Exhibit E.pdf

Dear Karla:
Please accept my attached testimony for submission into the record of LU 14-218444-HR-EN on the Mt. Tabor Reservoirs Decommissioning, scheduled for hearing this afternoon at 2:00 p.m.
My full testimony will consists of a legal brief and supporting exhibits A through DD, which due to file size will need to be submitted via 11 separate e-mails. I apologize for the inconvenience and appreciate your help getting all of this into the record.

This batch consists of the legal brief and Exhibits A through E. Kindly send me an electronic receipt when the documents are entered.

Thank you,
Katherin Kirkpatrick
1319 SE 53rd Avenue
Portland, OR 97215
samsa@pacifier.com

TESTIMONY IN OPPOSITION TO THE APPLICANT'S PROPOSAL, APPLICATION AND APPEAL

CASE FILE: LU 14-218444 HR EN, Mt. Tabor Reservoirs Disconnection

TO: City Council

FROM: Katherin Kirkpatrick, 1319 SE 53rd Avenue, Portland, OR 97215

DATE: 4/15/2015

Dear Council Members:

Please close one of the most painful chapters in Portland's recent history, and resolve to save Portland's open reservoirs by the methods outlined in Friends of Reservoirs' April 19, 2015, letter.

The current proposals and applications to decommission and demolish these reservoirs—which provide arguably the best municipal drinking water in the country and safely vent carcinogenic radon while also serving as well-preserved examples of the country's most beautiful public works design—are not only unlawful for the reasons enumerated in detail below. They result from improper government-private dealings that are now finding themselves the subject of criminal investigation. Enough is enough.

We advocates who testify on behalf of these irreplaceable resources have collectively devoted hundreds of years of expert-level research to this cause and have steadfastly offered ourselves and our expertise to City Council in a good-faith effort to find a regulatory compliance solution that safeguards our water quality and preserves our history.

We are here to serve the public, just as you are. Please work with us. Together we can solve this.

ARGUMENT IN OPPOSITION TO THE PROPOSED DECOMMISSIONING/DISCONNECTION OF MT. TABOR'S OPEN RESERVOIRS:

I. CASE SUMMARY

This hearing involves appeals, by both the Applicant and the Mt. Tabor Neighborhood Association, of the HLC's *Final Findings and Decision* ("Decision") dated February 9, 2015, approving—with condition of a mitigation plan—the Mt. Tabor Reservoir Disconnection application submitted by Applicant (specifically, Tom Carter on behalf of the City of Portland and Portland Water Bureau, collectively referred to herein as "Applicant") in *LU# 14-218444 HR EN, PC# 14-118276*.

The impetus for the case is Portland City Council's longstanding policy to disconnect and/or demolish Reservoirs #1, #5 and #6 at Mt. Tabor Park, despite almost unanimous public objection.

The case was acknowledged by the HLC as the largest public showing ever to come before it, with the near unanimity of citizen testimony in opposition echoing the majority opposition expressed by citizen respondents to the City's public poll on the project *(Submitted with this Testimony as Exhibit A)*.

Historically, City Council first codified its anti-open-reservoir policy via a Use Determination ("UD") dated September 3, 2003, for a disconnection/demolition plan that was later abandoned in the face of public opposition. That opposition included an appeal of the UD (*Boly v. City of Portland, LUBA 2003-152*), but the issues in the case were never litigated due to a technicality—namely, City Council's failure to notify appellants of a hearing upon which their right to appeal hinged.

Public intervention on behalf of the reservoirs succeeded in placing them, and the surrounding park, on the National Register of Historic Places in 2004, subjecting them to the full protections of *Portland City Code ("PCC") Title 33.846.060 Historic Resource Review*.

Following historic nomination, City of Portland negotiated with federal and state regulators, resulting in the adoption of a federal drinking water regulation (the *Long Term II Surface Water Treatment Rule*, or "*LT2*," codified by the Oregon Legislature as modifications to *ORS 448.135*) which the City then cited as a reason for resuming its plans to decommission the reservoirs despite their historic listing (though the regulation does not actually require decommissioning).

The City eventually moved forward with decommissioning plans under a Type II land use process with minimal public notice. After continued public outcry over irregularities in, and/or lack of, public process, City Council modified its decommissioning plan to include retention of above-ground water features at the site via an unspecified future process; and it submitted the revised plan to the HLC for Type III Historic Resource review.

No new UD was made; rather the application incorporated the original 2003 demolition UD. The Mt. Tabor Neighborhood Association ("MTNA") and witness Mark Bartlett requested and paid for a new Use Determination, but City staff delayed processing that request until after the HLC's decision was issued, despite being informed that the requested determination was material to the case before the HLC.

A public hearing was held before the HLC on December 1, 2014, at which the HLC deemed the application deficient and instructed the Applicant to return with a more concrete mitigation plan. Vociferous public testimony questioned the necessity and legality of the proposed work, raised doubts as to property ownership and the identity of the responsible party, and demonstrated that Applicant did not have the authority, nor the willingness, to commit to and abide by any mitigation plan should one be approved (further evidenced by the Applicant's current appeal of the mitigation plan). The HLC directed Applicant to contact witness MTNA and make a "meaningful collaborative effort to reach consensus with the community."

A second hearing was held on January 12, 2015, at which Applicant revealed that it had not complied with the HLC's request to meet with MTNA. A new application was presented by Bureau of Development Services ("BDS") staff which struck out references to the proposed change in "use," replacing them with the word "function." Applicant submitted, as a mitigation plan, a checklist from a May 2009 contractor's maintenance assessment (the *Mount Tabor Reservoirs Historic Structures Report*, hereafter referred to as "Mitigation Plan"), but made no promise to comply by it, revealing that City

Council reserved the right to withdraw compliance with the plan at will, lending further credence to the public's testimony that Applicant was not the true owner or responsible party with decision-making authority over the affected property. Following opposition testimony by several dozen witnesses and the submission by MTNA of an opposition petition signed by 915 individuals and 20 organizations (which HLC indicated was the highest turnout it had ever seen), approval was again denied, and the Applicant was again sent back to flesh out its Mitigation Plan.

A third hearing was held on January 26, 2015. Applicant did not attend. BDS staff argued on behalf of Applicant. The HLC echoed the public's concern that Applicant did not appear to be the true decision-making power behind the City's proposed reservoir decommissioning. BDS argued that HLC had no authority to enforce compliance with the Mitigation Plan, and suggested that BDS resign itself to wearing "advocacy hats," serving City Council in a purely advisory role. BDS insisted on a vote, and the Applicant's proposal was rejected 3-3. The public record in the case was closed.

Applicant then engaged in three weeks of off-record negotiations with City staff, following which the HLC publicly announced on February 9, 2015, that Applicant's proposal had been approved, with the 2009 Mitigation Plan set as an approval condition. Interested parties were given until 3:00 p.m. Friday February 27, 2015, to appeal the HLC decision to Portland City Council.

Appeals were filed by both the Applicant and MTNA, as a result of which this case now sits before City Council. Should City Council err in its decision making, the case can be appealed to the Land Use Board of Appeals and beyond.

II. ASSIGNMENTS OF ERROR

It is sincerely hoped that City Council will end this contentious matter today by resolving to cease decommissioning plans and re-negotiate a regulatory compliance plan and schedule that preserves the reservoirs in use as drinking water utilities and open aeration mitigation facilities.

However, should City Council fail to heed the public's near unanimous wish in this regard *(e.g., Exhibit A)*, the following Assignments of Error are offered to preserve the record for those parties seeking to appeal this matter to the Land Use Board of Appeals and beyond.

The City of Portland erred in submitting, via its agent Applicant, and the Historic Landmarks Commission ("HLC") erred in approving, an application that was incomplete, inaccurate, and failed to meet the approval criteria of the site as enumerated below; and the HLC exceeded its legal authority in issuing an approval-with-conditions without ensuring that the conditioned plan will actually result in adequate mitigation, as enumerated below:

A. <u>Errors of Omission</u>.

1. Council erred in submitting via its agent Applicant, and HLC erred in approving, an application that was incomplete in the following particulars:

a. Failure to Mitigate and Notify Public of Health Risk, in Service of Special Interests. The applied-for work neglects to first provide due public notification of the potential adverse health risks and water quality impact associated with the proposed alterations to the open reservoirs. This failure to protect the public appears to have connections to the potential undue influence that is the subject of the FBI's ongoing investigation of former Governor John Kitzhaber, his domestic partner Cylvia Hayes, and affiliates of Portland's reservoir engineering contractors.

i. Public of Health Risk: Radon and Disinfection Byproducts. Once the open reservoirs at Mt. Tabor and Washington Park are taken off line, they will no longer serve the public health mitigation role they currently serve, namely open aeration and sunlight, which currently protect the public from a variety of waterborne contaminants, not least being radon.

Radon is a carcinogen known to contaminate the city's backup water source at the Columbia South Shore Well Field (CSSWF). *See Portland Water Bureau Drinking Water Quality Reports of 2009 (p. 7), 2010 (p.7), 2011 (p.4) and 2012 (p.4) submitted herewith as Exhibits B, C, D and E. Also see the City's map of the CSSWF submitted herewith as Exhibit H, and the Oregon Health Authority's map of radon risk by zip code, submitted herewith as Exhibit I, showing the CSSWF to lie almost entirely within a region denoted as highest risk.*

The EPA states that "there is no safe level of radon." *See "Radiation Protection: Radon," EPA publication at http://www.epa.gov/radiation/radionuclides/radon.html, submitted herewith as Exhibit J.*

The EPA estimates that 192 people die per year from inhaling radon as it off-gasses from drinking water in the home, for which reason the EPA proposed a Maximum Contaminant Level (MCL) of 300 pCi/L, which if enacted would prevent an estimated 84 deaths per year. *See EPA's May 2012 Report to Congress, available at http://water.epa.gov/lawsregs/rulesregs/sdwa/radon/upload/epa815r12002.pdf submitted herewith as Exhibit K.*

Open aeration, such as occurs at Portland's open reservoirs, is designated by the EPA as the "best available technology" for removing radon from drinking water. See *"Risk Assessment of Radon in Drinking Water," National Academy Press, Washington DC, 1999, p. 179, available for free download in PDF form via registering at http://www.nap.edu/catalog/6287/risk-assessment-of-radon-in-drinking-water and referred to herein as Exhibit L.*

Other drinking water contaminants that are currently mitigated by the open reservoirs and will likely become more problematic once the open reservoirs are decommissioned include, but are not limited to, chloroform, nitrification byproducts, and light- and oxygen-sensitive microorganisms. *Scientific and Public Health Basis to Retain Open Reservoir Water System for the City of Portland, Oregon, at http://bullrunwaiver.org/wp-content/uploads/2014/05/waive2014.pdf, and submitted herewith as Exhibit M.*

Such increased public health risks fall under the Public Notification Rules of the US Environmental Protection Agency, as codified in *65 FR 25981*, May 4, 2000, and *40 CFR Parts 9 and 141-143* and as incorporated into Oregon Administrative Rules by virtue of Oregon Health Authority primacy. Neither

HLC nor City Council has the authority to bypass these fundamental safety requirements, which have not been met, and indeed have been thwarted by the City's actions.

The EPA's "Quick Look" summary of federal drinking water public notice regulations, which can be found at *http://water.epa.gov/lawsregs/rulesregs/sdwa/publicnotification/upload/dwpnquicklook.pdf, and which is submitted herewith as Exhibit N*, states:

> "Any time a situation occurs where there is the potential for human health to be immediately impacted, water suppliers have 24 hours to notify people who may drink the water of the situation."
> --*Exhibit N, p. 2, emphasis added.*

Certainly, hundreds of predicted cancer deaths from inhaling alpha particles emitted by radon in the public's drinking water constitute a "potential for human health to be immediately impacted." But even if, for the sake of argument, the threat were not immediate, public notice would still be required:

> "Any time a water system provides water with levels of a contaminant that … hasn't been treated properly, but that doesn't pose an immediate risk to human health, the water system must notify its customers as soon as possible… "
> --*Ibid*.

As shown in *Exhibits D and E*, the City's backup drinking water in the CSSWF had tested above the EPA's proposed MCL of 300 pCi/L for two consecutive years before the City removed radon entirely from the list of contaminants it reports.

Radon levels have subsequently been omitted from the City's drinking water data *(submitted herewith as Exhibits F and G)* since City Council's formal June 3, 2013, announcement that it was bound and determined to decommission/demolish Portland's open reservoirs, and since Commissioner Fritz's communication to this witness that there was no way to "stop Mayor Hales from moving forward with disconnecting and covering them." *See June 3, 2013, Press Release and accompanying personal communication from Commissioner Fritz, submitted herewith as Exhibit O.*

However, while removing radon data from public reports may be politically expedient, it does not make radon risk go away. On the contrary, a growing body of peer-reviewed research suggests that even the EPA's proposed MCL, and the City's now-abandoned yearly monitoring of the CSSWF, are feeble and outmoded measures for such a serious health threat:

- Since at least 1980 it has been known that periodic sampling, such as the City used to perform, is an inadequate method for assessing ground water risk, due to radon levels' ability to fluctuate widely based on seismic activity. *Talwani, P., W. S. Moore, and J. Chiang (1980), "Radon Anomalies and Microearthquakes at Lake Jocassee, South Carolina," Journal of Geophysics Research, 85(B6), 3079–3088, doi:10.1029/JB085iB06p03079; submitted herewith as Exhibit P.*

- Since at least 1997 it has been known that federal dosimetry models for public risk exposure from radon-contaminated drinking water may grossly underestimate risk because those models omit data from such sources as home showers, where "the increase in the long-term average

concentration caused by the release of [radon] from water use in the home could more than double the average daily dose." *B. Fitzgerald, P.K. Hopke, V. Datye, T. Raunemaa, and K. Kuuspalo, (1997), "Experimental Assessment of the Short- and Long-Term Effects of 222Rn from Domestic Shower Water on the Dose Burden Incurred in Normally Occupied Homes," Environmental Science & Technology 31 (6), 1822-1829, DOI: 10.1021/es950936l, p. 1822; submitted herewith as Exhibit Q*.

- Since at least 2006 it has been known that there is a "remarkable and convincing" association between home radon exposure and juvenile osteosarcoma. *M. Wright and D. Pheby (2006), "Risk Factors for Osteosarcoma in Young People in Cornwall: A Case-Control Study," Journal of Environmental Health Research, Volume 5, Issue 2, article p. 1; submitted herewith as Exhibit R.*

- Since at least 2008, home radon exposure risk from washing clothes and dishes has been added, alongside home showering, to the growing list of underestimated and underreported home drinking water radon exposure risks: "When high-radon groundwater is utilized in homes, clothes washing, dishwashing, sink usage and showering can cause 28-98% of dissolved radon to degas…and mixing of this radon into the volume of the house creates incremental increases in exposure to radon progeny over the relatively long (multi-day or longer) measurement periods typically employed in residential radon exposure calculations;….[but this] underestimates exposure because occupants are in proximity to water uses and because daily lows in airborne radon activities occur when residents are not at home…" *D.S. Vinson, T.R. Campbell and A. Vengosh (2008), "Radon Transfer from Groundwater Used in Showers to Indoor Air," Applied Geochemistry 23, 2676-2685, pp. 2676-77; submitted herewith as Exhibit S.*

- Since at least 2009 it has been known that periodic radon sampling of ground water such as formerly employed (and then abandoned) by the City of Portland does not adequately assess public exposure risk because radon outgassing into groundwater varies so widely with seismic activity that it serves as an earthquake prognosticator:
    - groundwater radon levels increase in 83% of seismic events due to the outgassing of radon that was previously trapped within solid rock
    - outgassing events typically last from 30 to 200 days
    - the amount of outgassing is not magnitude-dependent, meaning that even minor seismic events may trigger significant radon spikes
    - radon spikes can be as high as 1200% relative to baseline groundwater levels

  R.E. Cicerone, J.E. Ebel and J Britton (2009), et al., in "A Systematic Compilation of Earthquake Precursors," 476, 371-396; submitted herewith as Exhibit T.

ii. Undue Influence and Its Role in the City's Decision to Put Private Interests Before those of the Public. Instead of protecting the public from the above risks by preserving the time-tested, best-available-technology protections the public has enjoyed via our open aeration at the Mt. Tabor and Washington park reservoirs, the City and its agents have worked against the public health interest at the local, state and federal level to thwart public radon protections. This appears to have unduly benefitted reservoir contractors who have ties to City and State officials.

Indeed, the City encouraged the engineering firms who benefit from the lucrative reservoir-related public works contracts (such as CH2M Hill, MWH and HDR), and their agents, to serve on the City's behalf as "stakeholders" in the EPA's decision *(Exhibit N, above)* to shirk its Congressional mandate, resulting in failed implementation of public health protections such as the EPA's 300 pCi/L MCL for radon. Indeed, the advisory appendix to *Exhibit L* shows that Portland reservoir contracting associate Rhodes Trussell simultaneously advised the EPA on both its radon and its pro-industry LT2 panels.

In short, the City's engineering contractors and their lobbyists helped convince the EPA that the otherwise avoidable deaths of hundreds of citizens were not worth the trouble of taking public safety measures that could have been achieved by simply retaining the proven-safe technology exemplified by Portland's open reservoirs.

This special treatment of Portland's reservoir contractors also had help from Oregon's former Governor Kitzhaber, in a relationship that is now coming to light as part of the ongoing criminal investigation of the Governor and his domestic partner, Cylvia Hayes.

Governor Kitzhaber appointed to his cabinet an affiliate of Portland's largest reservoir contractor. Dan Carol, President of CH2M Hill's self-described lobbying "straw man," the West Coast Exchange (WCX) simultaneously served the Governor in a cabinet position in which he would have power to influence state policy regarding the type of public works contracts from which reservoir engineers such as CH2M Hill would benefit. *See WCX promotional materials submitted herewith as Exhibits U1 through U11, which describe among other things, keeping WCX's identity "ambiguous" with regard to conflicts of interest so as to "get…capacity at state level to do the hard politics."*

Portland's largest reservoir contractor then watched its interests flourish when Governor Kitzhaber's appointed administrator of the Oregon Health Authority (OHA), Gail Shibley, helped interpret state and federal reservoir policy in ways that proved beneficial to Portland's reservoir contractors, instead of to the Oregon Legislature's expressed intent nor to public radon protection:

- Administrator Shibley refused Portland's open reservoirs multiple reasonable requests for variances from decommissioning work related to LT2 and its counterpart rule at the state level, claiming that such variances were against federal policy. In fact the LT2 rule does not prohibit variances, and indeed the superseding *Safe Drinking Water Act, 42 USC Section 300g-4(a)(3),* permits variances from *"**any treatment technique requirement of a national primary drinking water regulation** upon a showing by **any person** that an alternative treatment technique not included in such requirement is at least as efficient in lowering the level of the contaminant with respect to which such requirement was prescribed." (Emphasis added).*

- Governor Kitzhaber and OHA Administrator Shibley also oversaw the OHA's adoption of an administrative rule, *OAR 333-061-0045*, which benefitted Portland's reservoir contractors by formally prohibiting LT2-related variances at the state level, even though by adopting this administrative rule the OHA disobeyed the Oregon Legislature's expressed intent that the OHA only reach "as far as and no farther than" federal regulations (which, per 42 USC 300 above, allowed variances. *See letter from Administrator Gail Shibley to Representative Ben Cannon,*

*June 16, 2011, submitted herewith as Exhibit V. Also see the Legislature's expressed intent in ORS 448.131, that "**Nothing in this section authorizes the [OHA] to require alteration of existing facilities** unless alteration is necessary to ensure safe drinking water." (Emphasis added.)*

- When in 2011 the EPA began to reconsider its LT2 rule and allow other open-reservoir cities to delay LT2-related reservoir modifications, Portland citizens began putting pressure on City officials to delay Portland's reservoir decommissioning schedule as well, in hopes of saving Portland's open reservoirs given the EPA's indication that it would consider the health benefits provided by open reservoirs. But Administrator Shibley and her staff told Portland City officials, and City officials in turn told the public, that the EPA had forbidden the City from delaying its existing demolition/decommissioning schedule. In fact, the EPA had said the opposite—that the OHA, as primacy agency, had every authority to grant such a schedule delay if it wished to:

    - *"[T]here may be specific articulable facts that warrant compliance schedule adjustments….Primacy agencies can evaluate these system-specific issues when evaluating a request to adjust a compliance schedule," Email from EPA Drinking Water Director Cynthia Dougherty to OHA Administrator Gail Shibley, December 7, 2011, submitted herewith as Exhibit W.*

    - *"There may be specific facts that warrant compliance schedule adjustments….It is entirely appropriate for primacy agencies to evaluate these system-specific facts when evaluating a request to adjust a compliance schedule." Letter from EPA Assistant Administrator Nancy Stoner to Senator Jeff Merkley, January 27, 2012, submitted herewith as Exhibit X.*

- Subsequently, Administrator Shibley was hired as Chief of Staff to Portland Mayor Charlie Hales, whose engineering company HDR had also benefitted from City reservoir contracts. *See LinkedIn Profile of Administrator Gail Shibley, submitted herewith as Exhibit Y; LinkedIn Profile of Mayor Charlie Hales, submitted herewith as Exhibit Z; and City Council Ordinance 178997 dated December 22, 2004, regarding HDR Engineering's contract on the Washington Park reservoir, submitted herewith as Exhibit AA.*

- Reservoir contractor CH2M Hill and its WCX lobbying group then promoted its research via Evergreen State College, the alma mater of the Governor's domestic partner Cylvia Hayes, in a publication that prominently featured Ms. Hayes and 3E Strategies, the company for which she was CEO. See *"Infrastructure Crisis, Sustainable Solutions: Rethinking Our Infrastructure Investment Strategies, November 2014, submitted herewith as Exhibit BB, pp. 13, 43 and 45.*

- Reservoir contractor CH2M Hill then sponsored a national symposium at which it would feature the Governor's domestic partner, Cylvia Hayes, moderating a presentation by Dan Carol of its WCX lobbying group, entitled "Climate Smart, More Resilient Infrastructure." *See invitation published by Climate Week NY°C 2015's invitation to the upcoming "Regional Action on Climate Mitigation and Resilient Infrastructure," submitted herewith as Exhibit CC.*

- Reservoir contracting affiliate Dan Carol then used his influential position on the Governor's cabinet to push for funding of the Pacific Coast Collaborative, with which Cylvia Hayes contracted. See "Governor's Office Releases 94,000 Cylvia Hayes E-mails," the Oregonian, April 4, 2015, pp. 2 and 5, submitted herewith as Exhibit DD.

Our current Governor Kate Brown has rightly severed her ties with Mr. Carol in the wake of the FBI's ongoing investigation into potential conflicts of interest. City Council should follow Governor Brown's example, and save itself and the citizens of Portland further humiliation, by terminating all reservoir decommissioning contracts that bear even the slightest whiff of impropriety. That those contractual relationships might have played a role in withholding crucial radon safety information from the public is unacceptable, and City Council must take immediate action to restore the public's safety from radon contamination in the CSSWF.

b. Title, Ownership and Management. The City, via its agent Applicant, failed to exercise due diligence in submitting an application that did not show clear title and/or management rights to the property in question; and the HLC erred in approving that application. PCC 33.730.060(C)(1) and (2) require an applicant to list all true owners of the properties impacted, and its interests relative to those owners; and to document all current and proposed uses of the properties impacted. Credible evidence was supplied to City agents and to the HLC by witness Mark Bartlett, and by witnesses Eileen Brady and Brian Rohter via their attorney, Ty Wyman, that the proposed work impacts land that is not owned and/or managed by Applicant Tom Carter or the bureau that he represents, but rather is owned and/or managed by Portland Parks and Recreation and zoned exclusively for park (i.e., non-utility) use. The application in this case failed to accurately distinguish both the true ownership of the various parcels impacted. The application also failed to accurately delineate the current and proposed uses of those parcels, both in terms of the parcels under applicant Water Bureau's management (see discussion in Section c below) and also in terms of the parcels currently under Portland Parks and Recreation management and zoned exclusively for park/recreational use (see discussion in Section e below). The application should neither have been submitted nor approved while lacking in such particulars.

c. Use determination/change in use.

i. Use determination precedes application of code. The City via its agent Applicant erred in submitting, and the HLC erred in approving, an application which lacked a clear UD upon which to determine applicable approval criteria. Under the Portland Zoning Code, approval criteria are determined by use; i.e., use is the first thing which must be determined, with all subsequent reasoning and authority based on that determination. Before delineating or enforcing any approval criteria, the HLC must first know both the current use and the proposed changes to it. Applicant relied upon an old 2003 UD that predated the site's historic listing and failed to address outstanding title and ownership questions. Applicant failed to specify how or whether its proposal changed the site's use(s). The evidence before the HLC overwhelmingly proved that the Applicant failed to meet its burden under 33.800.060 to clarify use categorization:

- City representatives repeatedly claimed that the proposed use was "reversible," without specifying what the use category would be either before or after reversal.
- Witness Katherin Kirkpatrick testified on January 12, 2015, that Applicant's claims as to the project's future reversibility hinged (via 33.815.050) entirely upon the reservoirs remaining in their current conditional use category (Basic Utility); and asked on January 20 that the City be required to ensure this categorization by, for example, issuing a use determination to that effect, and/or adopting a resolution designating the decommissioned reservoirs as an emergency drinking water backup system.
- Instead, the City removed the assertion "the utility use on the site is not changing" from its revised application, and simply changed the word "use" to "function" in its subsequent documentation.
- The HLC itself conceded that "this is a significant change in the use and function of the Mt. Tabor Reservoirs, in fact, the most significant change in their use and function since their original construction," yet did not offer even basic conjecture as to what the new use category would be.
- City Attorney Kathryn Beaumont testified on December 12, 2014, that the future use category was uncertain, postulating that it probably was no longer utility, and may or may not be recreational.

Clearly there was controversy even among the City's own representatives as to what the proposed use category would be. Thus, there was no basis upon which to determine what approval criteria apply. Witnesses MTNA and Mark Bartlett clearly testified that a new UD had been requested that was material to the outcome of the HLC hearing, and they requested that the hearing be kept open until such information was publicly available. The HLC exceeded its authority by closing the record while material issues were outstanding and issuing a premature decision based on insufficient information.

ii. Change in use requires a Type III conditional use hearing. The City via its agent Applicant erred in submitting, and the HLC erred in approving, an application for which the City had not exhausted the Type III conditional use hearing requirements of PCC 33.815.040(A) regarding any proposed change in the current conditional use. As acknowledged by the Applicant in its application, the reservoirs are basic utilities, which are not allowed outright in the open space; rather, they enjoy automatic conditional use by virtue of predating the existence of the Code. Given that they represent a nonconforming, conditional use, then under 33.815.030 any proposed change or addition to that use is subject to the provisions of 33.815.040 and the appropriate approval criteria. As discussed in A.2.b.i. above, the City and its agent Applicant did not exercise due diligence in determining the use category of the proposed development before making its application. Applicant thus fails to meet its burden under 33.800.060 of proving that its proposed change in use does not require a Type III conditional use hearing under 33.815.040(A). The application should neither have been submitted nor approved while lacking in these particulars.

d. Type III Conditional Use for alterations to development of an existing conditional use in same category.

i. Increased surface area. The City via its agent Applicant erred in submitting, and the HLC erred in approving, an application for which the City had not exhausted the Type III Conditional Use Hearing requirements of PCC 33.815.040(B)(1)(d) regarding the proposed development alterations to the existing conditional use. As testified by attorney Ty Wyman in his January 7, 2015, brief, the proposed work increases the exterior improvement area in an amount that may be greater than 1500 square feet. The burden under 33.800.060 is upon the Applicant to either (1) prove with quantifiable metrics that its proposed work will not increase the exterior improvement area by more than 1500 square feet; or (2) prove that it has carried out the appropriate Type III conditional use hearing required for increases by more than 1500 square feet. Applicant did neither. The application should neither have been submitted nor approved while lacking in these particulars.

ii. Change in amount of previous use. Even if one gives the Applicant the benefit of the doubt (which per 33.800.060 one should not do), and assumes that future basic utility use will be preserved (e.g., through designation as a backup water source, or via the proposed construction of an emergency power generator at Gatehouse 6), Applicant's proposal drastically impacts the amount of continued utility use in the same category. The reduction in amount resulting from a project that shunts a large city's entire daily water needs elsewhere, and replaces them with a mere tankful of backup or generator water, represents far greater than a 10% change in the amount of water represented by the current basic utility use, requiring a Type III conditional use hearing under 33.815.040(A)(4)(b). Applicant had the burden under 33.800.060 of either (1) proving through clearly documented metrics that its proposal would continue to use <u>at least 90%</u> of the water amount associated with current basic utility usage; or (2) proving that it has carried out the appropriate Type III conditional use hearing required if its proposed change to the site uses <u>less than 90%</u> of the current amount. Applicant did neither. The City via its agent Applicant erred in submitting, and the HLC erred in approving, an application for which this prerequisite was not met.

e. Type III Conditional Use for alterations of development of multiple uses in different categories.

i. Multiple concurrent uses. The City via its agent Applicant erred in submitting, and the HLC erred in approving, an application for which the City had not exhausted the Type III Conditional Use Hearing requirements of PCC 33.920.030(B) with regard to the basic utilities that also have a <u>concurrent non-utility (e.g., park) use</u>. As testified by attorney Ty Wyman in his January 7, 2015, the proposed work drastically alters the park's scenic vistas, in both the long and short term, via equipment access, tree removal, and uncertainty regarding the reservoirs' future fill levels, maintenance, or indeed their very existence. The burden under 33.800.060 is on the Applicant to prove that this requirement has been exhausted, or provide clear documentation as to why it need not be. That burden was not met. The application should neither have been submitted nor approved while lacking in these particulars.

ii. Loss of old use or addition to it. The City via its agent Applicant erred in submitting, and the HLC erred in approving, an application for which the City had not exhausted the Type III Conditional Use Hearing requirements of PCC 33.815.040(A)(2)(b) and/or 33.815.040(A)(3)(b), insofar as the work proposed will impacted lands which are currently zoned only open space <u>without the required conditional use permit</u> under 33.100.100(C) for basic utility use. The proposed work will install

pipes and other utility improvements, and create utility easements and subject the lands to high-impact installation and maintenance work. City of Portland did not involve the true owner of those properties in this process; indeed, it remains unclear who the true owner(s) even are. Applicant had the burden under 33.800.060 to document that it owned those lands or had completed the proper conveyance and easement procedures to gain legal access to them. That burden was not met. The application should neither have been submitted nor approved while lacking in these particulars.

B. Errors of Commission.

1. Approval Criteria under Historic Review *33.846.060(G)*.

a. Historic character; removal/alteration of historic features must be avoided under §1.

i. Loss of historic use. The HLC erred in its conclusion that aesthetics rather than use are sufficient to preserve historic character. Use is a historic feature whose loss must be avoided under *33.846.060(G)(1)*. The HLC incorrectly reasoned:

> "Although the historic function and use of the reservoirs is part of its historic significance, the Commission interprets this criterion to suggest that, in order for this criterion to be met, the aesthetics of a historic resource, rather than its use, must be maintained."
> --*Decision, pp. 17-18*, emphasis added.

This interpretation is flatly wrong. 33.846.060(G)(1) does not limit its authority to mere aesthetics. In this case, the reservoirs' use as public water utilities is an expressly delineated historic feature that is not only named in, but was indeed the reason for, their historic nomination:

> [T]he reservoirs were listed…due to their high integrity and historic significance to the city's water supply….The National Register nomination for the reservoirs states, '…[T]hese open reservoirs represent some of the finest examples of intact, still-in-use City Beautiful public works remaining in the nation.'"
> --*Decision, p. 5*, emphasis added.

To allow Applicant to remove the reservoirs from use as intact, still-in-use water works would remove the very feature that defines their character and got them nominated to the Register. To meet the avoidance requirements of *33.846.060(G)(1)*, Applicant has the burden of proving that less destructive alternatives were considered, and were not possible. Applicant offered no proof that removal of the reservoirs' function is necessary; indeed, the public testified and Applicant conceded that the LT2 drinking water rule offers less destructive options for compliance. Witnesses MTNA, Floy Jones and Katherin Kirkpatrick provided credible written evidence of less destructive compliance methods successfully employed by other cities. They also offered written evidence of Applicant's long-term refusal to publicly account for its refusal to develop alternate strategies. Applicant offered no evidence in support of its contention that its choice of a destructive compliance strategy was necessary, nor any evidence that other methods were indeed considered. This was echoed in Applicant's refusal to engage with the HLC on the topic of future compliance with conditions of approval, which the HLC termed

"inconceivable." *HLC comments, December 1, 2014, hearing.* Applicant failed to meet its *33.800.060* burden of proving that destruction of the resources' historic utility function was unavoidable. The HLC erred in approving this aspect of the proposal.

ii. Physical disconnection must be avoided under §1. The HLC erred in allowing physical destruction of historic features when such destruction is to be avoided per 33.846.060(G)(1). As with the historic use of the reservoirs discussed in B.1.a.i. above, the Applicant offered no documentation of its contention that physical disconnection of the reservoirs via cutting and plugging of pipes, and removal of other functional facilities, was necessary. Indeed, public testimony proved and Applicant acknowledged that other alternatives existed; and it offered no proof that it had duly considered them. Applicant failed to meet its *33.800.060* burden of proving that physical disconnection is necessary. The HLC erred in approving this aspect of the proposal.

iii. Fill levels and surface area must be preserved under §1. The HLC erred in its quantification of historic fill levels to be maintained as Condition B of approval. Witness MTNA requested, and HLC voiced agreement with, a condition that Applicant be required to maintain the reservoirs at the historical fill levels that are an inherent design feature of the park's scenic vistas. Figures of 50% to 75% were cited by Applicant but questioned by MTNA, who requested that the Applicant fulfill due diligence in researching the true fill levels necessary for both historic accuracy and adequate maintenance, before finalizing a Mitigation Plan. The HLC's findings also note that the parks' historic character depends on the acreage represented by the surface dimension of the contained water:

> The surface of the water held in the reservoir basins represents approximately twenty acres, about one tenth of the entire park acreage…[which] provides a chiaroscuro effect of Mount Tabor Park."
>
> --*Decision, p.5*.

Applicant has failed to meet its burden of proof under *33.800.060* regarding the quantifiable metrics of historic fill levels and surface dimensions upon which an accurate preservation of this essential historic characteristic must be preserved. And, insofar as any proposed work changes the fill levels or dimension of surface water vistas in an amount greater than 10% of their original values, the Applicant must exhaust its Type III conditional use hearing obligations under 33.815.040(B)(1)(d). Applicant failed to meet its burden of proof as to the quantifiable metrics of the historic fill levels and surface vistas, and thus could not prove whether it was justified in skipping Type III conditional use process. The HLC exceeded its authority in granting an application that was deficient in this regard.

b. Record of its time. Under §2, the resource must remain a physical record of its time. The HLC's Decision errs in its findings that Applicant "has worked with the local community, resulting in a proposal that is essentially reversible." Applicant failed to meet its burden as to either, which will be dealt with in Section B.1.c. below.

c. Preserve form and integrity of historic resources. Under §9, new additions and adjacent or related new constructions must be undertaken "in such a manner that if removed in the

future the essential form and integrity of the historic resource and its environment would be unimpaired." This represents the greatest failure of the Applicant to meet its burden of proof, and the greatest failure of the HLC in approving the application:

i. Reversibility. All parties to this case unanimously agreed that reversibility was a necessary prerequisite to the City's proposal being approved:

> "The proposed changes can be reversed."
> --*Applicant's Revised Staff Report, November 24, 2014, p.1*

> "MTNA requests that a premium be placed on the "reversibility" concept inherent in preservation ethics and represented in Approval Criteria #9."
> --*MTNA Comments to the Record, November 20, 2014, p.13*

> "The changes can be reversed."
> --*Tim Heron, Historic Landmarks Commission, oral testimony of January 20, 2015*

> "The current proposal does appear to preserve the essential form and integrity of the reservoirs … in that it does not propose significant irreversible changes."
> --*Decision, p.21*

Thus, approval hinges upon retention of the landmarks' future use as Basic Utilities.

However, as discussed in Section A.1.c.i. above, the Applicant provided conflicting information as to the proposed future use and failed to meet its burden under 33.800.060 to dispositively settle this issue. If one is to give Applicant the benefit of the doubt (which one is under no obligation to do), then one would trust both the City Attorney, Kathryn Beaumont, who conceded in her December 1, 2014, oral testimony that the reservoirs' use was changing; and City staff, who told the HLC:

> "that the proposed change in the reservoirs' function as an open and visually-accessible public utility elegantly holding the water that the citizens of this City drink every day to open storage for non-potable water is a significant change worthy of solemnity."
> --*Decision, p.29*, emphasis added.

If this changes the reservoirs' future Basic Utility use by, for example, shifting the reservoirs to a purely aesthetic recreational use, such change in use will erode the foundation on which the historic structures currently enjoy conditional use status.

This is because the reservoirs are not an allowed use in the open space, but rather enjoy automatic conditional use status by virtue of predating the existence of the Code (*PCC 33.100.220, PCC 33.258, PCC 33.815.030*). Once the applicant takes the landmarks out of the Basic Utility use category, this grandfathered conditional use status cannot be guaranteed in the future:

> If a conditional use is discontinued for 3 continuous years, the conditional use rights are lost. If a conditional use ceases operations, even if the structure or materials related to the use remain, the use has been discontinued. Any conditional use proposing to locate at the site after that time must go through a new conditional use review.
> *--PCC 33.815.050, Loss of Conditional Use Status*

By proposing to change the use of these reservoirs to an aesthetic-only "recreational" use, the Applicant appears intent on irreversibly wiping these in-use utilities from the history books even if the drinking water regulations being (erroneously) cited as the reason for the proposed work are revised.

As testified by witness Katherin Kirkpatrick on January 20, 2015, the only way for the Applicant to meet its burden of proof that it will safeguard this future character, form and integrity is for the Applicant to outline a concrete plan for the landmarks' continued classification in the Basic Utilities use category (for example, as an emergency backup system). The applicant would also need to demonstrate steps it has taken to achieve regulatory compliance while better preserving the landmarks' integrity (for example, treatment at the outlet). It has done neither.

The Applicant has failed to meet its burden of proof regarding its ability and intent to preserve the landmarks' historic character, function and integrity as in-use City Beautiful water supply utilities. Indeed, public testimony before the HLC provided credible proof that the Applicant has demonstrated a long history of contempt for public process and reservoir stewardship. Witness Katherin Kirkpatrick provided written notes from 2003, showing that:

> "The problem is that the [City] does not specify whether "the time of building permit application" is before … or after the demolition has already occurred. <u>The petitioners have good reason to believe that the reservoirs will be destroyed before they have any further opportunity to object in a land use proceeding</u>.
>
> "There is already precedent for what the city will do. It resorted to an identical Use Determination on March 6, 2003 to rule that the reservoirs in Washington Park could be covered without a land use review. It then gave notice of the right to appeal … [yet] <u>no such notice was given and no conditional use process was initiated</u> before the Water Bureau made immediate application for the actual "Site Development Permit."
> *--Katherin Kirkpatrick written testimony, January 12, 2015*.

Those notes quoted witness Jeff Boly, preparing for the appeal of the original 2003 UD for reservoir demolition, upon which the Applicant still relies today. As pointed out in the Case Summary above, the City failed to notify appellants of a crucial land-use hearing in that case, validating the community's fears about the City's intent (Washington Park's reservoirs are indeed being demolished as predicted), and underscoring the predictable consistency with which the City can be relied upon to renege on any promises of future stewardship. The HLC witnessed firsthand the City's contempt for public process and for the HLC itself, when the Applicant defied the HLC's December 1, 2015, request that it contact the MTNA before the next scheduled hearing and engage in "meaningful collaborative effort to reach consensus with the community." When asked by the HLC on January 12, 2015, why it had chosen to

ignore MTNA's phone messages, Applicant responded that it had simply decided that such collaboration was not worth its time. Clearly the Applicant's proposal gave not a single thought to community consensus, given the overwhelming opposition to its proposal as expressed in *Exhibit A*, above.

The HLC had firsthand knowledge of the Applicant's unwillingness to meet its burden on this issue. The HLC also knew that loss of conditional use status under *33.815.050* meant that the Applicant's claims of reversibility were utterly insincere. The HLC overstepped its authority in finding the Applicant credible on the issue of reversibility.

2. Mitigation Plan. In setting the 2009 Mitigation Plan as a Condition E of approval, the HLC errs in accepting the Applicant's unproven assertion that it can be trusted to flesh out metrics, carry out prescribed maintenance work, ensure funding, and otherwise carry out the Mitigation Plan by way of unspecific processes that may or may not be honored at an unspecified later date by the decision-making party with ownership control over the reservoir, City Council. City Council has absented itself from obligation by advancing its plan using the Applicant Water Bureau as a straw man with no authority to enter into obligations on City Council's behalf. This is entirely unacceptable under the burden of proof requirements of *33.800.060* and the case law delineated by attorney Ty Wyman in his January 7, 2015, brief; the arguments and case cites of which are incorporated herein by reference.

Witness John Laursen of MTNA provided damning testimony against Applicant's proposed Mitigation Plan, showing that the single page of indecipherable red arrows over a checked-off chart (which Applicant submitted in order to make it look like progress had been made since 2009), was actually a mere fragment of the full 2009 report. The meaning of Applicant's notations could not be deciphered even by the best efforts of MTNA's historic structures consultant; but what could be deciphered was that only $153,000 of the report's recommended $1,573,000 in work had been completed since the report was authored, yielding a progress rate that would leave the reservoirs progressively degrading toward senescence for the next 57 years. Witness John Laursen summed up the significance of this fact when he observed that:

> "Our kids can cash their Social Security checks for the ribbon-cutting party [at the Plan's completion in 2066]….It appears that the only history Applicant is interested in preserving is <u>its history of neglect</u>.
>
> *--John Laursen verbal testimony, December 1, 2014.*

As attorney Ty Wyman pointed out in his January 7, 2015, brief, Applicant has demonstrated a profound misunderstanding of the quasi-judicial process before the HLC. Applicant alone has the burden of proof, and may not defer that burden to some undefined future process. Yet City of Portland attempted to use its straw man Applicant Water Bureau to evade obligation, submitting a Mitigation Plan with the caveat that City Council may renege upon at its whim. And City of Portland's chosen Applicant could not even be relied upon to attend all of the hearings in its case, often relying upon BDS representatives to (wrongly) advise the HLC that it did not have authority to enforce a Mitigation Plan.

The City's past and future intent with regard to these irreplaceable historic resources was perfectly summed up in the testimony of BDS representative Tim Heron, when he suggested at the January 12,

2015, hearing that if the City were to let the reservoirs fall into hopeless disrepair, that was no business of the HLC, but rather <u>it was the public's responsibility to call the City's code violation hotline</u>.

Case law was cited by Attorney Wyman that made it very clear that the HLC indeed has the authority to require proof from decision-makers as to how and when a Mitigation Plan will be complied with. See, e.g., *Gould v. Deschutes County, 216 Or App 150 (2007)*; *Meyer v. City of Portland, 67 Or App 274, 280-82, rev den, 297 Or 82 (1984)*; and *Caster v. City of Silverton, 54 Or LUBA 441, 454 (2007)*. Short of quantifiable metrics and assurances of future funding, the HLC is obligated to either enjoin the Applicant to demonstrate those conditions of approval, or deny the application.

> "Applicant did not dispute the abundant credible testimony before the HLC that it has inadequately cared for the historic resources on the site. Rather, it said, in essence, that such lack of care was irrelevant. "Put bluntly, PWB has built no credibility, either in its past performance or in its testimony before this Commission….PWB's acknowledgement that it has not cared for the historic resources on the site belies its mission to work in the public trust. In other words, the [HLC] has every right to expect better from a public sector applicant than it would get from a private sector applicant (which is responsible to shareholders). Yet, it gets none."
>
> --*Ty Wyman testimony, January 7, 2015, p.6*

As correctly noted by the HLC on December 1, 2015, if the Applicant does not have the authority to assure a future budget for the Mitigation Plan, then by definition it cannot meet its burden of proof. *Comments of Commissioner Matarazzo, December 1, 2015.*

The HLC was thus well aware that the burden of proof had not been met. The HLC erred in approving the application with the condition of a Mitigation Plan that has:

- No quantifiable metrics;
- No benchmarks temporally tying staged completion of maintenance work to the proposed decommissioning project; and
- No dedicated funding.

The application should be denied outright or remanded until the true property owner with decision-making power behind the application (i.e., City Council) enacts such obligations as will make the Mitigation Plan quantifiable and enforceable.

Sincerely,

Katherin Kirkpatrick
1319 SE 53rd Avenue
Portland, OR 97215
(503) 232-8663
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Survey Results: Mt Tabor Reservoirs	Total Items: 966

Thank you for taking the time to learn about the Mt Tabor Reservoirs. Your comments will inform how we determine the future of these valuable assets. **Please submit your comments by Monday, December 1, 10:00 AM.**

I use the park		
weekly	379	39.2%
daily	227	23.5%
monthly	227	23.5%
infrequently	120	12.4%
	13	1.3%
Total	**966**	

After reviewing the concepts on the previous page, I prefer Concept		
#1 Fill the reservoirs and maintain them	742	76.8%
#4 Other	133	13.8%
#3 Implement a design that reflects the Gustafson Plan	62	6.4%
#2 Leave the reservoirs empty and maintain them	15	1.6%
	14	1.4%
Total	**966**	

If you selected #4 Other, please describe.

Keep the reservoirs connected and active. The entire reason for doing this is invalid and thoughtless. There is no common sense capitulating to a Federal law that should not apply, and "fixing something that doesn't need fixing".

Portland has some of the best drinking water in the country. This is owed both to our water source, the Bull Run Watershed, and our open air reservoirs. Open air reservoirs allow for oxygenation, natural sunlight disinfection, and harmlessly venting toxic and carcinogenic gases. Burying those reservoirs, or containing them, does not necessarily reduce the risk for contamination. It eliminates the natural water processes that sunlight and air provide, and underground tanks open up other risks that would have to be treated chemically. The concern over cryptosporidium seems blown out of proportion, given that our city has a historically clean track record regarding cryptosporidium; Portland’s open reservoirs have never had a serious outbreak of microbial or chemical health illness since they were built over 100 years ago. Portland’s open air reservoirs efficiently remove toxic and carcinogenic chemicals. Covered reservoirs cannot, and require strong chemicals such as radon, chloroform and other disinfection chemicals. In addition, the pools of water are an attractive and central focal feature at the park, they are part of what make Mt Tabor beautiful. Draining those reservoirs would change the aesthetic significantly, from pleasant to depressing. The Gustafson plan is visually pleasing, but not worth it at the cost of the quality of our drinking water, or the tax increases/city spending/ongoing maintenance costs it would take to implement it. We can preserve our drinking water, or we can waste water.

Although my NUMBER ONE option would be to not comply with this federal mandate and be a trailblazer for this issue that we should not even be debating!
and disconnect them in a way that they can easily be reconnected at a future date.
As much as the Gatson Plan is seductive, it's not affordable. Fill the reservoir and maintain them.
As the State of New Your did, you should request a waiver from the government. This is the wisest, safest and most cost-effective plan. The open reservoirs have served us well and unlike New York, there is no reason our reservoirs need covering. In fact, doing so would significantly increase the risk of radon exposure all over Portland as well as introduce many more contaminants that are not present in our current open reservoir system.
Build medium- or high-density subsidized low-income residential housing
Completely in a reversable condition.
Continue to ask for a way or so that we don't cover the reservoirs - don't take the water out.
continue to find a variance or delay or loophole or something to keep the reservoirs connected and in use as they currently are
Continue to use the reservoirs, as Portland has for over 100 years. Don't disconnect them at all. Don't mix our water with Willamette and Columbia Rivers water. Don't store our water underground. Stop repairing the faulty new tank and just go back to using the amazing system we've relied on and benefitted from.
Continue to utilize the existing reservoirs as they are for drinking water distribution. Follow the example of other communities who have elected to defer action on the 'treat-or-cover' rules until the EPA's LT2 rule revision is issued. This would preserve scarce city funds for projects that are actually far more pressing such as ensuring seismic safety in Portland Public Schools.
Could they still be a water feature, just not for potable water? There is something calming about having these urban "ponds" floating above the city skyline beyond, not to mention preserving the natural history of one of Portland's most cherished parks.
Decomission the reservoirs and allow nature to take its place. Refill with soil, plant trees, etc.
Decommission the Powell Butte and Kelly Butte Reservoirs and maintain Mt Tabor's reservoirs for municipal water storage.
Delay process to disconnect
DO NOT decomission the reservoirs - they are vital to our clean water supply. INVESTIGATE the deals the city has made with contractors and why. Let the people speak and have a say in where their water comes from and how it is maintained.
Do not decommission the reservoirs. Revoke municipal resolutions resolving to decommission & setting the decommissioning deadline. Challenge the OHA for its unauthorized insertion of anti-open reservoir language into Oregon Administrative Rules against the Legislature's intent. And, if necessary, challenge the EPA to prove that reservoir coverage/decommissioning is necessary.
Do NOT decommission the reservoirs. Maintain their functionality and use them as reservoirs!
Do not decommission these reservoirs!
Do not degrade our pristine water by disconnecting the reservoirs. Leave them as they are.
Do NOT disconnect the drinking water from the reservoirs. Fill them and maintain them as originally intended.
Do not disconnect the reservoirs in the first place!! 1) Please revoke the municipal resolution by which they voluntarily imposed the rush reservoir decommissioning schedule on themselves. 2) Please follow the advice of the Reed Smith legal opinion, and make the EPA prove in court that LT2 is justified. 3)

Please challenge the Oregon Health Authority for putting anti-open-reservoir provisions in Oregon's water rules without the permission (and against the expressed intent) of the Oregon Legislature.
Do not disconnect the reservoirs in the first place!! 1) Please revoke the municipal resolution by which they voluntarily imposed the rush reservoir decommissioning schedule on themselves. 2) Please follow the advice of the Reed Smith legal opinion, and make the EPA prove in court that LT2 is justified. 3) Please challenge the Oregon Health Authority for putting anti-open-reservoir provisions in Oregon's water rules without the permission (and against the expressed intent) of the Oregon Legislature.
DO NOT DISCONNECT the reservoirs. Period.
Do not disconnect the reservoirs. Do not spend all that money until the EPA has reviewed the LT2 regulation. The review should be complete very soon. It is foolish to go ahead with this plan and have to undo it. Penny wise and pound foolish. Listen to the people of Portland who do not believe it is necessary to make a mess of Mt Tabor Park, environmentally or historically. Stop spending money that we don't have! Wait until the LT2 rule is reviewed by EPA before proceeding any further with this costly and unnecessary disconnection of the open reservoirs. Open reservoirs serve a double purpose of using sunlight to disinfect the water and open air to dissipate radionuclides.
DO NOT DISCONNECT THE RESERVOIRS!
Do not disconnect the reservoirs. The structure of our water system and therefore our water quality is being degraded by companies who put profit before serrvice and work relentlessly to manipulate government for their own gain.
DO NOT DISCONNECT the reservoirs.
Do not disconnect them at all and let us continue to drink the lovely water. Ask the Governor to request a waiver. Do not support the dishonesty happening withing the water bureau.
Do Not Disconnect them in the first place!
Do NOT disconnect them please. The system works, and has already been mishandled too much. Stand up for Our Health & clean water. Friends of Reservoirs' info is correct & should be heeded. Thanks!
Do NOT disconnect them. Leave our water system alone please. This whole thing has been an unnecessary waste of money & resources. Friends of Reservoirs is correct on all points. Thanks.
Do NOT to disconnect the reservoirs, you are spending money to combat a problem we don't have, and challenge the FDA to prove it's necessary
Don't change anything
Don't decommission the reservoirs. Keep open air reservoirs (not covered, not under ground)—they are the safest for our health. File for an EPA Waiver, as NY did. You haven't even tried. Look into the health problems caused by closed and underground water systems. There is data. Research it.
Don't disconnect
Don't disconnect the reservoirs
Don't disconnect them. Come up with a plan to use science and waivers to challenge federal imposition. Together we can do this! Stand with us, we are the ones who live here!
Don't disconnect! But if you do, then I vote for #1 Fill the reservoirs and maintain them forever and use them for drinking water again when the EPA changes the mis-applied-to-Portland "LT2" rule.
Don't Disconnect!! Number 1 and 4.
Don't disconnect!!!
Don't disconnect!!!
Don't disconnect.
Don't disconnect. Get the waiver like New York!

Don't disconnect. Leave them as they are right now, providing fresh water to Portland. Infrequently because I've moved. I love this park even though I no longer live near it.
don't mess with the reservoirs. Keep water I them and minimum maintenance as you have for years.
Don't mess with them. They are open reservoirs and communities have used them for centuries. The fact that a person pissing in it caused upset is RIDICULOUS. Open reservoirs get bird stuff,etc...the water if filtered for GOD sake. We need to cut the crap and stop the culture of fear NOW. We can't afford this crap. No one can afford this.
Don't need air gap under reservoirs.
Exception = Reservoir 1 future
Fight to keep reservoirs filled with water and open for health reasons.
Fill in the reservoir and use the land for park and recreation, such as a skatepark or dogpark. Water should be accessible if filled as this will no longer be our drinking water.
Fill them back up and keep them as is. Stop spending our money to pay for your leaking tank on Powell butte!! We don't need covered reservoirs. We have the best water anywhere, stop messing with it. Restore bull run!!
Fill thre reservoirs and maintain them and keep them connected so they can supply water at a future rate.
Fill with water like they used to be and maintain is what I mean by choosing option one.
http://www.cityofrochester.gov/reservoirs/ If the City of Rochester NY can devise a plan to keep their uncovered reservoirs, why can't Portland follow their successful example?
I am a Montavillian and daily user of the Mt Tabor park. Before I bought my home in 2006, I had rented in SE Hawthorne/Belmont since 1992. Mt Tabor has always been a stable, beautiful part of this city. The water in the reservoirs are a big part of the environment of the park, integral to it's beauty. It's je ne sais quoi, if you will. The water is gorgeous and calming to look at. So, while I don't think the reservoirs need to be filled to the brim, I do think some water should be in them and we should maintain the current aesthetic. Additionally, if we have enough water to flush because of some ridiculous teenager, then we have enough water to show visually as part of the aesthetic even if not functionally part of the drinking system any longer.
I believe these reservoirs are a valid source of back up water supply in draught conditions. They should have the capability to be put on line in the event of need.
I don't want the reservoirs to be decommissioned
I don't want the reservoirs to be decommissioned.
I like the Gustafson Plan, but it seems overly complex and expensive. Perhaps a scaled-back version of the Gustafson Plan would work.
I live in N. Portland, and I consider Mt. Tabor Park and the Mt. Tabor Reservoirs an historic and aesthetic legacy that is as much mine and my family's as people in the neighborhood. I believe the reservoirs should be cared for, and that means filling the reservoirs with water and keeping them properly maintained.
I prefer that the existing reervoirs are used. There is precedent for this, and the reservoir replacement would treat a problem that Portland water does not have. There would be more health issues due to the materials used to construct the new reservoirs, and the water system would not benefit from the disinfecting effect of sunlight.
I prefer the concept of doing absolutely everything possible to delay action until 2016 when the EPA ruling is secured. Absolutely everything. I am a self-employed commercial and residential real estate investor. In my business decisions I find it is better to spend some money up front in order to save a lot of money later. Even if the reservoirs are kept filled and maintained, the cost of building the closed

system which may not be needed is not in the best financial interest of the tax paying citizens of Portland. Investing a fraction of this cost into fighting for a delay would be worthwhile.
I think each reservoir should have it's own personality.They could be disconnected from the drinking water system AND remain as water bodies. One (perhaps the south one) should become a 'eco-pool'- swimming in the middle, grey water processing biome along the edge. Another could be a full on 'muscle beach' swimming pool- sand terraces, deep water, everything the usual pools are not, but anyone that has enjoyed quarry or lake swimming understands. The third might be a reflecting pool, wading, cooling in the hot weather. Using the existing concrete shells, add waterproofing membranes to avoid tragic water loss, and go for it! We should be the city that shows the rest of the country how to manage our precious water for everyone's enjoyment and health.
I think it is better to keep them filled than empty them. I like the Gustafson Plan a lot, but I think there are other parks in other neighborhoods that need water features and better design more. And the money should be spent on those.
i thought there had also been a concept of covering the reservoirs but maintaining a small pond on top of the covers, which i expect would cost much less than plan 1. i would support that concept too. i am unclear on why the water quality has to be maintained in plan 1 if the reservoirs will no longer be used as a source of drinking water. that seems like an unnecessary expense.
I took a hike at the park on thanksgiving and seeing the sun set over the reservoir was so iconic of mt tabor. Why in the world would anyone want them trashed and who could possibly think that that would enhance the park? Follow the money is what I say, and only someone who would make money on such a public works project would say that the reservoirs should be filled with anything but water. And the disconnection is something else that I do not support. Our water is fine, exceptional in fact, and this is just another example of making money off of the backs of portlanders who are seriously against this whole deal.
I want the reservoirs NOT to be disconnected. I want you to leave our healthy water system as it is...maintained in open reservoirs as it as been without any problems for 100 years. I want you NOT to rip apart our park nor cut down any trees or endanger any wildlife who call our park their home. I want you NOT to burden ratepayers with anymore increases in water rates to fund this unnecessary disconnect project. I want you to work with the EPA to allow Portland to avoid compliance just as Rochester, NY did. I do NOT want the reservoirs drained...and I do NOT want a skatepark or an amphitheater in their place.
I want the reservoirs to stay functional.
I would like the reservoirs to remain as is, providing us with water to drink. It has not been proven in court that closed water is safer than open air water. Open air water breeds fewer contaminants such as e coli. It will cost much less to maintain these reservoirs than to build new ones. It is not right that the Oregon Health Authority make this ruling to close the reservoirs without permission from the Oregon legislature.
I would like water in them - either drinking water or not.
I would love to see all of the reservoirs used as is, with less taxpayer money wasted on Paranoia. However since that's obviously not on the table, I would love to see at least one reservoir turned into a wetland so that nature can maintain it naturally.
I would love to see the city fill in the large reservoir on SE 60th and use the space for playing fields/open grassy areas, then use the middle reservoir as a pond/water feature similar to the pond at Laurelhurst. If that's not possible, I prefer the Gustafson Plan, but it seems cost prohibitive.
I'd actually prefer to continue using the reservoirs for drinking water. I believe that the natural UV that sunlight provides is an important part of purifying our water.
I'd like them to remain AS-IS please. As my drinking water.
If a major park's investment is to happen, then a re-purposing of the structures is a good idea. The upper and middle ones could be left filled, but the lower one we have a real opportunity for an international quality park focal point. How about an outdoor water sculpture garden?

If they can no longer used as a water source.
In addition to filling and maintaining the reservoirs please do not disconnect them from our water supply. I request that you revoke the municipal resolution to rush the reservoir decommissioning schedule. Further, the advice of the Reed Smith legal opinion should be followed: make the EPA prove in court that LT2 is justified. Finally, please challenge the Oregon Health Authority for putting anti-open-reservoir provisions in Oregon's water rules without the permission (and against the expressed intent) of the Oregon Legislature.
Including fountains or Reservoir 6. Maintain historic structures.
Infrequently but love it. I would like them to look just as they do today.
It seems insane to not use and maintain these reservoirs when research indicates that sunlight helps keep water clean.
It's not broken, leave it in tacked in case of an emergency.
Keep the reservoirs as they are. Do not disconnect them. Use them as part of our water system.
Keep the reservoirs as they are. With good clean potable water. Save the underwater tanks for a community bunker to save us from the perils of terrorism.
Keep the reservoirs connected to our drinking water.
Keep the reservoirs exactly as they are, a treasured storage system that has worked beautifully for 100 years. If you mean fill the reservoirs with water from the Bull Run and maintain them in #1, I choose that.
Keep the reservoirs full and useful especially for a period of 2 years to be sure the wasteful new system is functional and provides us with continued excellent quality water. Keep this system funtional.
Keep the reservoirs functional.
Keep the reservoirs functioning as is.
Keep the reservoirs maintained and functional.
Keep them connected and full of Bull Run water. This is a valuable resource and we need to keep it useable by using it! I don't want to shower with radon.
Keep them connected and in use, continuing to provide good quality water to citizens.
Keep them functioning as they have for all these years. If you have to, pay any fine the EPA may impose. Or better yet, ignore the EPA regulations like you ignore federal law concerning use of drugs.
Keep them on line as our water source.
keep using them
Leave as is, don't disconnect
Leave it connected to the drinking water.
Leave our water alone.
Leave reservoirs alone = no disconnect
Leave reservoirs as they are using water as drinking water.
Leave the park alone! It's fines as is
Leave the park alone.
Leave the reservoirs alone. Maintain water system as it exists.
Leave the reservoirs as is and fully functional.
Leave the reservoirs as they are.
Leave the reservoirs as they are, add more security cameras, and don't bow to current threats. The best thing that can be done is to leave the reservoirs for the next generations to enjoy.

Leave the reservoirs as they are, part of the system that deliver Bull Run water to me.
Leave the reservoirs as they are.
Leave the reservoirs connected and maintain them full. This is our homeland security here. Nothing to play with.
leave the reservoirs connected, filled and maintained.
leave the reservoirs connected, filled and maintained.
Leave the reservoirs connected and as they are.
Leave the reservoirs connected to the Bull Run System so as to circulate fresh water as needed. Allow people to swim in the reservoirs. Introduce plants, fish, and wildlife to the reservoirs.
Leave the reservoirs functional as reservoirs! Portland is the only city in America where we can take a walk past our drinking water and see where it's coming from. It's a wonderful system, the water stays clean through aeration and sunlight, and it's part of what Mt. Tabor Park is. Please leave it!
Leave the resevoirs as is!!! Why fix something that works as beautifully as this monument of a water system does!?
Leave the resovoirs filled, connedted and maintained!!!
Leave the system fully functional… It has huge historical relevance. I am this water.. We all are, if you turn on a tap in Portland… You can separate yourself from the water as much as you like, but this clean, pure system? You are part of it.. Bull Run is part of you, it's water is in you.. We own the rights to this clean pure system, much like the Native American of the Columbia basin own the falls at Celilo.. This federal mandate stands between us, and our right to clean safe drinking water. Leave it connected and functional
Leave them as the are. DO NOT DISCONNECT THEM.
Leave them as they are. As they have been for a 100 years. They have searved us well. For a very long time. No need to spend millions to fill the pockets of the mayors neighbor.
Leave them as they were. I used to use the park almost daily. I haven't gone since the summer as the drained and vandalized 2 lower reservoirs are horribly depressing.
Leave them be. Stand up to the Feds! It ain't broke, why fix it!?!
Leave them connected! Apply for a deferral! Delay your self-imposed work timeline!
Leave them filled, connected and fully functional.
Leave them on line. They are a great reasource and there's no good reason to take them off line.
Let skaters turn part of one into a skatepark, let artists turn part of one into a free art are. Keep one filled with water and maintain for wildlife, use part of another as a place for tiny houses for houseless people, self operated like dignity village
Maintain as is. Keep water in and keep the fountain on. It is a historic site. It should be protected and its history should be taught with some kinds of signage.
Maintain connection/fight decommision. At worst use water in reservoir for gray-water purposes such as watering lawns in park.
Maintain reservoirs current role as part of City water supply.
Maintain the reservoirs fully functional, with water in them. In other words, no change.
Maintain water I'm reservoirs
Make a swim place for people to swim and one for the birds
Multi purpose playing fields where Reservoir 6 is.
My top choice would be to retain the reservoirs as they are and continue to use them. If the open reservoirs do have to be disconnected, I think that reservoir 5 could be turned into an amphitheater, and

perhaps one or both of the remaining reservoirs could be turned into swimming ponds for the warm weather.
Not all need to stay full. It may be interesting to put an athletic field of stadium in one and leave others full. These meetings don't get the opinion of most of the population. The people here are a small group but passionate.
Not interested in fear mongering or turning funds to private corporation.
Number 1 and 2. Number 1 is my second choice. Number 2 in my first choice, and PLEASE FIND A DEFERRAL.
Number 1 and 4, number 1 is less preferred, 2nd only to not disconnecting at all. Number 4, don't disconnect.
Number 1 and 4. Could the reservoirs remain filled and maintained while implementing emergency hook ups to the system? Not disconnected? I understand federal regulations to have covered reservoirs but don't believe all of the potentially adverse health effects of the new reeservoirs are known. if we're willing to look at a 40 million dollar project that is mainly cosmetic, we should also look at the cost to develop emergency hook-ups to the system.
Number 1 and 4. Don't change the manner in which they are currently used. Keep providing drinking water! We are Portland--NOT the EPA.
Number 1 and 4. Don't disconnect!
Number 1 and 4. Hybrid concept -- keep reservoir 1 and 5 filled and turn reservoir 6 into public garden or sports field.
Number 1 and 4. Leave them alone. No contracts to corporation to cover the reservoirs. Nature treats water well.
Number 1 and 4. Let's leave the reservoirs alone - sunlight treats water better than covering it with cement. No contracts to cover a gorgeous area.
Number 1 and 4. Make sure reconnection remains possible.
Number 1 and 4. Number 1 Maintain them, most cost effective honoring the historic listing Number 2 means deterioration, destruction Number 3 is too much $$, bad design. Number 4. Any other option would cost more than option #1 and be a complicated public process lasting faorever. Keep number 1 and permanent financing to restore, maintain, preserve historic structures.
Number 1 and 4. Number 1 is my second choice. Number 4 is my first choice. Keep them functional as they have.
Number 1 and 4. Preserve our entire park and reservoirs as they are officially historic.
Number 1 and 4. Leave it ALONE!!!
Number 1 and Number 4 Gambrusia Fish to help clean the reservoirs and keep down the cost of maintenance cleaning.
Number 1 is less preferred, maintain a option to reconnect to drinking water. Number 4, don't disconnect!
Our reservoir system is not broken and I see this whole project to "cover" or build new underground systems as unsustainable and a means to give away our tax payer dollars to crony contractors. Leave them as is and maintain them as the city has done for decades.
Our Water already meets & surpasses the Federal Government is "mandating." If the Federal standards are actually only going to put things "unknown" into OUR WATER & potentially contaminate what is already working + INCREASE OUR RATES... Fight for OUR WATER - it's what we are made of and the more naturally processed the better.
Part of the appeal of the park is the water element. How stupid would it be to remove that aspect of the park?

Please do not disconnect the reservoirs. If you must make this, in my opinion, unnecessary and unfortunate choice I would opt for #1 as this seems the least damaging to the current system/ecosystem of Mount Tabor.
Please get a waiver for EPA's LT2 ruling and leave the reservoirs as they are.
Please keep our drinking water in the open air reservoirs. It is the healthier, less expensive, and most ethical option.
Please keep the reservoirs as part of our drinking water system. This is what the people of Portland want.
Please keep the reservoirs filled. They are so beautiful and unique. Best yet, keep them on line.
Please leave our reservoirs intact and functiong as is.
Preferably connected.
Process cancelled by Dan Satzman 2003 mid-term - not completed due to Parks.
Review the plan and appeal the decision to decommission the reservoirs. There is a substantial number of citizens who believe there has been no push-back from City Hall and the water bureau over the unfunded mandate to cover reservoirs, ostensibly to protect the public from Cryptosporidium, which has never been a problem for our water supply. The rush to comply with the ill-advised mandate has raised suspicion of corrupt dealings by revolving-door actors in the civic and business sectors. The company that was awarded the work has a poor record for quality and ties to current officials.
Sell the property and turn it into a homeless shelter or build low income housing. I really could care you have already destroyed our drinking water. So go to hell..
The City of Portland should be asking EPA for an Open Reservoir Waiver like New York and New Jersey are currently negotiating! Why is this option not on the table?
The empty reservoir seems the perfect place for a fountain similar to the one at Seattle Center
The Gustafson Plan is spendy and both plans that include leaving water in the reservoirs don't put that water to any use. Why not convert one or more of the reservoirs into a rain catchment system that would at least provide water for the Mt. Tabor community gardens? Rain will be falling into them anyway, so why not use it? Portland currently has four very dry months each summer (very different than when I was growing up here!) and who knows what additional climate change will bring! A large rain catchment system could do much to maintain both our gardens, and if necessary, provide water for trees & shrubs on Mt. Tabor.
The native wildlife depend on the reservoirs, including waterfowl and bats. If they were drained, these animals,especially the bats, would no longer have the food and water they depend upon. So, while I agree with no longer using the reservoirs for human drinking water, I think they should be maintained for the wildlife. My idea is to make them more shallow, in order to use less water. So, my idea is close to #1, but with less water.
The options don't include a compelling locally developed new technology called he Puralytics LilyPads, which float and clean water simultaneously. The round or hex shaped floating pads use a sunlight activated nanotechnology, and are being deployed in Corvallis, have been proposed for the I205 bridge run off, and are funded under a Business Oregon grant. This option is significantly less expensive, deters birds from landing, and treats any contaminant continuously using only sunlight activation. It was voted in the water industry as the "most innovative and disruptive new water technology", and was developed in Oregon by Beaverton startup Puralytics. http://www.puralytics.com/html/lilypad.php
The reservoirs should be left as they are now, fully functional.
There is no reason not to use the existing reservoirs
There is no reason to touch the reservoirs other than to maintain the corrupt water bureau. Leave them alone

There's little evidence to support the idea that open reservoirs are less safe than covered ones. City government is being wasteful by disconnecting them and replacing them. Not all of us are fooled!		
These should be left and used as designed!		
though I would prefer no disconnect.		
To avoid future liability from substandard water, the city should continue to use the open reservoirs as reservoirs, as they intend to do in New York, for example. Eventually problems with contractors will be exposed, and the new tank has so many problems it could be used for an expose in Rolling Stone.		
turn it into a skate park		
Turn Mt Tabor's reservoirs into the world's best skate park and velodrome track. Roller derby events would be cool, too.		
Turn one of the reservoirs into an AstroTurf field. Turn the other into a semi-covered velodrome.		
Turn reservoir 6 into a multiuse playing field (soccer, baseball) . Turn the reservoir above it into a children's boat pond but retain the look of the reservoir. Keep reservoir #1 filled or create a swimming recreational space there.		
Turn the reservoir into a public outdoor, pool!		
turn them into recreaTION areas for skaters, bladers, bmx'ers...or do that with res 6 and fill & maintain the others. there was no previous page on which to read the descriptions of the options...just saying...might want to make that more accessible.		
Unhappy that we cannot maintain our open air water reservoirs. Perhaps leave one as a water feature. The Gustafson Plan seems like a lot of funding for little redesign. I think we need to reevaluate options of what to do, these options aren't desirable at all.		
Wait for a waiver. Post plan changes.		
Water will become an ever more important resource do not squander the riches we have.		
Wave garden - please visit website below fore more info. ww.facebook.com/wavegardenpdx		
Whatever is least disruptive to the beauty of the park...preserve and plant trees.		
Whatever the cheapest option is for the time being, until we have better parks in East Portland. Portland needs more and better parks for its most disadvantaged residents more than it needs decorative reservoirs.		
Your options aren't understandable. Fill them with what? Dirt? drinking water? Air? disconnect them and fill them with bike lanes, speed bumps and safety crossings. And street cars. Lots of street cars. Oh, and a light rail connection. What ever costs the most. It's not the City's money after all.		
Total	**189**	

What else would you like to share with us?
The proposed plan fails to review or implement previous submissions on water monitoring for health and safety. Reasonable options were ignored in the review. The report also fails to consider fully landscape and historical legacy of the reservoirs themselves, as part of our local heritage. It would alter social patterns of use dramatically to not maintain the reservoirs full and complete, including the restoration of fountains.
Covering the reservoirs deprives the water of sunshine and air which keep the water safe and drinkable.
I will comment that I want the reservoirs not just filled and maintained but also functioning in the manner they were designed. Don't disconnect them.
Our well-designed reservoirs have functioned superbly for over a hundred years. Sunlight on them & in the upper Bull Run system have long proved to be the perfect means of keeping pure the water we all use & depend upon. The EPA is virtually certain (in view of the above paragraph) to adopt a practical

standard in place of the discredited current one. In the meantime, maintaining the local status quo will NOT produce any negative results...
The server cut me off as I was providing personal identification information... Which will be provided on THIS survey form. Sorry about the complication... Thanks for your attenton....
#1!!!!!!!!!
$40 million to fill the reservoirs with fancy parklike features is not a good use of city funds given that many streets in our community have unimproved roads, no sidewalks or other deficiencies. It is not a good use of our public dollars to spend such a great amount of money. On the other hand, leaving them empty will look ugly. Drain them and create a public input process using an inclusive process, partnering with Multnomah County to apply the Equity and Empowerment Lens, to determine alternative uses for the empty reservoirs.
*Explain why Portland can't delay until after the EPA's 2016 ruling. *Answer community questions about no bid contracts.
-water suppy use is part of historic aspect -presence of water is critical part of use of park and ambience of park. -water is soothing Waht is the cost estimate to reconnect if the current plan goes forward?
1) Given the city's well-intended and wise effort to prepare for a 9.0 earthquake, it's thoroughly hypocritical to propose any options other than keeping the reservoirs open and functional. 2) The Commissioners (and the Mayor and the Governor) have not successfully defended their claims that all options for keeping the reservoirs open have been exhausted. 3) The Commissioners behavior in this matter has been nothing short of disgraceful. Intentionally fleeing the summer meeting before taking questions from the public was shockingly disrespectful. Censoring public testimony at City Hall recently was unjustifiable. Fish's silence on matters of PWB cronyism at the last meeting spoke louder than any defense he could (and should) have offered. The Commissioners have deservedly lost the public's trust. They are no longer fit to govern.
7 generations of our families have enjoyed the beauty and simplicity of our functioning Mt. Tabor Reservoir system. It is a marvel of good engineering and healthier than the alternative the city has forced down the throats of its citizens with lies and dishonest representations of the law. Yes I am a trained scientist and have reviewed the science and the budget. It is widely perceived by study of the history of the Mt Tabor Reservoirs that this proposed dismantling of them is due to corruption in City Government - and has never reflected a genuine interest in the will of the people you supposedly represent. The EPA rule is not backed by peer reviewed science and does not justify the debt being created. Many other communities have applied for and received waivers which you have refused to attempt. Hales, Fish and Fritz to the extent that you have cooperated, shut out meaningful community input and clung to false excuses for the project are perceived by multigenerational neighborhood residents such as our family as criminal violaters of the public trust. I would guess that you have no real idea of the deeply held value of the park and the waters to those who have shared in its generosities for generations. We grieve every day at the violence being imposed upon us. We hope that you will see the light and stop the destruction. In the mean time please respect the integrity of our beautiful system and do not create irreversible damage.
A thousand people could pee in the damn reservoir and it would still be perfectly safe. This is not a priority, in fact it's not even an issue. It's a distracting made-up crisis where once again, the public can be distracted into spending their valuable "spare time" on preventing stupidity rather than using that time to deal with real issues.
Actually, I think Portland should fight to keep them operational. But I suppose it is too late for that. So 2nd choice: Gustafson plan.
Again -- The structure of our water system and therefore our water quality is being degraded by companies who put profit before serrvice and work relentlessly to manipulate government for their own gain. We need to stop rewarding greed, aggression and dishonesty in both business and government --- start treating these qualities as mental illness and curbing those who are driven by them.

Although I understand the desire to create jobs, I do not want those jobs to come from unnecessary, environmentally damaging, and expensive projects. We have had safe water from Bull Run with nature doing a lot of the work of safely "cleaning" the water with sun and air for over a hundred years. I do not think Portland's elected officials have done enough to get a variance from the federal requirements as has Rochester, NY, for example. Moreover, the historical and aesthetic considerations should be given weight also. Our society looks at dollars as the main consideration and eschews other values such as aesthetics. Thank you for reading this comment.
An attractive destination park would go a long way toward integrating close-in northeast/southeast with East Portland.
And allow them to be easily reconnected if the opportunity arises in the future.
Another option would be to fill the reservoirs, cover them, and maintain a reflection pool on top of the cover. That would meet the EPA mandate to cover open reservoirs but also satisfy neighborhood residents' requests to maintain the beauty of the park.
Anything else would be a huge waste of money.
Appeal to the highest authorities available in order to defer the covering of Portland's reservoirs and avoid spending hundreds of millions of taxpayer dollars on a project that will most likely soon be proven to be unnecessary.
As a historical feature of the Mt.Tabor neighborhood, I believe we should invest in maintaining the scenic feature of the reservoirs.
As a PWB rate payer I also hereby make the following demands: 1) The City should submit an actual scientific response to the Oregon Health Authority along the lines of what was presented by Friends of the Reservoirs: www.friendsofreservoirs.org/resources/OHADeferalJune2013.pdf 2) Some kind of *honest* 3rd party investigation of the involvement of former PWB director Joe Glicker (now CH2M Hill) and Rhodes Trussell (of MWH at the time) in the EPA LT2 rule making process, including the National Academies' report on radon in drinking water, and the resulting no-bid reservoir construction contracts with the City. Huge conflict of interest!
As a stakeholder in the Mt. Tabor area (I am a homeowner on 60th, just down the street from the reservoirs themselves), I would of course prefer that the reservoirs not be disconnected at all--the scientific and economic arguments for keeping our open reservoirs far outweigh the EPA's one-size-fits-all legalisms--but if 'twere done, it should be done with the minimum amount of discontinuity with the past, and a maximum of reversibility, should the city ever come back to its senses and want to reconnect our pure water supply.
As a tax payer, I am appalled at the way the city council has handled this whole thing! The impropriety of paying Joe Glicker as a consultant knowing full well he works for the company that received the no bid contract is beyond obvious conflict of interest....even a child could see that!! Our water is very important to us, and there is no solid evidence that it should be covered. Water needs light and oxygen, and as is obvious from the Powell Butte reservoir, that covering it is not the answer! It's a lot of short-sighted political posturing,and we the citizens of the Tabor neighborhood DO NOT WANT our gravity-fed, sunlight-sterilized water messed with for a short term profit!! Do the right thing!!! Save our beautiful reservoir!!!!
At the recent public meeting I learned that cracks in the new underground reservoirs put the water supply at risk for radon contamination. If this is true it is an additional and compelling reason for Portland to fight for the current open and safe reservoirs.
Before I broke my leg, I was active on the foot patrol. I miss it! I love the park!
Bonding for boondoggles has a life span. Eventually, this practice will hit its end.
Calle me or give me a phone number to call you.

Can we PLEASE stop trying to fix what isn't broken? This has become virulent on the national level, but needn't be on ours. Let us maintain our foresightedness and clearheadedness here in Portland, Oregon. Especially with our water, which is more valuable than any other commodity.
Chemical and biological agents have z natural enemies, heat and light! None of these reservoirs are to deep to offset the effects of day light. In fact 8 hours of day light can kill 90% the germs in water.
City hall lies and sucks.....
Clean up the corruption in the water burue! Randy Leonard's legacy of selling out the health, safety, revenue and well-being of Portland water continues with Nick Fish. The city council, mayor and department heads will all be taken down by this scandal. Looking forward to seeing Nick Fish, thrown under the buss with Joe Dicker. Your career is over. Prosecute Randy Leonard for his role in this corruption. If the mayor and council continue this criminal corruption you will all be exposed for the corrupt Naked sell-outs you have become. Do the rite thing. End it. Blame Nick and throw out the rotten Fish. Someone Has an opportunity to be a political hero and cement a real legacy by turning this mess around the one who steps into that roll will have much clout with the citizenry.
Close Bull Run to the public and do not allow it to be coded "institutional" Pull GE out of Bull Run. Expose the spin Joe Glicker used in the EPA Open Reservoir Manual.. he implied all the horrific unexposed incidents that DID happen in closed systems "could" "may be" happen in Open Reservoirs. After speaking with a Water Expert within the industry, I was educated. Europe has had OPEN Reservoirs for 1000's of years, we have one of the best Open Reservoir Systems in the nation and we know it... It has now been compromised by GREED and justified by a FEAR Campaign to extort from its citizens of Millions of dollars to line the pockets of such companies as CH2M Hill, GE and now Mayor Hales, Senior VP of another Giant conglomerate master. And to boot, Gail Shibley who controlled the Oregon Health Department and who the EPA when challenged over the LT2 Rule deferred decision power to, is now Mayor Hales Chief of Staff. And the permits given by the county to the city by the city attorney to include a boogas EMERGENCY on fish runs that are washed out every year because of the winter run off during spawning season. These coverups and lies are getting exposed.
Closing the reservoirs was hugely expensive and completely unnecessary. Everyone on city counsel should resign for the good of Portland and its tax payers. The Water Bureau continues to rip off the rate payer both with storage tanks we never needed and that ridiculously overpriced office building. I don't know how the water bureau and city council sleep at night, they are so incompetent and such poor managers of city business and tax payer money.
Commissioners are not the ones who gets to decide what to do with our City's water. Citizens get to decide. Commissioners Fritz and Fish: stop blocking the process of what the people want.
Concerns about safety in the water do not seem to be scientifically sound. Let's not decide to drain them based on fear and a misinformed public. I used to jog around the lower reservoir weekly when I lived closer.
Conditions will always change. Some traditions, however are worth keeping and maintaining. The PDX City Council is WAY off about what to do w/our reservoirs. Destroy the charm / destroy the history / destroy the city.
Consider new ideas for resevoir 1 --maybe redo as an attraction water feature and surrounding habitat for birds/bird watching. Other idea = PP&R aquatic classes
Contrary to the opinion of the friends of the reservoirs this selection does not indicate that I oppose the disconnection of water system. They have had their heads in the sand since day one and will never be satisfied. Leaving water in the reservoirs will preserve the present aesthetics at a very reasonable cost.
Could cost of keeping reservoirs filled be reduced by filling reservoirs 2/3 with stone/clear gravel?
Cut No trees! unaccepatable! plant more trees of course. but cut no trees. this is not a radical idea. use them as public owned swimming pools
Disconnecting the reservoirs in Mt Tabor and Washington Parks is unnecessary and a waste of ratepayer money. Please work on submitting a waiver to LT2 instead of proceeding with reservoir disconnection activities.

Disgraceful that the City Council and Water Bureau are planning to degrade our water system at great expense to our health and pocket books. You should all be fired.
Do a better job of listening to the people
Do not chop the trees down
Do not disconnect from drinking water supply.
DO NOT DISCONNECT the reservoirs.
Do NOT disconnect them. Leave our water system alone please. This whole thing has been an unnecessary waste of money & resources. Friends of Reservoirs is correct on all points. Thanks.
Do NOT dismantle the pipe connections from the reservoirs which would make it IMPOSSIBLE to reconnect the reservoirs once someone with an ounce of sense decides it was never necessary in the first place!
Do not do not do not cover the reservoirs. It is expensive , senseless , and can be avoided.
Do not implement any plan that comingles our quality water with inferior tasting or quality of water. Minor and gradual improvements could be made over time to create an atractive visitor attraction and experience.
Do not sell the people short. Think long term. Be smart.
Do not under any circumstances develop on Mt. Tabor! This should be a non issue. No more over developing of this city.
Don't close down the reservoirs
Don't develop Mt tabor. The water is great, don't try to fix what ain't broke.
Don't disconnect the reservoirs! Practice good stewardship of this invaluable resource and park!
Don't let corrupt special interests control municipal government...you are spineless if you do. A case in point follows... What about the whole issue of letting developers rape neighborhoods with their cookie-cutter 2500 sf houses...Amanda Fritz has to go!? I spoke to her person in charge of development, and that woman was so obeisant to developer interests, that I would not be surprised if there is a scandal brewing, because she is bought and paid for by the developer lobbyists. She actually said that they wouldn't knowing violate city ordinances, and that they have the best interests of neighborhoods in mind. What ignorant crap! Steve Keller Woodstock Neighborhood Association friends with Robert McCullough, Eastmoreland Neighborhood Association
Don't make the park a construction zone.
Don't mess with them. They are open reservoirs and communities have used them for centuries. The fact that a person pissing in it caused upset is RIDICULOUS. Open reservoirs get bird stuff,etc...the water if filtered for GOD sake. We need to cut the crap and stop the culture of fear NOW. We can't afford this crap. No one can afford this.
Don't privatize our water!
don't privatize the water/// it's for everyone, not only the wealthy!!
Don't waste our tax dollars making some crony contractor rich.
Draining or using the water in the reservoirs needs to be based upon scientific testing and not media hype. I know the water is tested weekly and double tested if total levels require it. The city doesn't issue boil orders based on anything less than scientific testing. Why drain the reservoir for anything less?
EPA was influenced by fear & corporate greed after 9/11. Unbias science and nature are th ebest guidelines to follow.
Extremely disappointed in the lack of transparency in the process leading up to the current water management plan.

Extremely disappointed in the City's handling of this issue, especially when the City could have applied professional, extended efforts to obtain a variance, and thus maintain the park's crown-jewel reservoirs. In fact, it would be far less expensive to establish a fenced buffer zone and additional security than to undergo deconstruction and establishment of another reservoir elsewhere. Shame on you for handling this issue in the back room, with "loaded" facilitation and favored contractors. PS: I have lived in Mt. Tabor for 25 years and bought here because of the park.

Family has lived in Mt. Tabor for 63 years. Strongly want reservoirs still filled and maintained. Can use grey water when you drain reservoirs.

Fight this Portland. New York beat it, why can't we?

First, and foremost the Friends of the Reservoirs oppose the Portland Water Bureau's plans to disconnect the Mt. Tabor reservoirs from Portland's drinking water system. The onerous and currently under review Long-term2 Enhanced Surface Water regulation (LT2), the pretext for the disconnection, is primarily a surface water regulation in which an open reservoir provision was inserted requiring that systems with open reservoirs either "treat or cover" the reservoirs to address Cryptosporidium and other non-existent contaminants. The Enviornmental Protection Agency (EPA) has indicated that completion of their LT2 review and revision will take place in 2016. There is no deadline in the LT2 regulation for compliance with the reservoir requirements, mandates without a scientific basis, included without the EPA having conducted any scientific research or collected any national scientific reservoir data to support the requirements. The LT2 regulation was promulgated responsive to a 1993 incident in Milwaukee, WI wherein human and cow sewage present in Milwaukee's unprotected watershed backflowed into their drinking water system through a costly state-of-the-art filtration plant. The LT2 rule has been widely and substantively criticized as it was based on a sampling methodology that fails to distinguish between the majority harmless Cryptosporidium species and the few that are infectious to humans. The reservoir requirement was inserted into the rule without the Safe Drinking Water Act prerequisite use of the best science available. The Portland Water Bureau was the single utility seated at the table in Washington DC crafting this, by all accounts, poorly crafted EPA LT2 regulation. The PWB brought with them (under contract) a cozy consultant whose associated global engineering firms would profit from a regulation that focused on build projects as opposed to more effective watershed protection or mitigation efforts. The plan to disconnect the Mt. Tabor reservoirs from Portland's water system by December 2015 was proposed in isolation by the Portland Water Bureau. The Portland Water Bureau (PWB) in defiance of the 2004 Reservoir Panel Council ordinance # 36267 crafted this fast-track and excessively costly reservoir burial and disconnect plan without any stakeholder involvement. While it is unclear why this reservoir disconnection compliance plan could not be accomplished without all of the cutting and plugging, and the removal and replacement of pipes as proposed by the Portland Water Bureau, other alternative compliance options exist. Contrary to statements by the Bureau of Development Services, Portland Water Bureau documents secured through public records requests confirm that the Portland Water Bureau did not conduct an analysis of the "treatment at the outlet" alternative. The Bureau has admitted that they did no more than a "back of a napkin"examination of this option. Installation of two 24" ultraviolet light bulbs is the alternative compliance option that will be utilized at Rochester's historic open reservoirs in 2022, if the EPA fails to reinstate the "risk mitigation" alternative as part of their review and revision of the LT2 rule. Rochester has two large historic (1876) open reservoirs similarly set in city parks. In light of New York's Senator Schumer's 2011 success in getting the EPA to agree to review the LT2 regulation and in light of community support for retaining their historic open reservoirs as a part of their drinking water system, in 2011 Rochester sought and subsequently secured a ten-year deferral of all LT2 reservoir compliance work including project pre design. For more information on Rochester's compliance plan contact Michael Bushart, P.E. Senior Engineer/ Water Design, (585) 428-7567. Mr. Bushart can put you in touch with recently retired engineer Len Schantz who was the lead engineer involved in developing Rochester's reservoir compliance plans. Responsive to continual community pressure from a broad-based group of stakeholders including environmental, public health, business and neighborhood organizations, Portland made two perfunctory requests of the Oregon Health Authority to approve a deferral of the PWB's reservoir compliance plan. The City failed to back up their requests with the appropriate level of documentation nor did they engage in necessary next step lobbying to assure the success of the requests. See the Friends of the Reservoirs reply to OHA's 2013 denial (posted below) for more information on the basis for a deferral. In

2012 Portland community stakeholders advocated that the City Council change its open reservoir compliance option to installation of hypalon-like or floating reservoir covers (Hypalon-like cover grills had been installed prior to any mandate, and remain in place at the Washington Park historic reservoirs). While the community would likely not accept reservoir covers as a long-term solution, hypalon-like covers would meet the current LT2 requirements, and provide opportunity for Oregon's Congressional delegation to advocate alongside the New York delegation for reinstatement of the "risk mitigation" option inexplicably removed from the draft EPA LT2 rule. At least one member of Oregon's Congressional delegation has said that he is willing to work in support of reinstatement of the "risk mitigation" compliance option, but is unwilling to lobby for such without the support of Portland City Council. REQUESTS for CONDITIONS and MITIGATION MEASURES The Friends of the Reservoir supports the Mt. Tabor Neighborhood Association request for conditions and mitigation, however, alternative compliance options should be further investigated including whether the cutting, plugging and replacement of pipes is necessary. The Historic Landmark's Commission should further explore alternative compliance options such as hypalon-like floating covers and Rochester's 2022 plan to install two 24" UV bulbs should EPA fail to reinstate the "risk mitigation" option. Further, Friends of the Reservoirs specifically requests that the Historic Landmark Commission minimally require as mitigation that the city undertake completion of the recommendations as delineated in the Dortinagnacq 2009 Mount Tabor Reservoirs Historic Structures Report Tabular Summary setting as a priority work projects from the Tabular Summary that are recommended to be completed before others (See the memo titled “High Priority Project List” which is included in the Appendix). As the report states: "These more immediate work projects were identified either due to urgency, or because the task is both needed and is a readily achievable work item." The Commission should require that priority work be completed in the next two years given that 5 years have already passed since this report was published. As the Mt. Tabor Neighborhood asserts "this project is insufficiently funded to mitigate Approval Criteria failures." The Water Bureau selected a compliance plan that replaces the Mt. Tabor open reservoirs with underground tanks at Powell Butte and Kelly Butte. The same PWB consultant who was at the table crafting the Federal LT2 rule was awarded the Powell Butte tank design contract (CH2M Hill) and his former engineering firm (MWH Global) was awarded the Kelly Butte tank design contract. This same consultant, then with MWH Global, lead (under what became a 9-year PWB/MWH Global contract), the Powell Butte Land Use process. Thus over a half million dollars has been spent on "mandated" mitigation construction of a $500,000 Powell Butte park caretaker house now occupied by a Water Bureau employee. Significant dollar amounts were spent on other Powell Butte park amenities. While water demand has declined for 27 years there was no need to construct a 50 million gallon Powell Butte tank except for the Portland Water Bureau's having chosen a LT2 compliance plan that replaced the fully functional and recently upgraded Mt. Tabor reservoirs with tanks on Powell Butte and Kelly Butte. Similar if not greater mitigation funding must be required for the nationally recognized Mt. Tabor historic site, given that the impact is more significant. The cost of the Powell Butte LT2 tank project has been excessive and the result problematic on many fronts. Upon completion, the tank was found to be of such poor design that 3200 cracks were causing massive leakage on a daily basis. The cost of this project was estimated in December 2013 to be over $120 million but has likely escalated given the need to address the significant cracking. This cost is much higher than the cost of larger tanks built elsewhere such as Seattle's 60 million gallon Maple Leaf tank that was built for around $55 million. We agree that "damage to the Mt. Tabor historic sites is far greater than the cost of pipe capping, and the funding should not be so arbitrarily scarce. The resources protected at Mt. Tabor are not being appropriately cared for. Preservation work/mitigation funding can and should be commensurate with the site impact", not just with the budget of this one little slice of the PWB's chosen compliance plan. FRIENDS OF THE RESERVOIRS RESPONSE TO OHA DEFERRAL DENIAL Mr. David Leland June 21, 2013 Oregon Health Authority, Drinking Water Program P.O. Box 14450 Portland, Oregon, 97293 Sent via e-mail Dear Mr. Leland, This letter responds to the Oregon Health Authority's rejection of the City of Portland's request to defer "onerous" LT2 open reservoir projects at Mt. Tabor and Washington Park, projects that by all accounts will provide no measurable public health benefit. We ask that the OHA and the City of Portland go back to the drawing board and work together to approve a lengthy deferral. In denying Portland's first request for deferral of LT2 open reservoir projects, OHA provided no basis other than to state that EPA required steady project progress, barring construction delays. Rochester's deferral of all LT2 reservoir projects including preplanning, related to their two historic open reservoirs set in City

parks, until at least 2022, demonstrates that EPA is not requiring continued steady, project progress. There is no deadline in the LT2 rule itself for completing LT2 reservoir projects. A thorough review of OHA's second denial and internal communications finds no legitimate or scientific basis for denial. We have concerns that this may have been a political decision. OHA internal communications indicate what we know to be the case, that there remains opportunity for OHA and the City of Portland to work out a rational deferral plan. A broad-based coalition of organizations support a lengthy deferral, one that allows Portland to benefit, alongside Rochester, NYC and others, from the LT2 rule revision, set for 2016. (Please see coalition letter to OHA November 19, 2012, updated December 10, 2012) Director Bruce Goldberg's April 28, 2013 e-mail communication to Dave Leland suggests that there could be options that could be put in place beyond full-scale changes to assure water safety,"willing to consider other suggestion city might have to assure water safety etc." Though Dave Leland is quick to dismiss this suggestion, he does state in his reply to Goldberg " The City is of course (is) free to try to continue the discussion later with us if they choose, like anyone else." OHA/ PORTLAND FAILURE TO COMMUNICATE A review of the process makes clear that there was a complete failure to communicate in any meaningful, substantive way with the City of Portland while evaluating the City's deferral request. OHA and the City of Portland must work together in support of a rational outcome, an extension of the time line. This failure to communicate stands in stark contrast with the cooperative nature of the agreement which allows Rochester a 10-year deferral of plans to "treat" at the outlet of their two historic open reservoirs set in City parks. ROCHESTER AND PORTLAND COMPARISON OHA stated that Portland and Rochester water systems are not similar water systems. Indeed, most water systems have differences from other water systems. However, differences are not a basis for denial. OHA states that Rochester has a filtration plant and suggests that Rochester is deferring it's LT2 open reservoir projects (treatment at the outlet of the open reservoirs) in order to pay off the filtration plant. Rochester's filtration plant is a source water filtration plant, not a post reservoir treatment plant. Rochester has only minimally sampled the water exiting their filtration plant, so to use OHA logic, we do not know if this filtration plant is protective of public health. We do know that all public health problems have occurred in systems where a filtration plant was in place. More to the point, documents obtained from officials in Rochester state that they are deferring open reservoir projects (Cryptosporidium treatment at the outlet of their open reservoirs) for a number of reasons including revision of the "onerous" LT2 rule (see Rochester documents provided OHA in November 2012). Unlike Rochester, Portland ratepayers will be paying off $40 million in open reservoir upgrade projects until approximately 2030, $23 million of which are associated with a 2007-2011 Slayden Corporation construction contract # 37524, one of four recent open reservoir upgrade contracts. A consulting firm, Montgomery Watson Harza Global, was hired by the Portland Water Bureau and studied the open reservoirs under a 9-year contract. One of their tasks was to list projects (see pp. C1-5 in this link) that would maintain the safe function of the reservoirs until 2050. The majority of these projects were completed under four contracts. (These documents were secured through public records requests.) Good governance says that these investments should be protected, particularly given that sound scientific study confirms that Portland's open reservoirs already meet the goal of the LT2 rule, which is intended to reduce the level of disease in the community from Cryptosporidium, Giardia and virus. And like all open reservoirs, Portland's open reservoirs have never been the source of any disease. OHA OMITS CRITICAL FACT, IGNORES LOW-COST OPTIONS OHA maintains that a legitimate OHA reason for denial of deferral of LT2 Cryptosporidium reservoir projects is that Rochester treats at the outlet for bacteria and Portland does not. OHA fails to acknowledge that the chlorination facilities located at Portland's open reservoir sites are capable of treating at the outlet for bacteria if this were everdeemed advisable or nececessary (See PWB communication with OHA and MWH 9-year study documents). Both Rochester and Portland have chlorination facilities located on site, next to historic open reservoirs. Rochester uses free chlorine and Portland chloraminates it's drinking water. The chlorination facilities in Portland are currently used only to provide a "boost" of chlorine when necessary. OHA has been advised by the Portland Water Bureau that Portland could use these chlorination facilities to retreat for bacteria. (See public records- PWB communication with OHA, and MWH global 9-year reservoir study documents.) 1. Why did OHA omit the fact that Portland could retreat for bacteria if adding more chlorine beyond "boosting" is deemed a Rochester advantage? 2. Does OHA recommend that Portland retreat for bacteria beyond adding a "boost" of chlorine when necessary? What would be the measurable public health benefit or scientifically documented reduction in risk from adding more chlorine or re-treating the water? We look forward to OHA's prompt response to each of

these questions and others that follow. As OHA is aware, bacteria commonly occurs in buried infrastructure, buried tanks and buried distribution piping (see information below). BIRD WIRES OHA is seemingly suggesting that Rochester's having installed bird wires is a public health advantage, while offering no scientific evidence to support this. The PWB could install bird wires. The PWB's 9-year reservoir study (MWH Contract # 30491, Volume 4 Facilities Evaluation) recommended installation of bird wires around the year 2018. The recommendation to delay installation until 2018 is indication that MWH Global had no immediate public health concerns. The same study indicated that there had never been any public health problems associated with open reservoirs. The City's 2004 Independent Reservoir Panel that cost ratpayers more than $500,000, recommended installation of bird wires. The PWB ignored this recommendation while proceeding to spend $40 million on open reservoir upgrade projects. Either the PWB has been negligent in their failure to install bird wires or they did not believe birds to be a public health risk. Does OHA believe that the Water Bureau has been negligent or incompetent in failing to install bird wires? Does OHA believe the Portland Water Bureau should install bird wires and, if not, why did OHA reference Rochester's bird wires if OHA does not believe that they are beneficial? CONTAMINATION IN COVERED AND OPEN RESERVOIRS OHA suggests that open reservoirs are subject to recontamination and that any bacteria is a threat to public health. As is well documented in literature, locally and around the nation, both open and covered storage facilities are subject to recontamination, including bacteria contamination. Most importantly, only covered storage facilities have been demonstrated to be the source of any public health problems, deaths and illnesses. EPA's Total Coliform Rule white paper, Finished Water Storage Facilities, documents instances of covered storage public health problems as does the EPA LT2 rule itself. (See Gideon, Mo. Salmonella outbreak.) In Portland, contamination of a buried tank occurred on May 27, 2012. This 2012 break-in of Reservoir 7 involved vandals breaching the buried tank and throwing into it a bottle of hydrochloric acid and other items. (PWB Incident Reports were secured through public records requests.)The PWB failed to inform the public of this contamination. The PWB withheld this information from Oregon Health Authority for a month. BACTERIA IN UNDERGROUND INFRASTRUCTURE Bacteria is detected throughout Portland's distribution system including at the buried Powell Butte tank and at other locations such as the October 2012 E-coli detected in Sellwood at 9th and Ochoco (underground infrastructure). The Portland Water Bureau reports that they spent significant public resources preparing for a massive boil water alert responsive to the October 2012 Sellwood bacteria detect. Though a boil water alert was averted, OHA communications with the PWB (secured through PWB public records requests) raises questions about what appears to be a disparity in OHA's handling of E-coli detects when they occur in underground infrastructure, including the detect at the Sellwood site. (See Carrie Gentry e-mail to Yone Akagi which advised in advance of the repeat sample results, that even if the repeat sample returned positive for E-coli or Coliform OHA would consider invalidating if other sample sites were negative). The city of Tigard issued a boil water alert in 2012 as a result of an E-coli detect in their distribution system (in underground infrastructure). There is no regulatory requirement to cover open reservoirs to address bacteria. Such a requirement would be irrational. Covered reservoirs are subject to recontamination and bacteria (Coliform and E-coli) detects but are problematic in other ways. For example, nitrification is documented as a risk in the LT2 rule itself and in EPA white papers associated with the recent revision of the Total Coliform rule. (See LT2 1997 study of New Jersey reservoirs and EPA Total Coliform Rule Nitrification white papers) The appropriate response to bacteria detects including the non-infectious bacteria at the Washington Park reservoir is for the utility to determine the source of the problem and take corrective action such as improved basic system maintenance. LOW PUBLIC HEALTH RISK We knowof no scientific evidence that demonstrates a difference in public health risk between covered reservoirs and open reservoirs. The LT2 open reservoir "treat or cover" requirement is not based on any national sampling data. EPA failed to conduct even one single national round of sampling at open and/or at covered storage facilities. At the April 2012 EPA public meeting related to the requirement to review and revise the onerous LT2 rule, Tacoma's engineer Chris McMeen in describing their reservoir covering program did not identify any LT2 Cryptosporidium, Giardia or virus problems with their open reservoirs. Instead he concluded his presentation by stating that the public health risk to their open reservoirs was low, it was the same public health risk as with their covered storage, and that there were no differences in public health risk. OHA advised that Kari Salis listened in on at least part of this meeting. Even if she missed McMeen's conclusion, she heard no scientific evidence which described a measurable difference in public health risk between covered and open reservoirs. EPA's engineer, LT2

lead Stig Regli, could offer no review of any scientific evidence that supports the reservoir requirement or a difference in public health risk. To our knowledge none exits. The official LT2 record (reviewed by the City of Portland and community stakeholders such as Friends of the Reservoirs) contains no more than a handful of documents that mention the words "open reservoirs" (there are approximately700 documents in the record) and no national sampling data on open reservoirs exists. The LT2 record contains but a single 1997 study of non-engineered, lake-like open reservoirs in New Jersey conducted by Mark LeChevalier, William Norton, and Thomas Atherholt. Their published report (AWWA Journal volume 89, issue 9), Protozoa in Open Reservoirs, did not support a LT2 "treat or cover" requirement for open reservoirs because the public health risk was described as low. Rather, the researchers concluded by referencing the well-known risks associated with covered storage, "nitrification" (a serious problem common to systems using covered storage and chloramination),"degradation of water", and "problems with covers themselves". The researchers also stressed the importance of developing improved Cryptosporidium sampling methods, methods that accurately assess the viability and infectivity of Cryptosporidium oocysts, another of the significant LT2 issues that remains problematic today. OHA is aware that the City of Eugene is currently having problems with contamination of a covered reservoir. The Seattle Times reported (July 17, 2009, Major do-over for two Seattle reservoirs) problems with MWH Global reservoir burial projects, contamination of newly constructed buried tanks due to leakage related to cover design. MWH Global is the same global engineering corporation that was involved in crafting the LT2 rule and is currently profiting from implementation of the LT2 rule. ECONOMICS The arguments made by the City of Portland (February 4, 2013) and the coalition of organizations supporting a delay in the schedule and retention of the functionality of Portland's open reservoirs (November, 2012) should be re-examined. Since these communications in April 2013 the Water Bureau has taken on a significant amount of new debt. (See $253,635,000 Water System Revenue and Refunding Bond, 2013 Series, http://www.portlandoregon.gov/bfs/article/445929) Portland's LT2 compliance costs are approximately 90% higher than those being deferred in Rochester. Additionally, Portland just spent $40 million on open reservoir upgrades. Among the nation's 50 largest cities Portland's water bills are the 8th highest according to a 2012 annual survey report by the Americn Water Intelligence. Portland ratepayers pay higher water bills than Phoenix, a city in the desert. DISCOUNTING SCIENTIFIC STUDY OHA supports the expenditure of ratepayer dollars on participation in scientific research but discounts sound scientific peer-reviewed research when that research (AwwaRF 3021) does not support spending hundreds of millions on controversial reservoir projects for no measurable public health benefit. It will take Rochester approximately 10 years to collect the statistically significant sampling data the Portland has collected to date at its open reservoirs (7000 liters AwwaRF 3021) and at our source water (over 10,000 liters). Rochester confirmed to us in May 2013 that they are sampling only 50 liters per month at their open reservoirs. Rochester, unlike Portland, has not participated in any scientific research at their reservoirs, nor have they collected any disease surveillance data that would support a deferral. The AwwaRF 3021 researchers concluded that Portland already meets the goal of the rule which is to reduce the level of disease in the community from Cryptosporidium, Giardia and virus. This was based on statistically significant sampling at the outlets of Portland's open reservoirs. EPA LT2 REGULATORY REVIEW, REVISION, NEW RESERVOIR SCIENCE We believe that the LT2 revision process will result in alternatives for the open reservoirs. Responsive to Obama's Executive Order 13563 that agencies revise and repeal onerous regulations on March 18, 2011 NYC submitted substantive, detailed comments (see pp. 1-10) including very specific objections to LT2 open reservoir requirements (pp. 8-10). When EPA ignored NYC's request to include revision of the LT2 as part of this review process Senator Schumer, Mayor Bloomberg, and NY's entire Congrssional delegation intervened. EPA agreed to review the regulation both as part of standard review process, but more significantly, under Obama's Executive Order mandating revision or repeal of onerous regulations. Contrary to OHA's assertion, that there is no new evidence, New York submitted more than 167 pages of new scientific data and research. Portland submitted the AwwaRF 3021 scientific peer-reviewed study and information on Portland's massive 7000 liters of sampling data plus disease surveillance data (source water variance). Rochester will be submitting new data. In light of the fact that EPA's LT2 "treat or cover" requirement was based on ZERO scientific data and no scientific research that supported a "treat or cover" requirement, the "onerous" requirement must be revised to be in compliance with Obama's Executive Order and to restore some level of trust in government. EPA is required to evaluate alternatives. We remain concerned about the clear conflicts of interest related to engineering firm's involvement in both

crafting the EPA LT2 regulation and profiting from implementation of the regulation. CONCLUSION For the many reasons stated above and in previous communications, Portland stakeholders request that OHA immediately engage in a cooperative effort with the City of Portland to approve a well-deserved lengthy deferral of onerous LT2 reservoir projects. Sincerely, Floy Jones for Friends of the Reservoirs Cc Mayor Hales and Portland City Council Representative Earl Blumenauer Senator Merkley Interested Parties
For the love of our children, save the reservoirs! Find a message. You have the opportunity to be our heros.
Force the use ase designed.
Foremost, this is a park where reservoirs happen to be located. Don't distrub the park. In other words, keep things as they are.
go to bat for us against the epa as our elected officials. This is crony capitalism to disconnect.
Grew up on Harrison CT. It's my park!
I also like the Gustafson Plan but without secured funding I chose #1 as my preferred concept.
I am a long time resident & voter, living in this neighborhood near the reservoirs.
I am a resident of Mt. Tabor. I would like to know what the costs were for maintaining the current reservoirs. I chose the first option because: A. It will keep the Park unaltered. B. The costs to maintain them I assume will be the same (or less?) than the current costs to maintain them. C. As much as the Gustafson Plan would be beautiful, I think the cost is more than I (or any taxpayer) would want the city to put into it. Also, because of the heavy use of the park and its location, I'm concerned there would be vandalism and mischief with the new design, and costs to repair/maintain would be high.
I am a S.E. portland resident and feel strongly that we need to have a number of clean open water sources around the city for reasons of human and animal habitat needs as an accessible cache of water in times of drought. I also enjoy the beauty and tranquility of open water.
I am absolutely furious that your commissioners continue to ignore the enormous opposition to the closing of our reservoirs as our drinking water source, and the enormous wasting of money for a massively leaking underground tank, all because you never had the necessary backbone to demand a delay till 2016 to see if the EPA changes its rules. Don't claim otherwise, because I'm sick of your lies. Amanda at least should be sticking up for the public on this one, but alas, she's got her eyes closed too.
I am committed to public stewardship of our water. I am willing to contribute additional taxes should funding become an issue. The slide towards privatization of our water is unacceptable, dangerous. Fill and maintain the reservoirs! Thank you!
I am concerned about the ongoing efforts by the Parks and Water Bureaus to degrade and dismantle Mt Tabor Park piece by piece. The nursery, the long block,the trees that are being cut. All due to a fabricated/avoidable mandate. What is your agenda and why are to determined to destroy this irreplaceable jewel?
I am concerned that there may be even a remote possibility that our city water infrastructure is considered and/or acted upon as a commodity for sale, for lease, etc. --directly, indirectly, or part of a larger proposal).
I am deeply disturbed by the construction of the underground reservoirs at Powell Butte. The construction has not only destroyed the area, but apparently due to shoddy workmanship, are riddled with problems with an ever increasing price tag. Please protect our water. It should be a matter of public control, not private profit.
I am in support of keeping our very effective hundred year old water system unchanged.
I am not certain if the closure is definitely mandated. Is it?
I am not part of the group who issued the question sheet for the commissioners, but I really want detailed credible answers from our entire City Council. Thanks to RNW and the Commissioners for

working to respond to the majoirty of the people at the meeting. Nick you shouldn't have left Amanda to answer all of the questions! Nick never looked back at the people-Amanda did.
I am opposed to closing the reservoirs, and believe the city should do everything it can to keep them open.
I am strongly against the plan of getting the city's water from the Willamette. We have some of the best tasting municipal drinking water in the country, all supplied by the Bull Run reservoir. The idea that we will spend hundreds of millions of taxpayer dollars to build an filtration plant to clean & treat the river water is wasteful. Especially since it will never stand up to the quality and flavor of the Bull Run.
I am vey afraid this water project will degrade the park and you will run out of money When the time comes to repair your construction activity. The park will need new landscaping. Please don't ruin the East Side's best park.
I and all I love want you to keep the reservoires connected!!! We feel very strongly about this. And Amanda, I want to send heart felt love and peace to you at the passing of your beloved! May you find healing, and may you find ways to communicate with him across the dimensions.
I attended the public meeting on November 18. Commissioner Fish promised that he would answer the list of questions posed to him. We did not hear when he plans on giving the public the answers. Please post this information or send me a direct email letting us know when to expect his response.
I attended the Reservoir Meeting at Warner Pacific College on November 18. I had received an email from PPR announcing the meeting. It was the worst meeting that I have ever attended. I was one of a handful of people of the hundreds there that who don't favor open reservoirs. I understand that the reservoirs will be taken offline and that it is very important to come up with a plan for the future. I am very concerned about what that will look like. As soon as the meeting started the rabble took over with their own agenda and pointed attacks at Commissioners Fritz and Fish. There was a lot of shouting and constant interruptions - Payback for the last meeting as it was explained to me. The agenda was thrown out. There was a brief overview and questions. After that I left because I doubted there would be anything productive to follow. I'm not interested in attacks on the commissioners or pushing an effort to keep the reservoirs on line. I appreciate the efforts that Amanda Fritz has made in the past to try to get waivers to keep the working reservoirs. I understand the importance of coming with a concept and funding it. I understand the difficulties that Resolutions Northwest Facilitation Services had with the unruly crowd, but I think that throwing out the agenda was a mistake. The meeting didn't meet my expectations and it left me very concerned about the future of the project. There is a another meeting scheduled for December 10. Will that be a conversation as promised in the ads or a repeat of the one that I attended? I would like a response to my concerns. Thanks, Kathy Schuman
I believe our bull run water is slowly being privatized, and disconnect of the reservoirs is an early step, although I understand it is hard sometimes to see this bigger picture which unfolds over decades. It is important that the water belongs to the people - not Nestle or whomever, who then sells it back to us. I believe much of the whole water restructuring is happening because of lucrative engineering and construction contracts - certainly not because our current, amazing, gravity-fed, low-maintenance system wasn't working. It continues to work quite well. I believe our leaders lacked the political will to question the contracts and fight to save the reservoirs. Please keep them full and maintained - we are going to need them when/if the new Powell tanks fail.
I believe that maintaining the existing reservoirs and keeping them filled with water will allow the park to retain the most historical character. While I would support the Gastafson plan as a secondary option or perhaps as part of another park improvement in the future. The #1 option is really a modest cost to preserve the beauty of the water filled reservoirs and allow the public to safely continue use of the park.
I believe these resevoirs could make Mt Tabor Park even better. I would have preferred to leave them as uncovered water resevoirs, but now I look forward to them making the park even better. It would well be worth the money.
I disagree with the council's spending on the powell butte storage and its extremem over costing. Poor management and design.

I do a fast walk of about 3.5 mi. from my home to, up, down, and around Mt. Tabor Park almost on a daily basis. I use my car for weekly grocery shopping and other reasons, when it's too far to walk. I also take the bus a lot for trips to and from downtown. I think that by far the best option is: maintaining (on a minimal basis) all of the Mt. Tabor reservoirs and keeping some water in them (non-drinkable, except in the case of emergencies, when drinking water is in short supply). Thank you for making this whole process much more transparent!
I do not believe it is in the best interests of Portlanders to disconnect the reservoirs.
I do not support covering the reservoirs and consider the act an extreme waste of money and evidence of likely government corruption.
I do not support covering the reservoirs and consider the act an extreme waste of money and evidence of likely government corruption.
I do not want the city to dig any underground tanks in Mt Tabor Park, Nor cut any trees.
I don't believe the reservoirs should be put out of service.
I don't know much about the Gustafson Plan but I like the idea of keeping the reservoirs filled but increasing the value to wildlife by adding plantings. Concept 1 is acceptable to me as well. Any concept that does not include leaving water in the reservoirs is not acceptable to me. Thank you for the opportunity to comment.
I don't support disconnection of the open reservoirs. Portland has a great water supply now. I have lived in towns with poor quality drinking water and I do not look forward to diminishing water quality (which I believe will be the result of the new plan) and an increase in my water costs as a result.
I don't understand why some of the disconnect can not be done with pipes BEFORE they enter the park. It seems too disruptive to have to cut down trees & disconnect in the park, rather than doing it right at the entry.
I don't understand why we have to discontinue the use of our reservoirs as a water source, because that water should undergo a filtration process anyway, so it wouldn't be unsafe to drink. Since Portland is so rainy it seems as though collecting rainwater in a reservoir would be the most ecologically sound way of obtaining drinking water. My stance is that I'd like to see the least amount of change possible, so even if there is no way to continue using the reservoirs as a water source, I'd still like to keep the reservoirs looking the way they do now. That's why I chose concept #1
I enjoy Mt Tabor Park for hiking and cycling. The reservoirs are a huge part of the scenery, functionality and history of Portland. Water is a natural element and needs to be treated as naturally as possible, while still protecting our health. The system is working fine, no need to fix it.
I feel strongly the reservoirs should remain connected and functional. Barring that, maintaining them as water reservoirs would keep the character and quality of Mt. Tabor park.
I feel that just filling them in or leaving them dry would definitely take away from the beauty of that great park. Incorporating into some sort of feature accessible to the public with some water of at least one filled would really celebrate the good water and nature of the PNW.
I feel that our city hasn't done nearly enough to keep this wonderful resourse! I know the public line is that the reservours had to be removed because of a federal mandate, but I also saw now real push back on the federal "mandate". Also, I understand that New York was able to get a waiver. Is this project about public health or big dollar contracts? I used to have some faith in my local government, but after watching the way this issue has gone I have almost no confidence.
I feel that the covering of Portland's reservoirs, and the creation of new underground reservoirs is only helping big construction companies make a lot of money. It is unnecessary and will create a situation that causes the city to pour chemicals as treatment into our water. I am opposed to this, I do not want chemicals in my children's drinking water.
I found this article in the SE Examiner last year quite interesting. http://southeastexaminer.com/2013/07/open-air-reservoirs-and-your-health/ I would rather have my

drinking water exposed to sunlight and allow the water to diffuse unwanted gasses than to cover them and have to deal with those gasses in other ways.
I grew up on Mt. Tabor, and cherish every inch of the mountain. At age 4, my preschool class climbed the mountain on the east side from Ascension church to the playground to observe Mt. St. Helens erupting. At 10, we moved over the mountain from 76th and Alder to 60th and Salmon, and I discovered the reservoirs. My mom and I walked around those reservoirs rain and shine, carrying on in conversation as we exercised and admired the beauty of our park. At 15, I used the second and third reservoirs as my photoscape as I learned photography in school, and especially loved this setting in black and white. Then at 19, the reservoirs played an integral part in my 75 lb weight loss which led me into an empowered early adult life. Mt. Tabor park has over the past 17 years been a park I've introduced to my children, as my parents did me, and I'd be so sad to see the reservoirs and their unique piece of Mt. Tabor's beauty disappear. Please take my story into consideration and keep the reservoirs for what they were intended for!
I have lived in SE Portland for almost 20 years and have enjoyed Mt. Tabor Park all the while. I now live in the Mt. Tabor neighborhood, drawn in large part because of the park, which I think is one of the crown jewels of our park system. Of course the reservoirs are collectively one of the primary features of the park. If they cannot continue to function as they have for the water bureau, let's keep them for the other fine qualities they grace the park with.
I have lived near Mt.Tabor reservoirs all my life. When I was younger strolled around them many times. What a beautiful walk seeing the wildlife and many nice people to chat with. They have been there over one hundred years. Please fill and maintain them. Thanks! Betty Puckett
I have owned a home on the edge of Mt. Tabor Park for 25 years, use the park frequently and revere it. The reservoirs are an integral and icon part of the park and should be treated as such.
I have stayed informed about this issue and I see any other choice besides #1 as a massive waste of money and public resources with negligible or detrimental impact on our water safety
I highly value water that is as untreated as possible while still being safe to use.
I hike Tabor almost every day with my dog and it's the most magical part of my day. I meet wonderful people. I also play tennis weekly in the summer and am so thankful for those courts. I am also very thankful that our drinking water from the resoirvior is so pure and that I don't have to worry about what's in it. I recently moved her from CA and it wasn't pure like our water is here from the Tabor reservoirs.
I hope that the City will do everything in its power to let common sense prevail and not fix what isn't broken. Gravity-fed open reservoirs are sustainable and healthy, as well as beautiful.
I hope that we can wait to disconnect, at least until a decision is made by the EPA
I hope you will fight to maintain the system as it is now. If that fight is last then fill the reservoir and maintain them. the other options are awful. I volunteer with the foot patrol and in the Friends of Mt. Tabor visitor's center.
I imagine that there could be more moderate park improvements than Option 3, and that they would be worth exploring, but I also hear that a group of people who want to fight the federal mandate at any cost aren't really letting that conversation happen. I think it's more important to maintain water in Reservior 5 & 6 than Reservior 1. I'd be interested in seeing the smaller reservior turned into a skate area for skateboarders or bmx biking--I don't actually do those things, but I work with youth in SE who do, and I certainly see people skateboarding down Mt. Tabor.
I live right next to the park and loved and walked Mt. Tabor for 50 years. 1. I do not want the reservoirs disconnected. 2. I am concerned about Portland's water quality if the reservoirs are disconnected. 3. The reservoirs must remain as a water feature, must remain reservoirs. 4. The neglect of the reservoirs must quit and be maintained to the historical character of this site. 5. No disconnection should be considered until after the EPA ruling on above ground reservoirs.
I live up here and use the park on a daily basis. The only other thing I think could be nice is another playground or childrens water feature (splash pad or fountain) on the west side of the park.

I loathe both the PWB and city council over this single issue. I have some choice words but will keep them to myself. :-/
I love Mt. Tabor and the reservoirs are a great part of the park. It's a shame that we need to use chloramine in the water supply.
I love Mt. Tabor. I walk in the park everyday. One of the highlights of my walk is to look at the reservoirs and admire their beauty. Please, please keep them filled and maintain them. It would be such a shame to have them empty. It is such fun to watch the birds in the water.
I love the Mt. Tabor reservoirs. I enjoy taking a walk through the park with my dogs and I enjoy the view!
I love the open water reservoirs. They add so much beauty to the city. Please keep them open, filled, and maintained. Thank you!
I Love this City, Thank You all for everything you do! I am so grateful to be a part of a community that asks and listens to each other when making important decisions. I am also extremely grateful for water with no fluoride!
I love water shimmering in those iconic open reservoirs more than words can say. Please re-fill them so we can all breath exultantly.
I neither see the current system as broken nor in need of replacement. I see the current system as having an immense amount of embodied energy and being an adequate if not better performer then it's apparently imminent, flawed, and terribly expensive and ill-vetted replacement. I highly value Mount Tabor Park and it's mingling of historical functional structure and natural beauty. I am vehemently against what clearly appears to be a conflict of interest among decision-makers and contractor winners. I praise, support, and vote for politicians in position to alter courses that are headed for disaster, even if it means putting their jobs at risk or questioning a bad legal directive. And especially if it is for the better good of the people. No human should be on payroll as an advisor to a city who gives monumental closed-door, no-bid contracts to a firm with that The same person on their payroll. I hope to continue to enjoy the park, it's historic infrastructure, and it's glorious natural beauty for decades to come. And let Portland's water system continue to be a gleaming example of how it used to be and how it could assuredly continue under proper, lically supported management. One is only a pawn if they choose to be. Signed, and concerned.
I prefer an option that allows for possible future reconnection.
I really like having water in the reservoirs
I run a preschool at the edge of Mt. Tabor. It's an example of how this effects our youth. We are currently studying the Bull Run Reservoir water system.
I strongly feel that their functionality should NOT be destroyed. If/when allowed &/or needed again, we should be able to bring them back on line, without another huge expense.
I strongly oppose the reservoir disconnect. Our current system of open reservoirs fed by Bull Run is among the safest, tastiest, most sustainable, and least costly in the country. Furthermore, the historic and natural beauty of the open reservoirs are enjoyed by many area homeowners and residents daily. It would be irresponsible, unethical, and in direct contrast to public opinion to disconnect these reservoirs.
I support a reverse in the roll-over and give up mentality. We should abandon the leaky, potentially harmful boondoggled underground Powell Butte tank in favor of keeping our recently updated open reservoirs in service and providing clean, safe water to our majestic City of Roses.
I think if we're not going to use them for drinking water, the next best use would be as giant swimming pools. Or, possibly irrigation for planting areas directly below the reservoirs.
I think itsludicrous to waste money on a fearmongered agenda that is unnecessary and will diminish our landmarks that serve as an indentity and heritage of Portland
I think more time should be spent on asking the public what to do with the park. Open it back up to the public with better options/input to ideas.

I think that because the reservoirs are a National Historic Landmark, they should remain as they were originally intended - as a functioning part of the water source for the city. There has not been any research that shows that they do not function adequately, and we can follow NYC's model to challenge the LT2 ruling. We are throwing good money after bad by trying to take the open reservoirs off-line and implementing new, expensive and an unvetted underground reservoir concept.
I think that the council made a great mistake by not taking a much stronger stand against closing the reservoirs. Moreover, public perception is that the city ignores all but the most influential citizens.
I think they are beautiful and historically important as they are. The price shown to maintain them each year seems reasonable. They will also be left in place and could be reconnected once there is more data showing open air is just as heathy or better than closed or as back up.
I think they should be left uncovered, filled, and maintained
i use the park 2-3x/week and have done so for the past 16 years. my son also participated in the summer nature day camps there for 7 years. i strongly believe that digging up the reservoirs would destroy the beauty of mt tabor, which is a historic monument.
I visit the reservoirs 3-4x/week so didn't know how to answer the first question. While I like option 3, I doubt Portlanders want to pay for that, so I am satisfied in keeping them aesthetically as is. It is important to keep the water clean and at a high level; they look so low now. There should be as little disruption in the disconnect process (i.e. cutting the pipes) to prevent massive disruption to the flora and neighborhood and as little costs as possible. Also, to allow for a reconnect if the LT2 rules fever change!
I vote and am vocal in the community.
I walk Mt. Tabor daily and have always loved the reservoirs, the views, the trails. It would be a very sad day indeed to destroy the integrity of the park by changing the beauty of these reservoirs and the surrounding trees.
I want our water to stay in the Mt. Tabor reservoirs, uncovered.
I want the city commissioners to allow Portland citizens to talk at the December 10, 2014 who don't support the Friends of the Reservoirs & didn't like their usurping the November 18, 2014 meeting. All the people creating the chaos at that meeting deserved to be escorted out of the McGuire Auditorium. The Friends of the Reservoirs list of questions they wanted City Commissioners Nick Fish & Amanda Fritz to answer are not related to the subject. They are based on conspiracy theories & not documented facts. I have done my own personal research on Portland's history about covering/burying the reservoirs that I would like to share with the public. My research is based on documented facts only, which I have in my possession. I would like to be the last person to speak at the December 10, 2014 meeting & not be interrupted by Friends of the Reservoirs or their supporters.
I want to keep the reservoirs as they've always been
I was born in Portland and have lived here all my life. My children have all been born here. I have used Mount Tabor park on my life for recreation. My children have used Mount Tabor park in my daughter's college is Warner Pacific College on the slopes of Mount Tabor. I want the reservoir filled and maintained as it has been all these years of my life and before I was born. It is very important to me as a person born and raised in Portland that Mount Tabor reserve or be maintained.
I went to Franklin High School in the 60's and spent a lot of time on Mt Tabor and really enjoyed the area. Please don't change it. It is a wonderful place for a nice spring walk in the park.
I wish that the city would fight harder for a waiver of the EPA's LTZ rule!
I wish we could just keep EVERYTHING as is!
I wonder why there is a continuous assault on our water supply. Every time we vote you down one measure another is put forth. Who do you owe? What kind of deal was made. Cover them, fluoride them, now decommission a working system? Please do the honorable thing and resign, or better yet resign and blow the whistle. There are traitorous, greedy people in your midst.
I would like to see one of the reservoirs turned into a swimming pool.

I would like you to pursue a deferral through 2016. Just based on the complications of introducing more radon into our homes should be enough. We'll stand behind you if you'll take a stand. PS. You have typo below in the transportation questions. I think you mean "Mode" not more.
I would love to see an elaborate water fountain somewhere on the top of Mt. Tabor for the purpose of providing perching birds a place to drink and bathe.
I would love to see Option #3, implement the Gustafson Plan, but only if the anticipated $40 million costs were funded through special one-time funding that would not impact the general budget and would not take away funding from other essential services. Thank you for the opportunity to comment
I would love to see the city take a more moderate approach in reaction to people urinating in the reservoirs on occasion. The expense incurred seems overblown in proportion to the actual risk.
I would rather see space created/shared that is more readily accessible to more people, more focus on creating community spaces, improving amenities at the many small parks.
I would still like to see the reservoirs in use as they have been for so long! this is a tragedy!
I'd be okay with turning the reservoir into a giant skatepark!!! But seriously, an ever-increasing demand for a precious resource may be supplemented by the reservoir in the future. Who knows?!
I'd rather them not be disconnected at all. Thank you.
I'm pretty frustrated that the plan to bury the reservoirs seems to benefit only the corporation that gets the contract and the politicians that support them, but has absolutely no benefit to the tax paying public.
I'm pretty sure the open reservoirs are unsanitary, given the flocks of birds that I regularly see in them. As far as I'm concerned, the sooner we change the system, the better.
I'm proud of the reservoirs at Mt. Tabor. I appreciate their beauty as well as their functionality. Let's keep them as is.
I'm proud of the reservoirs at Mt. Tabor. I appreciate their beauty as well as their functionality. Let's keep them as is.
I'm still angry at the city of Portland and its elected officials on their decision not to protest the LT2 regulation and seek a waiver until the EPA conducts a final review and ruling in 2016. I know that is outside the purview of this survey, but I want to be clear that I have been 100% opposed to the process that the city of Portland, the water bureau, and by association, Portland Parks and Recreation have chosen to undertake by not unifying with elected City Council leadership and state and federal elected officials to consider alternatives to this current course of action.
I'm terribly disappointed that the Water Bureau is gong against the wishes of the citizens of Portland, and that city council and Jeff Merkley won't apply for an extension to avoid this needless project. But it always comes down to money. A few people stand to gain while the citizens are left with the bill. Shame on you!
I'm tired of my tax money being sucked west of I-205 for the already nice neighborhoods.
I'm very disappointed that the city went w/a corrupt company like CHM2Hill w/the Powell Butte project. Portland should fight the EPA LT2 all the way1 Portland Water Bureau is corrupt - Glicker goes for water commission to being lobbyist for CHM2Hill. I'm also concerned about radon in our drinking and gen'l water supply from covered reservoirs.
I'm very happy with our current system of using the Mt. Tabor reservoirs and I strongly oppose any changes.
I've lived here for 35 years. I am a property and business owner. I vote in every election. I will vote against any City Commissioner who helps destroy these reservoirs.
I've lived in Portland all my life and remember my very first visit to Mt. Tabor park at the age of 7, I am now 44 years old. I remember what it felt like to see that beautiful park and how cool it was to see all that water and having it explained to us that that is the same water that came out of our taps. With the reservoirs changing to underground tanks, that conversation will change for future children visiting the

park, but keeping the reservoirs full will enable children to grasp the concept of where their drinking water comes from, how much of it we need/use, and give them a visual representation. Not to mention, I think they are beautiful just as they are and don't see a great benefit in investing lots of money to remake them into some modern design. Those of us that love Portland, love it the way it's always been - we don't need to have this new, shiny, soulless Portland continually shoved down our throats by outsiders who have no connection to our past.
I've used the park for decades. The reservoirs are such an important part of the sense of space and tranquility, I can't imagine the park without them. From the descriptions, either option #1 or option #3 would preserve those elements. Mt. Tabor Park is like the love child of the Olmsted brothers and William Mulholland. It's absolutely irreplaceable. Don't suck it dry!
If cities as large as Denver and NYC received waivers from the EPA, how is it possible that PDX was denied. I want you to try again. There is no reason to spend billions of tax payer dollars on a process that we don't need and will wind up reversing 1-2 years later.
if current plan is really and truly not possible (how/when/why is that decided), then #1
if its not broken, no need to fix or divert it. NOT all laws are good laws, nor do they apply in all cases. variances are possible. especially in this case. Get corruption out of our water. it tastes bad. please look into Glicker, and no bid no cap contracts. that's not good governance.
If plan does continue, do not disconnect. Leave potable water available in case of emergency. Does not need to supply whole city as would be used only in an emergency
If the funding isn't available for #3, strongly prefer #1. Water is an essential aspect of this park and its historic value.
If the reservoirs were drained, then we have to look at the options for repurposing their space. Obviously, leaving them as huge, empty concrete basins is an eyesore. The Gustafson Plan, proposes building a pedestrian entrance on 60th Ave and a water amusement park that will bring hundreds of new users to the park every day. Montgomery Watson Harza estimated that maintenance for what goes on top, and the costs of cleaning and maintaining the buried tanks will be equivalent to current maintenance of the open reservoir. Adding 3 waterfalls, a wading water table, a water garden, a new pedestrian entrance and path and maintaining them as proposed will obviously make those estimated costs much greater. But most importantly, I don't want my beautiful, calm natural park to become a crowded water park "feature". Please maintain it as a serene place to walk, rest, and enjoy wildlife and nature. Please do not bastardize it by turning it into a skate park, an ice skating rink, or a waterpark. There are so many other options for this type of entertainment in our city, but fewer enticing natural urban areas on the East Side.
If these reservoirs are taken offline then where is my water going to come from. What about the issue of radon gas possible with closed subterrainean tanks.
if they must be disconnected so it in such a way that they can be reconnected should Powell Butte reservoir prove unsuitable.
If you chose not to keep them flowing with water like how it was when myself,my parents,and my grandparents grew up here I will be deeply saddened but suggest temporary ice rink in the winter and roller rink in the summer
In #1, by "fill" you DO mean fill them with Bull Run water, right? That is my choice. Empty reserviors could be "filled in" with dirt, you know. Please re-read all of the fields of this questionnaire, spell check didn't notice you said "more" instead of "mode" of transport, it is a little thing but a lot of people are reading this and relying on your ability to pay attention to all the little things. Your final editor should have been a human being. By the way, I am not upset at the possibility of drinking water which has urine from mammals or bird droppings in it. The reserviors are quite large. I work in SW Portland four days a week. I look forward to getting to drink delicious Bull Run water on those days.
In the first place, I totally disagree with disconnecting the open reservoirs from the city's drinking water supply system. But if they must be turned off, please maintain their appearance and that of the adjacent park lands.

It appears that there is no way around the disconnect. Too bad City Hall could not assist. Leave the reservoirs as is with water and maintain them. Maintain the beauty and integrity of the Park and the reservoirs.
It is ridiculous that the City paid security guards to watch the reservoirs to see if a plane/person/terrorist/bird would poison our water.
It is unfortunate the EPA requires covered reservoirs and Portland could not stay allied with New York, whom I understand are still questioning the need for covering reservoirs. It is also unfortunate the design and implementation of the covered reservoirs on Kelly Butte has resulted in leaking reservoirs; indicative of either poor workmanship and contract administration oversight, or inferior material design. Trust with the public has eroded with the water house, the rose city house at the waterfront, failure to direct existing funds to the road maintenance need at the time of need. Filling the reservoirs and leaving the connections available for future use as reservoirs is important. I realize this comes with a cost as well.
It seems as though there is significant redevelopment of the Portland water systems being tied to this effort that I do not understand. If the mandate is to cover the reservoirs, why is that option not being offered here? The future of fresh water access is very much being played out today, and what I see here is a lot of political wrangling and short term gain occurring at the cost to taxpayers today, and water access for Portlanders tomorrow. Please help me to understand!
It would be a tragedy to lose the open water reservoirs—they make the park unique and the water connects us more closely with nature, and isn't that what urban parks are here for?
it would be a tragedy to not use these incredible reservoirs!
It's not broken, so don't fix it. And definitely don't fix it by giving that much money to a private company to make us a worse system.
Keep private industry out of our water supply. Stop making backroom deals with Nestle or anyone else that wants to make money off of Portland residents and their water. The Water Bureau is bad enough.
Keep the historical landmark status. Shut the value but don't disconnect. Don't rethink - keep the existing look. Like the fountains fight for the people on the waiver.
Keep the Mt. Tabor Reservoirs as is, filled with Bull Run Water, maintain the equipment -- check the pumps and values, drain and clean the cement walls annually, above all keep those security cameras monitored. In a perfect world, Parks Foundations would be able to budget funds to install water features in each of the reservoirs, new electrical panels, and heavy duty pumps to rotate the water from one reservoir to the next. Why? To keep open water free from mosquitos and algae.
Keep the reservoirs open!
Keeping open air reservoirs no longer makes sense. Quaint but no longer secure. Keep it for the community, with water. Maybe consider a kickstarter investment in community aquaculture.
Leave it connected, and functional
Leave the open reservoirs. Clean and maintain the enclosed reservoir. It's not a goddamn bird that caused the E. Coli. Stop the corruption in City Hall! Stop the out of control spending!
Leave the reservoirs alone.
Leave the reservoirs alone. They work just fine.
Leave the reservoirs connected filled and maintained.
Leave the resevoirs connected filled and maintained.
Leave them be and let them house our drinking water like always please.
Let's fry for a waiver to LTZ! Please address how the city will address the health issues associated with removing the reservoirs from service.
Let's not cap it or sell it. It's a unique City resource that should be kept that way.

Let's think about the big picture, which is our future. 100 years from now and the livability for our children, in a changing global world (ie water shortages) -- Bull Run has water for us. I still believe that the EPA does not realize the true value of our system and that it does not need to be compromised on value -- money, water quality, human health, preserving the ecosystem. Save our reservoirs/fully functioning.
Look deeply into CH2MHill - don't grant contracts w/o open bids and transparent RFP projects Decisions made about our water system for drinking should be completely up the people. Focus on delaying to 2016
Maintain flexibility for potential future use as reservoirs. Maintaing historical structures is very very important.
Maintain historical features
Maintain the potential reconnection to our drinking water so at a future date they can be reconnected. I strongly disagree with the options we are now forced to choose from. I am also deeply concerned about the contract process of issuing no RFP and hiring a untrustworthy company with questionable judgement when dealing with water resources (that has paid fines to the EPA) to manage our precious water system. The trust has been broken in the community.
Make it habitat for migrating birds.
Maybe, open them for community canoeing or something. Thanks! :D
More research on possible problems with covered reservoirs specifically radon and other ill health possibilities.
Mt Tabor is a nearly-magical place. A dormant volcano where people gather to play, work out, and make a statement. Flaming Lips videos have been filmed there. Adult soapbox derbies go flying down it every year. Naked bike riders gather there. Keep the magic alive by embracing the park's, and Portland's, quirky culture. Thank you.
Mt Tabor is a priceless, historic landmark in our city. Every effort must be made to preserve and enhance the park. Selling off land for development should never be an option. Closing the nursery should only happen if that land will be transformed for recreation. The city has been snowed into covering these reservoirs in the first place. The entire perceived threat is ridiculous.
Mt Tabor is sacred to me -- please keep it as beautiful and wonderful as it is.
mt. tabor is a beautiful park and should be left as it is. the resivoirs are part of Portland history and should be left as is. I feel that there are people that have monetary reasons to cap the resivoirs and it is just a money game.
Mt. Tabor is one of the best places in Portland and the water adds such calm and peace to the park. Taking out the water would take out so much of the parks spirit. Please keep the reservoirs on Tabor, they are a beautiful Portland legacy. Thank you
Mt. Tabor Park and walking through, up, and around it, is a daily joy. There is history in the parks including the reservoirs filled with drinking water (and soon filled with water for artistic and soul value). What a wonderful park in the midst of Portland to bring one back to nature, history, and health (both mind and body). Let's keep it that way.
Never, ever sell our water infrastructure to private industry.
Once it is gone, it is gone!
Open water creates a relaxing calm.
Oppose the EPA mandate, persue a waiver, don't disconnect the reservoirs.
Option #3 is creative and a great solution. Thank you for pursuing this despite rabid protests.
Our open reservoirs have served us well for over 100 years. Sunlight is the best disinfectent that nature ever created. Work to get an EPA Open Reservoir Waiver like New York and New Jersey are currently negotiating with EPA. Our water supply and our reservoirs are worth fighting for.

Our open reservoirs system has worked wonderfully for as long as they have been built. The natural system of sun and air has kept our water pure and healthy. It is really not necessary to dismantle this system. Please keep our open reservoirs the way they are and let Nature do its job, instead of spending loads of money on constructing a new system that is not even up to par as our current system. Let's spend that money on other things that our City needs, like more funding for the arts, please. Thanks!
Our open reservoirs work. Please leave them as they are. Save us money. Save our safe water.
Our water is a precious resource that brings us health and helps make Portland one of the most livable cities anywhere. Let's keep it that way!
Our water is precious. Please do not endanger it by implementing a design that reflects the Gustafson Plan.
Our water is some of the best in the nation and we need to preserve and protect the land in the Bull Run Watershed.
PDX can reapply for exemption.
People use this park as part of their mental, physical, emotional, and spiritual practices and therapies. To make any extreme change to this park will be at the detriment of many, at a very deep and personal level. Have respect for our community, and leave this oasis as is. Thank you!
Persue a waiver to the LT2 rule ferociously. Defend our water. Address the issue of Joe Glicker and his corporation.
Place some value on the history and aesthetics of the city, not just short term money interests.
Plan #3 would be feasible with private funding but the property taxes and needs for road/systems maintenance and safety improvements need to take precedence.
Plase leave our reservoirs intact & functioning as is.
Please allow the public to participate more in these decisions. Thank you for this survey.
Please attempt another opt out of the covered reservoirs requirements. Open air is fine for Portland. Thank you.
Please avoid privatizing Portland's water supply & department.
Please be respectful of the natural beauty of Mt Tabor. It is the best natural treasure we have in Portland.
Please choose option 1
Please do not allow a small group of people stop the valuable public park enhancements that we now have an opportunity to implement! The majority of the community has been trying for years to implement design improvements that maintain the historic treasures of the Mt Tabor Reservoirs and also allow for improved park use and access. There have been design competitions and public involvement approvals in the past that have stalled again and again. Now is the time to approve funding that is desperately needed to maintain and restore the historic features of Mt Tabor Reservoirs YET find funding that will go further in creating improvements to public use and access that were previously impossible while the reservoirs were being utilized as our water resource/utility.
please do not disconnect the reservoirs! they work and are an important part of our amazing water infrastructure!
Please do not drain the reservoirs without having a plan for the park. This situation needs to be viewed as an *opportunity* to make the park better. (And as much as I like the Gustafson Plan, surely there is a creative solution to re-imagining the reservoirs at a fraction of the cost!)
Please do NOT drain the resevoirs and leave them empty. It would be a terrible eyesore and attract vandals.
Please do not get in bed with private industry!
Please do not privatize our water!

Please do not privatize!
PLEASE do not sell our water supply out to a private corporation! This is a terrible idea.
Please don't cover the reservoirs. It is the type of descision that people will grow to regret. Tabor is an incredible space, and the reservoirs serve the city well. Why change a system that isn't broken?
Please don't destroy what works!
Please don't privatize our water system. Please keep up our beautiful reservoirs.
Please fight for the EPA waiver. Don't force the ratepayers to spend millions of dollars fixing a good water system that works well AND provides such a beautiful and historic part of our heritage.
Please fix the roads before making new park features.
please include ALL of Portland, not just the Mt. Tabor neighborhood
Please keep our historic open reservoirs functioning for the health of all Portlanders!
Please keep the reservoirs filled with water. There is no doubt they look better filled. Keeping them filled is the only way to maintain their historic landmark designation. In addition, NOT disconnecting them guarantees three vital things: That Mt. Tabor park will not be permanently altered and/or temporarily disrupted, costing the least of all options. That the reservoirs can be used as an emergency water system in case of an earthquake or natural disaster, or a failure in the new system (isn't it already cracking?). That the possibility of reservoirs returning to normal use if the federal mandate changes or the city wins a deferral. If we installed a fool proof system to simply shut off the reservoirs rather than removing pipes and trees, it would cost the least amount of money, disrupt the least amount of people, alter the historical structures in the least way possible, and ensure a backup emergency system and make it the easiest to put back online, as the people who own the land have fervently expressed. Logically, it just is the best option.
Please keep the reservoirs filled. They are so beautiful and unique. Best yet, keep them on line.
Please keep the reservoirs filled with water! This park is an oasis in a city that is quickly losing private green spaces and where other public green spaces (such as the Tabor Long Blocks/former nursery site) are at grave risk from unfettered development. The filled reservoirs provide a much-needed place for citizens to engage in quiet reflection and birds to stop for water. Don't pave them over--we need this open space!
Please keep the reservoirs functional.
Please keep the water features in some fashion.
Please keep this beloved park as it is. Thank you.
Please leave the reservoirs connected, filled and maintained. We must fight crony capitalism and corruption in our local politics with no bid contracts to CH2M hill. This is our greatest resource as a community. It must be held and cherished.
Please leave the reservoirs full of natural water!
Please listen to the people's response. We want our reservoirs intact.
Please maintain our pristine water reservoir system.
Please maintain the character and functionality of our Mt Tabor Park.
Please maintain the historic structures as well.
Please make sure that the water to replenish them is NOT a budget item every year. Make sure that the mioney is available NO MATTER WHAT happens with the budget process.
Please make sure this park remains a free resource to the hundreds on daily users. It's an important community recreation resource.
Please PLEASE do not do option #2. It would turn a lovely functional reservoir into an eyesore. I am a property owner in the neighborhood.

please please do the right thing. a lot of people are counting on you. we are watching. thank you!
Please preserve our resivours and maintain them...
Please remember that My Tabor Park has a historic designation and to honor that distinction, water must remain in the reservoirs.
Please see the official comments written by Stephanie Stewart and submitted by the MTNA on behalf of the entire neighborhood for details on what should happen with our city's wonderful Mt. Tabor park. These comments were unanimously supported by the MTNA at our last neighborhood meeting. The Olmsted Brother's wonderful Mt. Tabor design should not be tarnished by the Portland Water Bureau's current plan.
Please, please PLEASE, do not let whoever is trying to force this disconnect these reservoirs. We will not allow it to happen. We will stand by you with our lives if you have the courage to stand up to this rude corporate imposition, because there are many of us who know what is really going on and that this is about so much more than a few reservoirs being disconnected. So if you don't stand up for us and stop this, hopefully we don't have to risk our lives stopping them, but we will. So our children can have clean, healthy, affordable water. Thank you.
Portland has long been an innovator and been bold in coming up with unique solutions to global issues. I think the reservoirs should be retained and continued to be managed in this very Portland tradition!
Portland has some of the best drinking water in the country. This is owed both to our water source, the Bull Run Watershed, and our open air reservoirs. Open air reservoirs allow for oxygenation, natural sunlight disinfection, and harmlessly venting toxic and carcinogenic gases. Burying those reservoirs, or containing them, does not necessarily reduce the risk for contamination. It eliminates the natural water processes that sunlight and air provide, and underground tanks open up other risks that would have to be treated chemically. The concern over cryptosporidium seems blown out of proportion, given that our city has a historically clean track record regarding cryptosporidium; Portland’s open reservoirs have never had a serious outbreak of microbial or chemical health illness since they were built over 100 years ago. Portland’s open air reservoirs efficiently remove toxic and carcinogenic chemicals. Covered reservoirs cannot, and require strong chemicals such as radon, chloroform and other disinfection chemicals. In addition, the pools of water are an attractive and central focal feature at the park, they are part of what make Mt Tabor beautiful. Draining those reservoirs would change the aesthetic significantly, from pleasant to depressing. The Gustafson plan is visually pleasing, but not worth it at the cost of the quality of our drinking water, or the tax increases/city spending/ongoing maintenance costs it would take to implement it. We can preserve our drinking water, or we can waste water. If the reservoirs were drained, then we have to look at the options for repurposing their space. Obviously, leaving them as huge, empty concrete basins is an eyesore. The Gustafson Plan, proposes building a pedestrian entrance on 60th Ave and a water amusement park that will bring hundreds of new users to the park every day. With only one bus line that runs past (71), and very limited parking, how will all these new users access the park? Montgomery Watson Harza estimated that maintenance for what goes on top, and the costs of cleaning and maintaining the buried tanks will be equivalent to current maintenance of the open reservoir. Adding 3 waterfalls, a wading water table, a water garden, a new pedestrian entrance and path and maintaining them as proposed will obviously make those estimated costs much greater. But most importantly, I don't want my beautiful, calm natural park to become a crowded water park "feature". Please maintain it as a serene place to walk, rest, and enjoy wildlife and nature. Please do not bastardize it by turning it into a skate park, an ice skating rink, or a waterpark. There are so many other options for this type of entertainment in our city, but fewer enticing natural urban areas on the East Side.
Portland has some of the best drinking water in the country. Please don't sacrifice it for short-sighted and profit-driven corporate interests.
Portland has some of the cleanest drinking water in the world. The reservoirs are in good working order and the system does not need to be fixed or changed at all. I would prefer that they do nothing and the city apply for an exemption to a flawed federal law. Mt. Tabor park is also an important bird refuge and everything should be done to preserve it as a quiet sanctuary for this purpose, in addition to preserving these well engineered drinking water reservoirs that purify our water with exposure to sunlight every day.

Portland is my home. One of the reasons I am so proud to say that is because of our water sources and how hard our people work to protect them. I am a very intimate relationship with the water in this area. I am an avid kayaker, kayak instructor & outdoor educator and I want to see our local government care for this environment (which includes it's people) as much as they would care for their own bodies, minds and loved ones. Please know that there are far more people who care about this than people who don't.
Portland will stand with you when you stand up to the federal mandate to cover/disconnect. Buy us more time! Wait for the EPA decision! Thank you for using Resolutions NW facilitation. They should facilitate every public meeting.
Portland's open air reservoirs are a source of local pride and I would be deeply saddened to see Mt. Tabor's lost.
Post rule to prevent skate boarders from "bombing" down the closed roads. I've had too many close calls. Enforce the darn Off Leash Laws!!!!!
Preferable leave them connected to our water source.
Present the science. Get the waiver.
Priorities: Community Health. Simple and natural always beats over technical and corporate. No one lining pockets.
Promote more disc golf courses, and increase land use in areas where inter urban areas have succumbed to homeless patron 'camping'.
Q: What would it cost to creconnect the reservoirs?
Quit wasting taxpayer money on pork-barrel schemes to benefit city hall cronies.
really like the connection with the water shown in the gustafson plan. would like to implement more social gathering; cafe (possible at the building at the very top with a cantilevered deck with a view of downtown), larger performance space, singletrack mountain bike/running/hiking trails, removal of invasives and replanting entire park, learning center.
Regulations are for the good of public health. When a regulation actually conflicts with public health, it should be an unenforceable regulation. We elect our City Council members to advocate FOR US. Nobody WANTS these reservoirs discontinued, including the City Council! Stand up for common sense! Stand up for public health! Stand up for not wasting money pointlessly! Stand up for Portland!
reservoirs are on the historical register, I don't know why there is even a question about keeping them the way they are!
Resolutions NW did an excellent job facilitating this meeting. I would also like to suggest that the city appoint someone (perhaps a volunteer) to communicate regularly with the public regarding this issue. I think that people are angry about what they perceive as a lack of transparency regarding the process of the water bureau. Perhaps if we had more information about how Water Bureau decisions are made people would be less combative.
Revoke the municipal resolution and self imposed rush. Please also follow the advice of the Reed Smith legal opinion, and make the EPA prove in court the LT2 is justified. Also please challenge the Oregon Health Authority for putting anti-open-reservoir provisions in Oregon's water rules without the permission of (and against the expressed intent of) the Oregon Legislature. Let Portland's water system continue to be a gleaming example of how it used to be and how it could assuredly continue under proper, locally supported management.
Since I selected concept 2, I would like to see in the winter months when the temperature is cold to fill half of reservoir 6 with six inches of water to ice skate, similar to the Westmorland casting pond.
since our new failing leaky underground water reservoir is not gravity fed, when disaster happens we probably won't be getting water. so please maintain the function of the current open reservoir just in case. We like to have water in our neighborhood.

Since the decision to disconnect the park has shown signs of neglect class of security etc. Thieves move graffitti and people sleeping and camping there. Mt. Tabor is a city that is sure, and Mt. tabor shouldn't be dismantled or disconnected beacuse it's no longer our drinking water.
Som eof the walk ways around the reservoirs need repair. Saw about "selling' personalized pavers like at Pioneer Square and at the playground at Mt. Labor park? So many people love the Park and would also love to help preserve it and having oned name on a paved would be a win win.
Some amount of water should remain in the reservoirs.....please keep the illusion that the reservoirs continue to be what their historic designation said.
Some positive thinking in retaining the open reservoirs in existence. They are we degrading the Park, spending millions of dollars for an unnecessary procedure?!
Spending millions of dollars burying our water infrastructure is counterproductive, will lead to poor water quality (no sunlight, radon), and is a MASSIVE WASTE OF MONEY. The city council and state and federal representatives and senators should together be actively appealing the bogus cryptosporidium concern about out water. It doesn't make sense to spend huge amounts of money to fix a problem that doesn't exist. Take a cue from New York on this issue.
Stop paying money out to Joe Glicker and CH2MHill for things we don't need, and pursue a waiver on the behalf of our water and our health.
Sunlight is a powerful disinfectant. Enclosing the entire system and adding chemicals is a horrible idea. Portland water used to taste great, varying with the seasons. It has gotten progressively worse and the city's plans will surely further ruin Portland and its water. The city should take every step to fight the removal of the reservoirs - it seems awfully convenient to claim the EPA wants them covered when the city had already tried to cover them. City officials need to listen to the people, especially long-term residents.
Surely there is a hero somewhere down at City Hall who will help us save our historic, functioning, sustainable reservoirs.
Thank you for asking for community input.
Thank you for considering community input in this decision! Mt. Tabor is a spectacular park and a true jewel in our beautiful city.
Thank you for listening to us Amanda Fritz and Nick Fish. Please act in our behalf accordingly to our wishes. I don't wish to see the reservoirs disconnected in the first place. I would like to see Resolutions NW continue to facilitate meeting with citizens and city council, excellent job! Thank you for bringing them here. Considering there's a ruling about this resolution up far debate in federal court. Please seek and implement a delay in diconnection. I don't understood the haste, please seek to give us all more time.
Thank you for the mediation grouip--they liasoned extremely tactfully between the irrate protesters and the uncomfortable taciturn commissioners. Very appreciated.
Thank you very much for being great stewards of our lovely parks and green spaces!!!
Thank you! Mt Tabor is a big reason that I chose this location to live!! Thank you for doing your best to continue to maintain the reservoirs as they were originally intended to be!!
Thank you. This is such a great opportunity to showcase Portland and one if it's truly great assets. Let's keep the Rose city the jewel of the Pacific Northwest.
Thanks for the big water bills. Also the * for the required field indicator doesn't tell responders which field is required. Also why is this still up if the deadline was Dec 1?
Thanks for considering the public's input!
Thanks for having poll and for dealing with such a difficult issue! I am glad to get our water into closed systems!

That means leaving them as they are, full of delicious Bull Run water, safe from radon, ecoli, salmonella, and cryptosporidium. Stand up to EPA, and ask for whatever we need to hold off until 2016 when their safety can be properly reviewed. As elected officials, you work FOR THE PUBLIC that elected you, and we want the reservoirs connected and in good condition. STOP doing business with CH2MHill. Abandon spending more unnecessary money building anything else we do not need, investigate the related corruption within the OHA, and FIGHT for keeping our water clean, safe and publicly owned. It's the right thing to do.

That whenever any form of government becomes destructive of these ends, it's the right of the people to alter or to abolish it and to institute new Governement!

The calm water feature of the reservoirs provides a therapeutic space in the park for our community. Time spent near trees and water - these important elements of the natural world - have been proven through studies (ACS Journal) to have a significant effect on the brain resulting in increased levels of happiness and reduced blood pressure. Throughout each week, I need it, you need it, they need it, we all need it.

The City could use the waterbag technology to use the reservoirs and protect the water. The bags would be connected to the in and out pipes, and the water would not be open to the air in the reservoir. The bags could be covered with water to maintain the look of the reservoirs.
http://en.wikipedia.org/wiki/Flexible_barge

The City is doing a poor job on this project. A lot of us, active with Mt Tabor, are just discovering this survey. We pay a lot in taxes and expect a higher level of integrity from Portland.

The city must show the public true transparency in the bidding and awarding of such major public outlays. My family water/sewer bill has quadrupled in the last 15 years. I was more than willing to pay for the big pipe to cut pollution. I am not willing to sacrifice water quality and waste perfectly working water infrastructure in order to line the pockets of contractors and revolving-door bureaucrats.

The City of Portland's reservoir system needs to remain as it is, as it was originally designed to function. Our water quality is more than suitable, and the contaminants that would be introduced by the additional requirements of contained water bring multiple health and economic disadvantages. Many of us have chosen to live here because of the open source Bull Run water as it is. We face a much greater threat from old bridges and schools -- I hope the City would place all emphasis on bridges and schools and leave our water as it is, please. The historic nature of this gravity fed system design is highly functional and deserves to be protected. Lay this issue aside for now, please. In time, I believe it shall become clear that covering the reservoirs would have been an unnecessary folly.

The city should not cater to the demands of people. Who don't want the city to comply with the SDWA of 1974, as amended 1996. Let's stop having meetings at their insistance since the USEPA isn't going to change any part of the 172ESWTR until after 12/31/2016. They won't have their 3rd meeting on the LT2ESWTR until the end of 2015. (I asked the USEPA myself.) USEPA's review of LT2ESWTR will end by 12/31/2016.

The city should push back the disconnection of the reservoirs and investigate claims of corruption in the awarding of contracts and rule making. Former employees of the PWB has unduly influenced the process and, without merit, cost the city hundreds of millions of dollars.

The city's acquiescence to this unnecessary federal overreach has been about the most un-Portland approach to a public policy issue I have ever observed. Now, living with the legacy of its own refusal to stand up for what is right, the least Portland can do is preserve the reservoirs in their historic context.

The community at large DOES NOT support disconnection of Portland's open reservoirs, and I am part of that community. These facilities are a treasure and MUST be maintained--that's what we pay you for.

The community DOES NOT support disconnection of Portland's open reservoirs.

The current system is not broken nor in need of replacement. I see the current system as having an immense amount of embodied energy and being an adequate if not better performer then it's apparently imminent, flawed, and terribly expensive and ill-vetted replacement. I highly value Mount Tabor Park and it's mingling of historical functional structure and natural beauty. I am vehemently against what clearly

appears to be a conflict of interest among decision-makers and contractor winners. I praise, support, and vote for politicians in position to alter courses that are headed for disaster, even if it means putting their jobs at risk or questioning a bad legal directive. Porltand should not be paying consultants who are also executives of the corporations receiving all our monumental sized, closed-door, no-bid, no-cap contracts. The EPA is going to change it's LT2 Rule in July 2016. Why bullishly push forward with this project? Follow the money…... Our City Commissioners have a chance to be our hero's - to stand up for the good of the Commnowealth rather than be pawns of corporate cronyism. Please be our heroes!! Be brave!!! I truly hope to continue to enjoy the park, it's historic infrastructure, and it's glorious natural beauty for decades to come. And I hope to drink healthy, wonderful water from our pristine, unique Bull Run Watershed. I hope our children may do the same as well…..
The current system is not broken nor in need of replacement. I see the current system as having an immense amount of embodied energy and being an adequate if not better performer then it's apparently imminent, flawed, and terribly expensive and ill-vetted replacement. I highly value Mount Tabor Park and it's mingling of historical functional structure and natural beauty. I am vehemently against what clearly appears to be a conflict of interest among decision-makers and contractor winners. I praise, support, and vote for politicians in position to alter courses that are headed for disaster, even if it means putting their jobs at risk or questioning a bad legal directive. Porltand should not be paying consultants who are also executives of the corporations receiving all our monumental sized, closed-door, no-bid, no-cap contracts. The EPA is going to change it's LT2 Rule in July 2016. Why bullishly push forward with this project? Follow the money…... Our City Commissioners have a chance to be our hero's - to stand up for the good of the Commnowealth rather than be pawns of corporate cronyism. Please be our heroes!! Be brave!!! I truly hope to continue to enjoy the park, it's historic infrastructure, and it's glorious natural beauty for decades to come. And I hope to drink healthy, wonderful water from our pristine, unique Bull Run Watershed. I hope our children may do the same as well…..
The element of water is critical to the unique sense of place of Mt. Tabor Park.
The filled reservoirs are the way to go. They add beauty and peace to the park. We need to be around nature and water. We also had an idea of turning one of them, maybe the small one at the south side of the park, into an outdoor winter skating rink. It could be quite a tourist attraction and money maker. Maybe just for December and January. Of course skaters would have to hike in and maybe that would limit the number of visitors.
The Gustafson plan is a giant expensive folly that would cost millions and forever change the nature of the park. Why do that? Keeping water in the reservoirs is absolutely the least expensive plan and one that is least disruptive to the character of the park. The park is deeply loved as it is, and is on the Register of Historic Places as it is. Keeping some water in the reservoirs, periodically cleaning the basins, and maintaining the sidewalks, is the frugal win-win solution that maintains our connection to this piece of our history and maintains our connection to our deeply loved viewscapes and parkland.
The Gustafson Plan is wonderful, and I wish the funds were easily available. However, for the present please at least keep the reservoirs full and maintained. Since coming to Portland 15 years ago, Mt. Tabor and it's reservoirs have been one of my favorite places. Though I now live on the west side, I still make frequent trips to Mt. Tabor. Whenever I go there I always see families enjoying the ambience and views over the water of the reservoirs. It is really one of this city's treasures.
The impact of having open water, in a historic setting is important to maintain.
The lack of respect for the public and disregard for public input is disturbing. The current city council is held in very low regard with the general public, which is a shame. Respect has to be earned. If I were your teacher I would give you a IID- Only because of Amanda, otherwise, y'all would be getting an F. And it's "mode" of transportation, not "more." Super LAME!
The last thing I think should be done is to leave them empty. Water is something that renews people and makes them happy; empty concrete will make likely decrease use or encourage uses you don't want. Please consider having water there no matter what. Thank you!
The most valuable feature of my neighborhood is the peace and beauty provided by the reservoirs during my 2x or 3x weekly walk up Mt. Tabor.

The Olmstead family developed the parks with the water feature in mind. The history integrity of the reservoirs must be maintained.
The people of Portland LOVES Mt. Tabor & the Reservoirs. Preserve them. Thanks.
The recreational redesign is a great idea, but the cost is prohibitive. I'd rather have usable water for a fraction of that price.
The reservoir water can be used to emergencies and fires. Please do not add a bunch of chemicals to our water.
The reservoirs are not only beautiful, they are functional and make perfect sense. Closed water is contaminated water. If oxygen cannot get to the water supply, it will stagnate. Please do the intelligent thing and stop spending millions and millions of dollars on archaic technology that merely lines pockets of the few and takes from the good citizens of Portland who are scrambling to pay their land taxes and keep their homes, I might add, pay their rather Huge water bills.
The reservoirs are a historic landmark. If we can reconnect, what would the reconnect cost?
The reservoirs are a treasure. I run around them daily and picnic with my family near them in the warm months. I can't imagine Mt. Tabor without them. It would be ruined.
The reservoirs are great piece of functional history. I like to bring out of town guests up to the park and talk about how the city's history.
The reservoirs are one of the unique and beautiful aspects of the park. My first preference would be to continue to use them for the water supply. Given this is not a possibility, enhancing them would be great. My only concern with the Gustafson plan is that it may make detract from the natural beauty. It's hard to tell off drawings. Thank you for asking out opinion!
The Reservoirs are part of Portland's history and have been officially recognized as such. I urge the City of Portland to maintain their water and fountains.
The reservoirs bring me and my family so much joy and peace. They also bring us such amazing, clean, healthy water! Please keep them open, connected, and functioning! Thank you!
The reservoirs in this park make it one of Portland's most beautiful, and the water is perfectly safe and clean. It would be a real bummer to see the beauty and utility of great drinking water be cut off and shut down because of a one-size-fits-all government mandate.
The reservoirs should be filled and remain open and not covered. I believe that that it is important to utilize the great resources that we have already in existence here in Portland.
The reservoirs should not be disconnected. 2 adjacent valves, without the "required" 10' air gap in each of the connecting lines, would be sufficient to "disconnect" from the water source. The construction of the covered storage at Powell Butte, a major waste of our money, should be sufficient for the EPA edict. What does that make the system, 95% compliant? The EPA is not requiring the cities of Milwaukee WI. or Chicago, IL. to cover Lake Michigan, the source and reservoir for about 10 million people. Portland has not pushed back hard enough to preserve the water supply system that has proven to be successful for almost 100 years. This has been a major boondoggle. Don't mess it up further.
The reservoirs were functioning perfectly. Leave them alone and wait for the federal government to alter it's ruling in 2015/16. Our wter system is unique and well thought out and precious to its residents.
The risk for problems with our water causing illness will increase substantially now with our water being stored in tanks!
The science says that our water quality will be threatened by changing to underground tanks. Who would want that? Water is so basic to life! And there is still time to make sure that we maintain the current reservoir system and prevent disconnection.
The Tabor reservoirs are a Portland landmark. Please keep them.
The true wishes of the community are to keep the reservoirs intact, as they are.
The water in the reservoirs supports the enviorment and butterflies.

There are clearly questions about who is profiting from this deal - and it ain't the taxpayer!!!!!!! If NYC doesn't have to close their reservoir, why do we?
There are no details on the Gustafson Plan available anywhere on your website.
There is nothing wrong with our water system. Please stop being corporate pawns and preserve and use our open reservoirs. The LT2 rule is up for revision and we need to put our efforts there - not in underproven industrial systems that many argue, will degrade our water quality.
There is nothing wrong with the way the reservoirs have been used as a city water supply. They should be maintained and not drained. It is absurd to allow whatever shadowy forces that wish to drain the reservoirs do just that. There is no public benefit to draining them,only private financial gain. Furthermore, covering the reservoirs is not an acceptable measure as that would allow radon and some harmful water treatment chemicals that would otherwise evaporate to remain in our DRINKING WATER.
There must be more options if other cities have received variances and don't have to disconnect their reservoirs.
There was no obvious way to see more detail on the Gustafson Plan.
These Mt Tabor reservoirs are historic and have been used without problems for over 100 years. The Powell Butte reservoirs are nothing but problems thus far. Anyone with a TV can see the loss of water in the southwest, it makes the most sense to hold on to whatever water storage we have. There is no argument to removing this historic and needed water storage.. James Parsons
these options do not include estimated or ball park estimates for some plans, so seems costly, aka boondoggle. low cost options are appropriate when so many portlanders are in hardship due to government and banker systemic economic jiggering/bailout/debt/ruined lives and families and home residences. lowest cost safe option , long term, low maintenance is common sense. wbc
These reservoirs a true city treasure and their historic significance should be respected. If anything I would love to see the Olmstead design for the park finished as originally intended. Also, in the event of a severe earthquake the reservoirs might serve as a critical backup water supply.
These reservoirs belong as functioning members of our drinking water system, and Portland City Council should be embarrassed by what they've allowed to happen.
These reservoirs do not need to be disconnected. If the will of the people is ignored and they are disconnected, they must be done in a way where they could be reconnected in the future.
They are really not real options. Since #3 will never be paid for. # 2 means ultimately destroying the resevoirs. There's only one option--#1.
They're beautiful, they work, it's an historic part of our community. Why mess with it?
Think win win....not just accomplishing one objective.
This is a great opportunity to invest in one of Portland's best parks. Let's seize the moment and make Mt. tabor the crown jewel of the city parks system for the twenty first century.
This is important~ This is what the people want, clean water!
This is the most important issue - I've ever seen raised here & I can't believe as a City with our WATER THAT IS WORKING SO WELL our leaders are laying down and saying there is nothing we can do. SHAME ON YOU. HOLD OUT...don't potentially ruin our HOLY WATER & spend OUR MONEY. Also the Contractor who can do this job tends to go over budget I hear...like more over budget than original estimates...follow the $ - this seems just criminal on so many levels. YOU HAVE NOT RIGHT TO VIOLATE the most important H2O I put in my body and my son's body everyday. Native Portland / Oregonian - Heidi Nelson
This meeting was poorly planned. You should have know this would happen.
This meeting was very stressful. "Passion" doesn't require rudeness. I wish there could be more civility, though it did improve. I feel strongly that we should continue to use the reservoirs for our drinking water.

This park is a part of what makes Portland such an amazing place. The construction will do colossal damage to the area, in which past and future generations have been lucky enough to experience. This would be a step in the wrong direction for such an amazing city which prides itself on being "green". Let's not conform like the rest of the nation. Let us keep pursuing environmental friendly practices.
This process was poor on public engagement and lacks guiding principles and accountability to public preference, public interest, and fiscal prudence.
This project seems like cronyism. Is anything in this site incorrect, and if so what?: http://whoisjoeglicker.wordpress.com/
Until we know for sure that we have to cover the reservoirs we shouldn't implement any multi-million dollar plans to switch things around. As a homeowner that lives a mile or so from Mt. Tabor this park is very important to me and so is the cost & quality of my water. I'm very concerned how the costs of these EXPENSIVE plans would be passed along to us homeowners.
Very disappointed.
Water is a basic human right and should never be privatized!
We are fortunate to have direct access to very clean and fresh water, we have simple systems in place which are effective and should be maintained. Visitors to mt tabor enjoy and are respectful of reservoirs, and are proud to see their drinking water.
We are planning to leave Portland as we can not live in a city that will not provide clean affordable water.
We are very distressed that Portland is not fighting to preserve this asset. The reservoirs and water has served this city for decades helping it thrive. It is disgraceful to do otherwise.
We have the most amazing water. Please leave it alone and allow us to drink it. Thank you!
We love our park and our water system - please preserve.
We love our water pure and keep it the way it is.
We need more time! Delay the disconnect! Water is sacred. It's our life. The reservoir is ideal! Give us more time!
We need to pursue a waiver until the fed gov't sues us and or a public vote can happen.
We still need that LT2 waiver.
We would like more advocacy to fight for a deferral from the EPA. Stupid decisions by Bureaucrats infuriate us.
What a mess. Why wasn't a waiver obtained? >>> Corruption, is the answer.
What about open water swimming? Charge and maintain. Then, if they change their minds, we can have our reservoirs open again.
What are ways the city gov. of Portland can override the statefed regulations that got to the place of disconnecting the reservoirs?
Whatever happens long term, robust bicycle access needs to be constructed so Mount Tabor is not overrun with automobiles and is accessible for ALL residents, from whatever direction. A north-South path past the eastern side, or above, the lowest reservoir could be built connecting Harrison with Salmon, Yamhill and Belmost just east of the retirement facility to connect up to 62nd that will become a greenway to the 60th street MAX station. This could be coupled with multi-use-path improvements around the perimeter of the park on the south and north-east side to connection up disparate neighborhoods in an overall active transportation network.
While studying this issue, I have learned open reservoirs are healthy because of oxygenation and sunlight. I think that decommissioning the reservoirs would be a big mistake in case we choose to put them to use in future years.
Why are we wasting millions of dollars on this project. Fight the EPA mandate as other cities have.

Why are you wasting taxpayer money to combat a problem that Portland DOES NOT HAVE!!! I'd like to see you challenge the OHA for its unauthorized insertion of anti-open reservoir language into Oregon Administrative Rules against the Legislature's intent, and challenge the EPA to prove that reservoir coverage/decommissioning is necessary. This looks suspiciously like cronyism to me. I'm not a fan.		
Why can't the reservoirs be used for pretreatment storage? Why does the water have to be drained to the sewer system?		
Why give into fear and spend taxpayer money to change a system that has worked just fine for years..... thousands of little kids have thrown things in there, people have peed in there and wildlife peed and even died it there. Nothing to drastic ever happens the.community still thrives and grows!		
You could make it easier to find details about the three options you listed above. I was able to track down information, but #1 in particular is unclear as to whether you mean to 'fill the reservoirs' with dirt or with water - and if with water, would that still be connected to the drinking water distribution system.		
You did not say what you wish to fil the reservoirs with in option 1. I am assuming that you mean fil them with WATER vs. SOIL. I wish for you to fill them with WATER as they are now! This is about preserving the control of a life giving substance in the hands of the people where it can be viewed used and enjoyed. I do not wish to have water from tanks under ground pumped with chemicals. Cleaning methods should be as natural as possible and use as few chemicals as possible. If the monied powers have bought this system so much that the will of the people who live in an area and use the resources is not longer the deciding factor in how to use resources, then leave the water there at least, for us to enjoy the view at least. You should also tell us what Gustafsons's plan is before making it an option.		
You mention the Gustafson Plan but don't provide a link to it. You say it's on the "previous page" but what happens if I just got a link to this page, how am I supposed to know what the previous page is? If you're going to use the web for feedback, design your survey so the information needed to complete it is easy to reach.		
You need to be more frugal with taxpayer money, and smarter in your decision making process. You don't seem to do independent research, but rather rely on those who have something to gain by convincing you we need to upgrade, when we don't.		
Total	**411**	
Please tell us about yourself!		
I am age		
35-44	287	29.7%
45-59	285	29.5%
60-79	189	19.6%
25-34	154	15.9%
	24	2.5%
16-24	17	1.8%
80 & over	9	0.9%
15 & under	1	0.1%
Total	**966**	
I am		
female	527	54.6%
male	410	42.4%
	29	3.0%

Total	**966**	
Regarding residence, I		
own	655	67.8%
rent	272	28.2%
	39	4.0%
Total	**966**	
I identify as: (please check all that apply)		
Latino		
No	939	97.2%
Yes	27	2.8%
Total	**966**	
African American/Black		
No	956	99.0%
Yes	10	1.0%
Total	**966**	
Asian/SE Asian		
No	943	97.6%
Yes	23	2.4%
Total	**966**	
Pacific Islander		
No	960	99.4%
Yes	6	0.6%
Total	**966**	
Native American/Alaska Native		
No	944	97.7%
Yes	22	2.3%
Total	**966**	
Caucasian/White		
Yes	770	79.7%
No	196	20.3%
Total	**966**	
Other		
No	891	92.2%
Yes	75	7.8%
Total	**966**	

My most frequently used more of transportation is:		
car	526	54.5%
bike	163	16.9%
foot	161	16.7%
bus	66	6.8%
	50	5.2%
Total	**966**	
Name		
	302	31.3%
Jack Wells	2	0.2%
Ansula Press	2	0.2%
Charles Rooney	2	0.2%
Dan Berger	2	0.2%
Ellen Simmons	2	0.2%
john	1	0.1%
julie	2	0.2%
Katherine	2	0.2%
Kathryn Notson	2	0.2%
Maggie Zadikov	2	0.2%
Marlin Saner	2	0.2%
Matthew Stanbro	2	0.2%
Megan Bradley	2	0.2%
Stan Hoffman	2	0.2%
Stephen Pew	2	0.2%
Steve Bennett	2	0.2%
Tia Zilberstein	2	0.2%
Wayne Dietz	2	0.2%
Aabra Jaggard	1	0.1%
Alan Mekel	1	0.1%
Alan P. Scott	1	0.1%
Albert Kaufman	1	0.1%
Albyn Jones	1	0.1%
Alessandra Rueegger	1	0.1%
Alex	1	0.1%
alex connor	1	0.1%
Alexander Aris	1	0.1%
Alexandra Jackiw	1	0.1%
Alexandra MacDonald	1	0.1%

Alexis Reale	1	0.1%
Alisha Sullivan	1	0.1%
Alissa Keny-Guyer	1	0.1%
Allison Wibby	1	0.1%
Amanda Brazel	1	0.1%
Amma Li	1	0.1%
Amy Angell	1	0.1%
Amy Baker	1	0.1%
amy ciesielka	1	0.1%
Amy Hall	1	0.1%
Amy Hatfield	1	0.1%
amy lennon	1	0.1%
Amy Lynn Gray	1	0.1%
Amy Miner	1	0.1%
Ana DeCastro	1	0.1%
Andrew Hormann	1	0.1%
Andrew Wilkins	1	0.1%
Andrew Ziegwied	1	0.1%
Andy Swanson	1	0.1%
Angela de Roos	1	0.1%
Ann Hubard	1	0.1%
Anna David	1	0.1%
Anna Fritz	1	0.1%
Anna Giedwoyn	1	0.1%
Anne Newkirk Niven	1	0.1%
ANNELISE KELLY	1	0.1%
annie	1	0.1%
Anthony Foster	1	0.1%
Antonio Matic	1	0.1%
April Parker	1	0.1%
April Robbins	1	0.1%
Ashanti Hall	1	0.1%
Asher Fulero	1	0.1%
Ashley	1	0.1%
Audrey Wang	1	0.1%
Audrey White	1	0.1%
Augustus Keala Young	1	0.1%
Austin	1	0.1%

Austin Kmetovic	1	0.1%
Avis J. McHugh	1	0.1%
B J Starr	1	0.1%
B. F. Smoody	1	0.1%
Barara Traver	1	0.1%
Beau Russell	1	0.1%
Ben Carter	1	0.1%
Ben Nieves	1	0.1%
ben rasche	1	0.1%
Ben Waisanen	1	0.1%
Benjamin Davenport	1	0.1%
Bertha Guptill	1	0.1%
Beth Paxson	1	0.1%
Betsy Salter	1	0.1%
Betsy Zucker	1	0.1%
Betty Mayther	1	0.1%
Betty Puckett	1	0.1%
Bobi Blue	1	0.1%
Bon McNery	1	0.1%
bonita davis	1	0.1%
Bonnie Barta	1	0.1%
Brad Mosher	1	0.1%
Brad Yazzolino	1	0.1%
Brandy Lentz	1	0.1%
Brenda Purvis	1	0.1%
Brett Gillean	1	0.1%
Brian Caplener	1	0.1%
Brian Maher	1	0.1%
brian mitchell	1	0.1%
Brian Scrivner	1	0.1%
Brianne Sabin	1	0.1%
Brittany Bennett	1	0.1%
Brittany Powell Parich	1	0.1%
Brook Thompson	1	0.1%
Bryan	1	0.1%
Bryan Sebok	1	0.1%
Caglan Baler	1	0.1%
Caitlin Davis	1	0.1%

Caran Goodall	1	0.1%
Carol Adler	1	0.1%
Carol Lane	1	0.1%
Carole Scholl	1	0.1%
Carri munn	1	0.1%
Carrie Lacina	1	0.1%
Carrie Larson	1	0.1%
Carson Lattimore	1	0.1%
Casey	1	0.1%
Cathy Kuehel	1	0.1%
Cathy Kuehnl	1	0.1%
Celeste Summers	1	0.1%
Celina Flores	1	0.1%
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Charlie Cavallo	1	0.1%
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Cheyenne Sheehan	1	0.1%
Chloe idle	1	0.1%
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Christina Shock	1	0.1%
Christine Kosonen	1	0.1%
Christine Yun	1	0.1%
Christy Brown	1	0.1%
cindy gleason	1	0.1%
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Claire kucera	1	0.1%
Clark Kelley	1	0.1%
Clay Hert	1	0.1%
clayton peirce	1	0.1%
Cliff Heaberlin	1	0.1%
cliff marhoefer	1	0.1%
Cliff Rees	1	0.1%
Colleen Cash	1	0.1%
Connie Luckenbaugh	1	0.1%
cora Coronel	1	0.1%
Courtney Brooks	1	0.1%

Courtney Scott	1	0.1%
craig Brandis	1	0.1%
Craig Opfer	1	0.1%
cynthia rosene	1	0.1%
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Kaya	1	0.1%
Keesha Wallace	1	0.1%
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Kelley Tom	1	0.1%
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Kendra Wenzel	1	0.1%
Keni Sue Klein	1	0.1%
Kenric Ashe	1	0.1%
Keri Roberts	1	0.1%
Kevin Levy	1	0.1%
kevin takalo	1	0.1%
Kevin Woodruff	1	0.1%
Kim Lakin	1	0.1%
Kimberly Kaminski	1	0.1%
Kirk deFord	1	0.1%
Kristen A Curry	1	0.1%
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Kundalini R Bennett	1	0.1%
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Kyle McTeague	1	0.1%
L Buch	1	0.1%
Larry Clark	1	0.1%
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Larry Dudewall	1	0.1%
Larry Venaska	1	0.1%
Laura Bender	1	0.1%
Laura Bright	1	0.1%
Laura Mason	1	0.1%
Laurel Crissman	1	0.1%
Lauren	1	0.1%
Lauren Moreno	1	0.1%
Laurie	1	0.1%
Laurie Sonnenfeld	1	0.1%
Lee Kurtz	1	0.1%
Leslie Chester	1	0.1%
Leslie Rose	1	0.1%

Lia Nagase	1	0.1%
Linda Sheeley	1	0.1%
Lindsay Tallon	1	0.1%
Lisa	1	0.1%
Lisa Bell	1	0.1%
Lisa Degrace	1	0.1%
Lisa Olivas	1	0.1%
Lisa Taylor	1	0.1%
Liz McCann	1	0.1%
lloyd Lemmermann	1	0.1%
Lora Britt	1	0.1%
Loretta Callahan	1	0.1%
Louisa	1	0.1%
Louise Gray	1	0.1%
Luke Dolkas	1	0.1%
Lurelle Robbins	1	0.1%
Lynn Feinstein	1	0.1%
lynn merrick	1	0.1%
Lynne Halvorson	1	0.1%
M	1	0.1%
m becka	1	0.1%
MacKenzie Stout	1	0.1%
Maia. Godet	1	0.1%
Mandy L. Kruger	1	0.1%
Mara Cogswell	1	0.1%
Marc LaPine	1	0.1%
Mariah Jochai	1	0.1%
Mario HAro	1	0.1%
Marisa Kula Mercer	1	0.1%
Marisha Auerbach	1	0.1%
Marjorie Kinney	1	0.1%
Mark	1	0.1%
Mark Colman	1	0.1%
Mark Owen	1	0.1%
Mark Williams	1	0.1%
Martha	1	0.1%
Martha Mitchell	1	0.1%
Martrese White	1	0.1%

Mary Ann Schwab, Community Advocate	1	0.1%
Mary Kinwick	1	0.1%
Mary McAteer	1	0.1%
Mary Pleier	1	0.1%
Mary Saunders	1	0.1%
MaryJo Andersen	1	0.1%
MAtt Butler	1	0.1%
Matt Gordon	1	0.1%
McKenzie Leedom	1	0.1%
meadow goldman	1	0.1%
Meera Hays	1	0.1%
Megan Gibb	1	0.1%
Megan Whisnand	1	0.1%
Melissa Gordon-Magnus	1	0.1%
Melissa Pancurak	1	0.1%
Melissa Robertson	1	0.1%
Melissa Sanborn	1	0.1%
Melnaie Rios	1	0.1%
Meredith Hachemeister	1	0.1%
Michael	1	0.1%
Michael Molinaro	1	0.1%
Michael R Vogt	1	0.1%
Michael Snyder	1	0.1%
Michael SPATZEK	1	0.1%
Michele Gila	1	0.1%
Michele Glazer	1	0.1%
Michele Loew	1	0.1%
Midge Pierce	1	0.1%
Mike	1	0.1%
Mindy Fitch	1	0.1%
Miriam Berman	1	0.1%
Mollie Stratton	1	0.1%
Naga Nataka	1	0.1%
Nancy Coscione	1	0.1%
Nancy Newell	1	0.1%
Nancy Russell	1	0.1%
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Natalie Whelan	1	0.1%
Natasha Stoudt	1	0.1%
Nathan Baker	1	0.1%
Neil Baker	1	0.1%
Neil Leeborg	1	0.1%
Nicholas Miner	1	0.1%
Nicholas Travers	1	0.1%
Nora Harbison	1	0.1%
norma j weiss	1	0.1%
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Paige	1	0.1%
pam hickman	1	0.1%
Pamela Boyd	1	0.1%
patra Conley	1	0.1%
Patricia Dair	1	0.1%
Patricia Lackaff	1	0.1%
Patricia No	1	0.1%
Patrick	1	0.1%
Patty Baumeister	1	0.1%
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Paul Cienfuegos	1	0.1%
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Paulette Meyer	1	0.1%
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sara eck	1	0.1%
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sarah mccarthy	1	0.1%
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sharon callison	1	0.1%
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Tye north	1	0.1%
Tyler Fuqua	1	0.1%
Ursala Garbrecht	1	0.1%
Valerie Hunter	1	0.1%
Victoria Oglesbee	1	0.1%
Vincent Stoffer	1	0.1%
Viola Rose	1	0.1%
wayne proctor	1	0.1%
wc	1	0.1%
Wendy wiles	1	0.1%
Whitney walker	1	0.1%

Wiley Barnett	1	0.1%
William Green	1	0.1%
William Henderson	1	0.1%
William Risser	1	0.1%
William Ulmer	1	0.1%
Wisteria Loeffler	1	0.1%
Wrenna	1	0.1%
Zack	1	0.1%
Zipporah Lomax	1	0.1%
Total	**965**	
Address		
	402	41.6%
1615 se 58th av	4	0.4%
3415 SE 9th Ave	3	0.3%
1109 se 72nd ave	2	0.2%
1625 SE 40th Ave	2	0.2%
1825 SE Mountain View Dr	2	0.2%
2034 SE 41st Ave.	2	0.2%
2224 NE Everett St	2	0.2%
2501 SE Madison St.	2	0.2%
2516 ne 86th ave	2	0.2%
3735 SE Yamhill St	2	0.2%
3740 SE Washington	2	0.2%
4233 SE 182nd Ave. #228	2	0.2%
4914 NE 57th Ave	2	0.2%
5107 SE Madison St	2	0.2%
5533 NE 30th Ave.	2	0.2%
5627 SE Pardee Street	2	0.2%
6027 SE Main St	2	0.2%
637 SE 68th Ave	2	0.2%
7016 SE MALL ST	2	0.2%
7330 SE Harney st	2	0.2%
8047 SE Clay Street	2	0.2%
914 N Emerson	2	0.2%
18504 N.E. Davis St.	1	0.1%
1938 nw 45th ave	1	0.1%
964 ne 90th ave	1	0.1%
Se 54th	1	0.1%

0407 SW Nevada Street	1	0.1%
0841 SW Gaines St	1	0.1%
1016 SE 12th Avenue	1	0.1%
1025 SE 73rd	1	0.1%
1030 SE 69th Ave	1	0.1%
1033 SE Franklin Street	1	0.1%
104 SE Gilham Avenue	1	0.1%
1041 NE 109th Ave	1	0.1%
105 NE 73rd Ave	1	0.1%
1050 SE 73rd	1	0.1%
10851 SE Garrett Dr.	1	0.1%
1117 se 30th	1	0.1%
112 NE 45th Ave.	1	0.1%
1127 S.E Lambert Street	1	0.1%
11329 se salmon	1	0.1%
1134 SE 33rd Ave	1	0.1%
11349 NE Glisan St	1	0.1%
11502 se washington	1	0.1%
11502 SE Washington Street	1	0.1%
11540 NE Klickitat St	1	0.1%
1176 SE 87th Ave	1	0.1%
119 NE 45th Ave.	1	0.1%
12016th se 88th ave.	1	0.1%
12145 SE Brookside Dr.	1	0.1%
1215 SE 73rd ave	1	0.1%
1215 SE Cora	1	0.1%
1221 se 80th ave	1	0.1%
1222 SE 73rd Avenue	1	0.1%
1237 SE RHINE ST	1	0.1%
1240 S E 73rd Av	1	0.1%
12814 SE Market St	1	0.1%
1287 farrview ct	1	0.1%
12th	1	0.1%
1306 SE 20th Ave	1	0.1%
1309 SE 43rd Ave	1	0.1%
131 NE MLK Jr. Blvd.	1	0.1%
132 NE 57th Ave.	1	0.1%
1331 Se 76th Ave	1	0.1%

1333 NE 47th Ave	1	0.1%
134 ne 83rd ave	1	0.1%
134 se 24th ave	1	0.1%
13719 NW 16th Avenue	1	0.1%
1400 SE 60th Ave	1	0.1%
1401 NE Roselawn St	1	0.1%
14014 clubway	1	0.1%
1410 SE Harrison	1	0.1%
1411 NE 16th Ave., Apt. 221	1	0.1%
1415 SE 52	1	0.1%
1415 SE Martins Street	1	0.1%
1417 SE 34th ave	1	0.1%
1425 SE 80th Av	1	0.1%
1518 ne 73rd ave	1	0.1%
1527 ne hancock st.	1	0.1%
1535 se 29th st #6	1	0.1%
1535 SE 60th Ave	1	0.1%
1547 NE 75th	1	0.1%
15478 SW Foster Lane #283	1	0.1%
160 ne Bryant at	1	0.1%
1602 SE 80th ace	1	0.1%
16075 NW Telshire Dr	1	0.1%
1611 SE 60th ave	1	0.1%
1616 N Terry Street	1	0.1%
1619 NE 27th Ave	1	0.1%
1625 NE Bryant St.	1	0.1%
165 NW 97th Ave	1	0.1%
1665 SE Holly	1	0.1%
1705 SE 57th	1	0.1%
1723 SE Marion St	1	0.1%
1724 SE 55th ave	1	0.1%
1728 NE HIghland	1	0.1%
1735 SE Sherrett St	1	0.1%
1741 SE Linn St. Unit A	1	0.1%
1767 SE Maple	1	0.1%
180 SW 85th Ave	1	0.1%
1803 S.E. 57th. Ave.	1	0.1%
1808 SE 35th Place	1	0.1%

1811 se mountain view dr	1	0.1%
1815 NE 46th ave.	1	0.1%
1815 SE 77th ave	1	0.1%
1816 SE 54th Ave.	1	0.1%
1820 se 44th ace	1	0.1%
1821 ne 65	1	0.1%
1832 SE HAZEL ST	1	0.1%
1837 SE 51st Avenue	1	0.1%
1849 se 36th ave	1	0.1%
1904 SE Hemlock Ave	1	0.1%
1905 ne going st	1	0.1%
1907 SE 48th Ave	1	0.1%
1913 SE 56th Ave	1	0.1%
1915 SE Alder St.	1	0.1%
1927 NE 66th Ave	1	0.1%
1933 NE60th	1	0.1%
194 N Hayden Bay Dr	1	0.1%
1955 SW Fifth Avenue Apt 724 B	1	0.1%
1991 n Jantzen	1	0.1%
2000 ne 42nd ave #113	1	0.1%
2001 Silver Springs Road	1	0.1%
2008 SE 174th	1	0.1%
2015 NW 21st Ave.	1	0.1%
2020 se bush street	1	0.1%
2023 SE Taylor ST	1	0.1%
2033 SE 59th Avenue	1	0.1%
2058 SE Elliott	1	0.1%
2106 NE Flanders	1	0.1%
2115 ne Rosa Parks away	1	0.1%
2115 Se 46th ave	1	0.1%
2123 SE 31st Ave	1	0.1%
2126 N Blandena St	1	0.1%
213 n mason	1	0.1%
2131 SE 32nd Pl	1	0.1%
2131 SE 54th	1	0.1%
2131 Se 54th ave	1	0.1%
2133 se Tibbetts	1	0.1%
2135 NE 134th Place	1	0.1%

220 NE Bridgton Rd.	1	0.1%
2207 SE 37th Ave	1	0.1%
2214 N. Emerson St	1	0.1%
2214 SE 52nd Avenue	1	0.1%
22153 SW Bushong Ter	1	0.1%
2216 SE 58th Ave	1	0.1%
2225 SE 59th ave	1	0.1%
223 SE 62nd Ave	1	0.1%
2250 SE 44TH AVE	1	0.1%
2250 SE 44th Ave.	1	0.1%
2251 SE Caruthers St	1	0.1%
2259 N Dekum St.	1	0.1%
2309 NE Brazee	1	0.1%
2311 SE 58th Avenue	1	0.1%
2315 SE 60th Ave	1	0.1%
2319 SE Taylor St.	1	0.1%
2342 NE 14th Ave	1	0.1%
2345 SE 58th AVENUE	1	0.1%
2346 SE Woodward St	1	0.1%
2354 NE 54th Avenue	1	0.1%
2360 SE 55th Ave	1	0.1%
2360 SE 58th Ave	1	0.1%
239 SE 49th Avenue	1	0.1%
2419 SE 16th Avenue	1	0.1%
2424 se 49th Ave #3	1	0.1%
2441 SE 76th Ave	1	0.1%
2445 S.E. 71st.	1	0.1%
24645 SE Brevi Lane	1	0.1%
24645 SE Brevi Ln	1	0.1%
2504 se 49th ave	1	0.1%
2506 SE 70th Ave	1	0.1%
2516 SE 52 Ave	1	0.1%
2522 SE 35th Ave	1	0.1%
2523 SE 28th ave.	1	0.1%
2525 nunyabusiness st.	1	0.1%
2529 SE 81st St.	1	0.1%
2536 SE Morrison #4	1	0.1%
255 SW Harrison St. #14H	1	0.1%

2603 SE 61st Ave.	1	0.1%
2606 SE 64th Ave.	1	0.1%
2612 SE 70th	1	0.1%
2612 SE Taylor	1	0.1%
2615 SE 35 Ave	1	0.1%
2624 SE Pine St	1	0.1%
2637 N. Winchell St.	1	0.1%
2653 SE 62nd Ave.	1	0.1%
267 N Ivy St	1	0.1%
2704 SE Taylor St.	1	0.1%
2717 SE 26th Ave #6	1	0.1%
2731 SE 70th Ave	1	0.1%
2734 S.E. 60th Ave.,	1	0.1%
2755 SE 75th Ave	1	0.1%
28 SE 78th Avenue	1	0.1%
2820 SE 20th Ave	1	0.1%
2823 SE 87th Ave	1	0.1%
2833 SE 33rd Place	1	0.1%
2834 se Clinton st	1	0.1%
2905 NE 38th	1	0.1%
2905 NE 38th Ave.	1	0.1%
2910 NE Jarrett Street	1	0.1%
2916 NE 48th Ave	1	0.1%
2920 ne 24th ave	1	0.1%
2933 SE clinton Street	1	0.1%
2937 NE 22	1	0.1%
2938 se 111	1	0.1%
2939 SE Francis St	1	0.1%
2939 SE Francis St.	1	0.1%
3 Monroe	1	0.1%
3005 SE 78th Ave.	1	0.1%
3006 SE Lincoln St.	1	0.1%
3006 SE Lincoln street	1	0.1%
301 SW Lincoln St. #1201	1	0.1%
3016 N Holland St	1	0.1%
3034 se 20th ave	1	0.1%
3036 SE Sherman St	1	0.1%
304 SE 45th Ave	1	0.1%

3040 SE olsen st	1	0.1%
3045 NE 9th Avenue	1	0.1%
3125 SE yamhill	1	0.1%
3126 NE 18th ave	1	0.1%
3134 SE 22nd Ave	1	0.1%
3134 SE 57th Ave.	1	0.1%
3135 N. Willamette Blvd	1	0.1%
3144 SE Belmont St	1	0.1%
3144 SE Belmont St.	1	0.1%
32 SE 30th Pl	1	0.1%
322 NE 73rd Ave	1	0.1%
330 SE 52nd Ave.	1	0.1%
3303 SE Clinton St	1	0.1%
3309 SE Gladstone	1	0.1%
3309 SE Gladstone St.	1	0.1%
3311 SE Caruthers St.	1	0.1%
3314 NE 61st Ave	1	0.1%
3322 SE Yamhill	1	0.1%
3327 NE Oregon St	1	0.1%
338 NE 78th ave	1	0.1%
3439 NE Sandy Blvd #184	1	0.1%
344 NE 76th Ave	1	0.1%
3508 NE Simpson St.	1	0.1%
3530 se hawthorne blvd	1	0.1%
3601 SW Kanan Dr	1	0.1%
3601 SW Kanan Drive	1	0.1%
3608 SE 73rd Avenue	1	0.1%
3624 SE 13th Ave.	1	0.1%
3651 se washington st	1	0.1%
3707 SE Clinton	1	0.1%
3746 se yamhill st	1	0.1%
3746 se yamhill st.	1	0.1%
3755 SE Grant Ct	1	0.1%
3804 N Haight Ave	1	0.1%
3813 se 67th	1	0.1%
3828 SE 51st Ave	1	0.1%
3836 SE 49th Ave.	1	0.1%
3840 SE Ivon St.	1	0.1%

3910 S.E. Dora Ct.	1	0.1%
3933 SE 28th Place	1	0.1%
3933 SE 29th Ave	1	0.1%
3935 SE Clinton st	1	0.1%
3945 NE Stanton ST	1	0.1%
3952 SE Oak St.	1	0.1%
3969 ne Rodney ave	1	0.1%
4007 NE 99th Ave	1	0.1%
4007 SE Taylor St	1	0.1%
401 N. Blandena	1	0.1%
4015 SE Taylor st	1	0.1%
4025 SE Kelly St.	1	0.1%
4026 SE Belmont St.	1	0.1%
4032 SE Crystal Springs Blvd	1	0.1%
404 NE. 56	1	0.1%
4045 SE Tibbetts Street	1	0.1%
4054 NE 13th Ave	1	0.1%
4058 NE 12th Ave	1	0.1%
4117 SE 80 th Avenue	1	0.1%
412 NE Hazelfern	1	0.1%
4120 SE Madison St	1	0.1%
4120 se Morrison st	1	0.1%
4122 NE 79th Avenue	1	0.1%
4135 SE 63rd ace	1	0.1%
416 N Beech St	1	0.1%
42 SE 62nd Ave.	1	0.1%
4211 N Mississippi Ave	1	0.1%
4222 NE 11th Ave.	1	0.1%
4223 SE 40th Apt b	1	0.1%
4245 SE Morrison St	1	0.1%
43 NE 86th Ave	1	0.1%
4305 SE 64 Ave	1	0.1%
4306 SE Reedway St.	1	0.1%
4311 SE 37th Ave #10	1	0.1%
4315 N Gantenbein Ave	1	0.1%
4324 NE 17	1	0.1%
4331 se yamhill ace	1	0.1%
4334 SE 35th ave	1	0.1%

4335 NE Sumner St	1	0.1%
4335 SE Belmont	1	0.1%
437 SE 67th Ave	1	0.1%
4418 SE Harrison St	1	0.1%
4420 NE 96th Ave	1	0.1%
4420 se belmont st	1	0.1%
4423 SW Hamilton Terrace	1	0.1%
4424 NE Alberta Court	1	0.1%
4520 SE Brooklyn st	1	0.1%
4526 NE 78th Ave.	1	0.1%
4534 ne Alberta court	1	0.1%
459 be hazelfern pl	1	0.1%
4602 SE Rex Dr.	1	0.1%
4606 NE 26th Ave.	1	0.1%
4606 SE Taylor St.	1	0.1%
4635 SE 64th	1	0.1%
4635 SE 64th Avenue	1	0.1%
4709 SE 64th Ave	1	0.1%
4709 SE 86th Ave	1	0.1%
4725 SE Yamhill St.	1	0.1%
4726 SE Salmon	1	0.1%
4726 se salmon st	1	0.1%
4733 n kerby ave	1	0.1%
4806 SE 48th ave	1	0.1%
4807 SE Salmon St	1	0.1%
4816 SE 50th Ave.	1	0.1%
4819 ne cleveland	1	0.1%
4820 SE 36th pl	1	0.1%
4826 NE 14th Place	1	0.1%
4826 SE lincoln st	1	0.1%
4829 se 63rd ave	1	0.1%
4833 SE Salmon	1	0.1%
4834 SE Lincoln St.	1	0.1%
4849 NE 12th ave.	1	0.1%
4900 SE Division st	1	0.1%
4904 ne 10 ave	1	0.1%
4904 SE 64th Ave	1	0.1%
4925 E Burnside St	1	0.1%

4984 sw oleson rd #6	1	0.1%
4993 SE 30th Ave #100	1	0.1%
5021 NE 27th Avenue	1	0.1%
5029 SE Gladstone St	1	0.1%
5100B NE Prescott St.	1	0.1%
5107 SE Madison street	1	0.1%
5122 se hawthorne blvd	1	0.1%
5134 NE 26th Ave	1	0.1%
5211 E Burnside St #5	1	0.1%
5227 SE 70th	1	0.1%
5229 NE Holman	1	0.1%
5230 se 49th	1	0.1%
5232 SE Madison St	1	0.1%
5236 ne 34th ave	1	0.1%
526 SE 45th Ave.	1	0.1%
530 NE Royal Court	1	0.1%
5314 SE Bybee Blvd	1	0.1%
533 NE Holiday #203	1	0.1%
5336 SE 68th Ave	1	0.1%
535 SE 68th Ave	1	0.1%
536 SE 55th Avenue	1	0.1%
537 SE 78th Ave	1	0.1%
54 SE 74th Ave.	1	0.1%
5403 se Hawthorne blvd	1	0.1%
5406 SE 45th Ave	1	0.1%
5420 SW Idaho St	1	0.1%
5435 SE Flavel Dr	1	0.1%
5435 SE Flavel Dr.	1	0.1%
544 se 58th ave	1	0.1%
5465 NE Mallory Ave.	1	0.1%
5480 NE Sandycrest Terrace	1	0.1%
550 SW Bond Ave. # 802	1	0.1%
5520 SE Schiller	1	0.1%
5528 SE 86th Ave	1	0.1%
5533 NE 17th ave	1	0.1%
5539 E BURNSIDE ST STE A	1	0.1%
5556 N. Wilbur Ave	1	0.1%
5616 SE Hawthorne	1	0.1%

5616 se hawthorne blvd	1	0.1%
5620 NE Alberta St.	1	0.1%
5625 SE Gladstone St Apt 1	1	0.1%
5732 SE Yamhill St.	1	0.1%
5803 SE 83rd Avenue	1	0.1%
5816 S.E. Lincoln St.	1	0.1%
5825 NE 17th Ave. Unit B	1	0.1%
5839 SE Stark St. Apt. 26	1	0.1%
5839 SE Stark, #8	1	0.1%
5840 NE 18th Ave	1	0.1%
5850 SE Taylor St.	1	0.1%
5904 SE Knight ST.	1	0.1%
5906 ne 18th ave	1	0.1%
5925 SE Lincoln St	1	0.1%
6009 NE Flanders St	1	0.1%
6034 SE Stephens Street	1	0.1%
605 SE 38th Avenue	1	0.1%
6103 SE. Clinton St.	1	0.1%
611 SE 54th	1	0.1%
6110 SE Main	1	0.1%
6111 East Burnside	1	0.1%
6126 NE 31st Ave.	1	0.1%
6126 SE Lincoln Street	1	0.1%
6126 SE Main St	1	0.1%
6136 SE Sherman	1	0.1%
614 NE 60th	1	0.1%
6147 SE Stephens St	1	0.1%
6203 SE Clitnon	1	0.1%
6209 ne 7th ave	1	0.1%
6211 SE Harrison St	1	0.1%
622 SE 60th Ave unit A	1	0.1%
6222 SE Lincoln St	1	0.1%
6224 SE Main St.	1	0.1%
6224 SE Stephens	1	0.1%
6225 N Albina	1	0.1%
6231 SE Harrison St	1	0.1%
6233 S.E. Stephens St	1	0.1%
624 SE 36th Ave	1	0.1%

624 SE 68th Ave	1	0.1%
6240 NE 22nd Ave	1	0.1%
6245 SE Harrison Street	1	0.1%
625 SW Jackson St.	1	0.1%
629 se franklin st	1	0.1%
6307 NE 8th	1	0.1%
6309 SE Grant st.	1	0.1%
633 SE 81st Ave	1	0.1%
6332 SE Windsor Ct.	1	0.1%
6335 SE Stephens St.	1	0.1%
6345 SE Harrison St.	1	0.1%
6345 SE harrison street	1	0.1%
636 N Skidmore St.	1	0.1%
636 SE 60th Ave	1	0.1%
6405 NE Alberta St	1	0.1%
6420 NE 42nd Ave.	1	0.1%
6430 N. Willamette blvd	1	0.1%
6435 e burnside st	1	0.1%
6435 SE Ivon St.	1	0.1%
6446 NE 22nd Avenue	1	0.1%
6446 SE Division St.	1	0.1%
6451 SE Morrison Ct	1	0.1%
6455 SW Nyberg Ln F101	1	0.1%
6565 SE Scott Drive	1	0.1%
6639 SE YAMHILL CT	1	0.1%
6716 n albina	1	0.1%
6805 se clinton st	1	0.1%
6825 SE Pine Ct	1	0.1%
6908 SE Ash st	1	0.1%
6915 SE 92nd Ave	1	0.1%
6928 se 122nd dr.	1	0.1%
6935 N GReenwich ave	1	0.1%
6944 SE Yamhill St	1	0.1%
7038 SE Clinton Street	1	0.1%
704 S.E. 38th Ave	1	0.1%
7040 N Lancaster Ave	1	0.1%
705 NE 125th Ave	1	0.1%
7050 SE Yamhill	1	0.1%

706 SE 60th Ave.	1	0.1%
706 SE 60th Avenue	1	0.1%
707 SE 48th	1	0.1%
707 SE 72rd Ave	1	0.1%
7074 SE Division	1	0.1%
7101 SE Harrison Street	1	0.1%
7106 SE GRANT ST	1	0.1%
7110 Sw 32nd ave	1	0.1%
7129 SW 2nd	1	0.1%
7132 SE Lexington	1	0.1%
7135 SE Gladstone	1	0.1%
7214 SE Taylor St	1	0.1%
7215 se salmon street	1	0.1%
7217 SE Main St.	1	0.1%
7231 SE Mill St.	1	0.1%
7233 SE Alder St	1	0.1%
7235 se madison st	1	0.1%
7245 ne prescott #2	1	0.1%
730 SE 72nd ave	1	0.1%
7306 SE Main Street	1	0.1%
7324 SE Madison St	1	0.1%
7324 SE YAMHILL ST	1	0.1%
7345 SW 29th Ave	1	0.1%
739 SE 60TH AVE	1	0.1%
7404 SE Clay Street	1	0.1%
7404 SE Washington	1	0.1%
7404 SE Washington St	1	0.1%
7525 NE Irving St.	1	0.1%
7527 sw LaView Dr	1	0.1%
7605 SE Knight St	1	0.1%
7644 SE Taggart Ct.	1	0.1%
7657 SE Market	1	0.1%
7705 SE Market St.	1	0.1%
7731 SE Yamhill St.	1	0.1%
7736 SE Clay st.	1	0.1%
7805 SE Hawthorne Blvd.	1	0.1%
7814 SE Morrison	1	0.1%
7814 se morrison st.	1	0.1%

7834 SE Lincoln St.	1	0.1%
7835 N Burrage Ave	1	0.1%
7903 SE Salmon ST.	1	0.1%
7927 SE Hawthorne Boulevard	1	0.1%
8014 S.E. Morrison St.	1	0.1%
8024 N Syracuse Street	1	0.1%
8036 NE Oregon st	1	0.1%
805 SE 74th	1	0.1%
807 SE 65th Ave	1	0.1%
807 SE 68th Ave	1	0.1%
8103 SE Taylor St	1	0.1%
8107 N Van Houten ave	1	0.1%
8129 se 74th ave	1	0.1%
822 NE Hancock ST	1	0.1%
824 SE 69th Ave	1	0.1%
824 SE 73rd Ave	1	0.1%
828 SE Ash St	1	0.1%
8316 N Lombard st #444	1	0.1%
8330 NE Pacific St. #1202	1	0.1%
8501 SE Yamhill St	1	0.1%
8504 SE Market St	1	0.1%
8538 N. Syracuse St.	1	0.1%
8616 SE Washington St	1	0.1%
8641 NE Pacific st	1	0.1%
8828 Se Pine St	1	0.1%
8837 se rhone st	1	0.1%
8925 ne Edison street	1	0.1%
9026 N Syracuse St	1	0.1%
910 NW NAITO PKWY APT I18	1	0.1%
910 se 42nd #370	1	0.1%
9101 E Burnside	1	0.1%
919 se 48th	1	0.1%
920 SE 67 th	1	0.1%
922 se franklin st	1	0.1%
9231 N Trumbull Ave	1	0.1%
930 SE 69th	1	0.1%
949 North Prescott Street	1	0.1%
972135735 ne 61	1	0.1%

Alsdorf	1	0.1%
Blakeslee	1	0.1%
Brazelton	1	0.1%
Clark	1	0.1%
Cody-Wald	1	0.1%
Inner NE Portland	1	0.1%
Jones	1	0.1%
P. O. Box 86731	1	0.1%
PO Box 29109	1	0.1%
PO Box 33142	1	0.1%
PO Box 51083	1	0.1%
POBOX 80090	1	0.1%
Redmon	1	0.1%
SE 58th Ave.	1	0.1%
SE 60th AVE	1	0.1%
se hawthorne	1	0.1%
SE Ivon St	1	0.1%
Summers Park	1	0.1%
Wheeler	1	0.1%
Total	**966**	

City/State		
	396	41.2%
Portland	258	26.8%
portland, OR	151	15.7%
Portland OR	48	5.0%
Portland, Oregon	20	2.1%
Portland/OR	17	1.8%
OR	14	1.5%
Portland Oregon	9	0.9%
portland/Oregon	1	0.1%
portland. OR	4	0.4%
Oregon	3	0.3%
Gresham, OR	2	0.2%
Pdx	2	0.2%
Portland OR	2	0.2%
Portland / Oregon	2	0.2%
Camas Wa.	1	0.1%
portland/OR	1	0.1%

Arlington, wa	1	0.1%
Beaverton	1	0.1%
Beaverton?, OR	1	0.1%
Eagle Creek	1	0.1%
Eagle Creek, OR	1	0.1%
Eugene	1	0.1%
Eugene OR	1	0.1%
Haiku	1	0.1%
Lake Oswego	1	0.1%
Maywood Park	1	0.1%
Milwaukie	1	0.1%
Oak Grove, Oregon	1	0.1%
PDX,	1	0.1%
pdx, OR	1	0.1%
pdx/or	1	0.1%
PDX~ or	1	0.1%
Portland , or	1	0.1%
Portland / OR	1	0.1%
Portland, OR	1	0.1%
Portland, Oregon	1	0.1%
Portland, I'D	1	0.1%
Portland,OR	1	0.1%
Portland. OR	1	0.1%
Portland/Or.	1	0.1%
porttland, oregon	1	0.1%
Sherwood / OR	1	0.1%
Troutdale, Oregon	1	0.1%
Tualatin	1	0.1%
Vancouver, WA	1	0.1%
West linn	1	0.1%
Total	**961**	
Zip		
	323	33.4%
97215	195	20.2%
97214	69	7.1%
97206	65	6.7%
97202	51	5.3%
97211	37	3.8%

97213	29	3.0%
97217	23	2.4%
97212	16	1.7%
97218	14	1.4%
97232	13	1.3%
97216	12	1.2%
97220	12	1.2%
97266	9	0.9%
97203	8	0.8%
97201	6	0.6%
OR	6	0.6%
97219	5	0.5%
97227	5	0.5%
97230	5	0.5%
97239	4	0.4%
97210	3	0.3%
97221	3	0.3%
97222	3	0.3%
97225	3	0.3%
97236	3	0.3%
Oregon	3	0.3%
97022	2	0.2%
97030	2	0.2%
97127	2	0.2%
97206	1	0.1%
97215	1	0.1%
07217	1	0.1%
097211	1	0.1%
96206	1	0.1%
97006	1	0.1%
97035	1	0.1%
97060	1	0.1%
97062	1	0.1%
97068	1	0.1%
97078-2689	1	0.1%
97140	1	0.1%
97205	1	0.1%
97206-1135	1	0.1%

97206-5336	1	0.1%
97209	1	0.1%
972093741	1	0.1%
97211-4604	1	0.1%
97213-2621	1	0.1%
97214-3203	1	0.1%
972143143	1	0.1%
972152937	1	0.1%
972154032	1	0.1%
97216-3840	1	0.1%
97233	1	0.1%
97286	1	0.1%
97403	1	0.1%
97405	1	0.1%
97408	1	0.1%
97520	1	0.1%
97809	1	0.1%
98223	1	0.1%
98607	1	0.1%
98685	1	0.1%
OR 97215	1	0.1%
Total	**966**	
Email		
	480	49.7%
marlen91@comcast.net	2	0.2%
meckel.traver@gmail.com	2	0.2%
meyer4842@comcast.net	2	0.2%
Paisleyartmachine@gmail.com	2	0.2%
paradigmshift@lovebeing.org	2	0.2%
Stanhoffman@mindspring.com	2	0.2%
ashford3150@gmail.com	1	0.1%
riversandroses@msn.com	1	0.1%
503-285-9419	1	0.1%
503-901-3618	1	0.1%
6yanga3@copper.net	1	0.1%
9215	1	0.1%
97215	1	0.1%
97220	1	0.1%

acadiabaird@gmail.com	1	0.1%
achadden@gmail.com	1	0.1%
acjaggard@gmail.com	1	0.1%
Aeminer@mac.com	1	0.1%
Agiedwoyn@yahoo.com	1	0.1%
albert@albertideation.com	1	0.1%
alexandra.jackiw@gmail.com	1	0.1%
alexcross3@msn.com	1	0.1%
alissakg@comcast.net	1	0.1%
Amatic@pdx.edu	1	0.1%
amberlinblessinger@gmail.com	1	0.1%
amhtw2003@yahoo.com	1	0.1%
Amiliscious@gmail.com	1	0.1%
amybakerma@yahoo.com	1	0.1%
Amylydiahall@gmail.com	1	0.1%
amyolene@gmail.com	1	0.1%
amyzing42@hotmail.com	1	0.1%
andrewtaylorwilkins@gmail.com	1	0.1%
angedetour@gmail.com	1	0.1%
anna@annafritz.com	1	0.1%
annelisekelly@gmail.com	1	0.1%
ansula@gmail.com	1	0.1%
anthony.m.fost@gmail.com	1	0.1%
aqua_lovr@yahoo.com	1	0.1%
attunementmovement@gmail.com	1	0.1%
Awakeningmeridian@gmail.com	1	0.1%
bbblues23@yahoo.com	1	0.1%
bcaplener@gmail.com	1	0.1%
ben.waisanen@mac.com	1	0.1%
ben_rasche@hotmail.com	1	0.1%
benndavenport@gmail.com	1	0.1%
betsysalter@comcast.net	1	0.1%
betsyzucker@gmail.com	1	0.1%
Bioplasticsoregon@gmail.com	1	0.1%
bjammin@aracnet.com	1	0.1%
Blondnahalf07@yahoo.com	1	0.1%
bobi_blue@yahoo.com	1	0.1%
bonitajdavis@mn.com	1	0.1%

bootsnbolts@gmail.com	1	0.1%
bowyerjo@aol.com	1	0.1%
brad@bradyazzolino.com	1	0.1%
bradley.mosher@gmail.com	1	0.1%
brandy.lentz@pcc.edu	1	0.1%
brazel.amanda@gmail.com	1	0.1%
brendapurvis@gmail.com	1	0.1%
brettlifenectar@gmail.com	1	0.1%
brianamitchell@gmail.com	1	0.1%
brianlmaher@yahoo.com	1	0.1%
brittany@webbrandagency.com	1	0.1%
brookmthompson@gmail.com	1	0.1%
Bryansebok@gmail.com	1	0.1%
budgarrison@ymail.com	1	0.1%
caglanbaler@gmail.com	1	0.1%
cait.irvine@gmail.com	1	0.1%
caldwelldavids@gmail.com	1	0.1%
carnation_54@hotmail.com	1	0.1%
carol.lane@excite.com	1	0.1%
carolesnews2@gmail.com	1	0.1%
carrielacina@gmail.com	1	0.1%
carrimunn@gmail.com	1	0.1%
carson@carsonlattimore.com	1	0.1%
certifiedpet@gmail.com	1	0.1%
Charliecoko@gmail.com	1	0.1%
chdorr@comcast.net	1	0.1%
Chhotiwala@gmail.com	1	0.1%
chris.shaffer@gmail.com	1	0.1%
christybrownnow@gmail.com	1	0.1%
cicombe@gmail.com	1	0.1%
Clairevoyant@gmail.com	1	0.1%
ColleenWelch@gmail.com	1	0.1%
conlon@pdx.edu	1	0.1%
coracoronel@gmail.com	1	0.1%
corrigan@easystreet.net	1	0.1%
courtney@scottwork.com	1	0.1%
courtney765@comcast.net	1	0.1%
cpypdx@gmail.com	1	0.1%

cqflores@gmail.com	1	0.1%
craigbrandis@gmail.com	1	0.1%
craigopfer@yahoo.com	1	0.1%
crees1080@gmail.com	1	0.1%
cskpdx@aol.com	1	0.1%
cyndiro@gmail.com	1	0.1%
dabopen@gmail.com	1	0.1%
dallas_deluca@yahoo.com	1	0.1%
dan@danbrazelton.com	1	0.1%
dan@dc-creativelabs.com	1	0.1%
Dana.d.lmt@gmail.com	1	0.1%
danaawear@gmail.com	1	0.1%
dancingcreatress@gmail.com	1	0.1%
danielparkermusic@yahoo.com	1	0.1%
dannanieto@gmail.com	1	0.1%
dansloaniii@gmail.com	1	0.1%
danwilson48@pps.net	1	0.1%
darossart@gmail.com	1	0.1%
darvlloyd@gmail.com	1	0.1%
davehillman@comcast.net	1	0.1%
david.l.petty@gmail.com	1	0.1%
davidafd@ymail.com	1	0.1%
Dawnharpel@gmail.com	1	0.1%
dcmadsen@gmail.com	1	0.1%
dcrafton5@comcast.net	1	0.1%
ddddddddddd98104@yahoo.com	1	0.1%
debra.canales@comcast.net	1	0.1%
debra_zavala@hotmail.com	1	0.1%
decembercarson@gmail.com	1	0.1%
deebeckoregon@gmail.com	1	0.1%
delosfox@hotmail.com	1	0.1%
Destinationunknown@gmail.com	1	0.1%
devitamcbride@gmail.com	1	0.1%
dj	1	0.1%
dl_chloe@yahoo.com	1	0.1%
dlabcahill@gmail.com	1	0.1%
dlima84@gmail.com	1	0.1%
docwang78@gmail.com	1	0.1%

draphael@comcast.net	1	0.1%
drdan42@gmail.com	1	0.1%
drewhormann@gmail.com	1	0.1%
drift.mavyn@gmail.com	1	0.1%
droberts5949@msn.com	1	0.1%
dshultz52@gmail.com	1	0.1%
dtj108@yahoo.com	1	0.1%
Duchessoflevity@gmail.com	1	0.1%
duckyis2@gmail.com	1	0.1%
dufus@pacifier.com	1	0.1%
dwan@dwanjabi.com	1	0.1%
e.f.harbison@gmail.com	1	0.1%
e33maschwab@gmail.com	1	0.1%
ebeam0266@yahoo.com	1	0.1%
ebpax1@gmail.com	1	0.1%
eddopdx@q.com	1	0.1%
edhershey@comcast.net	1	0.1%
editor2@bbimedia.com	1	0.1%
egiobbi@comcast.net	1	0.1%
ellen.rubinstein@gmail.com	1	0.1%
ellensimmons@verizon.net	1	0.1%
emarie2525@yahoo.com	1	0.1%
emilychenoweth@yahoo.com	1	0.1%
emkelley87@gmail.com	1	0.1%
encorepoliticalservices@hotmail.com	1	0.1%
erik.emanuelson@gmail.com	1	0.1%
ewisteria@yahoo.com	1	0.1%
family@genia.org	1	0.1%
Farmdreads@hotmail.com	1	0.1%
floidthebarber@yahoo.com	1	0.1%
Floraj67@gmail.com	1	0.1%
floy21@msn.com	1	0.1%
freds@sms1.org	1	0.1%
freeairfreewater@yahoo.com	1	0.1%
fuchsiaforest@gmail.com	1	0.1%
genia@genia.org	1	0.1%
gillygb@yahoo.com	1	0.1%
gilvital@hotmail.com	1	0.1%

gjensonwheeler@comcast.net	1	0.1%
glenda@inbalanceservices.com	1	0.1%
goodiejackson@gmail.com	1	0.1%
gorustic@gmail.com	1	0.1%
greenbunnygoods@gmail.com	1	0.1%
gretchan.jackson@gmail.com	1	0.1%
Gwilliam15@hotmail.com	1	0.1%
haleywax@comcast.net	1	0.1%
halvorson.lbc@comcast.net	1	0.1%
hannan.email@gmail.com	1	0.1%
harposleg@gmail.com	1	0.1%
harriet.beauchamp@gmail.com	1	0.1%
havefreedom@earthlink.net	1	0.1%
hbhbox13@yahoo.com	1	0.1%
heidi@autojobsonline.com	1	0.1%
helgafuller@gmail.com	1	0.1%
herschel@spiritone.com	1	0.1%
hkeinholtz@gmail.com	1	0.1%
hlbryan@mac.com	1	0.1%
holly@peoplingpeople.com	1	0.1%
hollylblake@comcast.net	1	0.1%
holtzman.sally@gmail.com	1	0.1%
honeydancer17@yahoo.com	1	0.1%
Howey.r@gmail.com	1	0.1%
htolbert@utexas.edu	1	0.1%
iamsandrag@gmail.com	1	0.1%
infinite242@gmail.com	1	0.1%
info@jeyaaerenson.com	1	0.1%
Ivykatz@gmail.com	1	0.1%
j.w.cool@gmail.com	1	0.1%
jackobein@gmail.com	1	0.1%
jacqnjon@comcast.net	1	0.1%
jacque.dewolf@yahoo.com	1	0.1%
Jadedbrew@gmail.com	1	0.1%
jalexmichaels@hotmail.com	1	0.1%
jamesblivingston@gmail.com	1	0.1%
jameslcollinslaw@yahoo.com	1	0.1%
jasonmmisner@gmail.com	1	0.1%

jasonranker@gmail.com	1	0.1%
jayalvaro@msn.com	1	0.1%
jbohem@gmail.com	1	0.1%
Jcadwellpdx@hotmail.com	1	0.1%
jcjones@pacifier.com	1	0.1%
jeanninebrown333@gmail.com	1	0.1%
jeff.betts@gmail.com	1	0.1%
jeff.frane@gmail.com	1	0.1%
Jessicagsnyder@gmail.com	1	0.1%
jesstrix@gmail.com	1	0.1%
jewls4u2treasure@yahoo.com	1	0.1%
jhmclaren@yahoo.com	1	0.1%
jimjas@gmail.com	1	0.1%
jj.bjordahl@gmail.com	1	0.1%
jjdances1@yahoo.com	1	0.1%
jjmcateer@gmail.com	1	0.1%
jjones@bestweb.net	1	0.1%
joanie@happywhisk.com	1	0.1%
john@frozenpoodle.com	1	0.1%
john@sitepainters.net	1	0.1%
johnny@peakexperience.cc	1	0.1%
Jonah@riverfish.org	1	0.1%
jonboerner@comcast.net	1	0.1%
joshua.bernsen@gmail.com	1	0.1%
joshua.force@gmail.com	1	0.1%
Jsunwells @	1	0.1%
jtemprano@hotmail.com	1	0.1%
jtoddmartin@gmail.com	1	0.1%
juditharmatta@gmail.com	1	0.1%
judy92809@gmail.com	1	0.1%
julia.degraw@gmail.com	1	0.1%
justine@morphisstudios.com	1	0.1%
jwilli_irie@yahoo.com	1	0.1%
ka48@msn.com	1	0.1%
kalikeke1944@gmail.com	1	0.1%
Karahlockman@gmail.com	1	0.1%
Karasea@gmail.com	1	0.1%
karen@checkoway.com	1	0.1%

karlamsuccess@gmail.com	1	0.1%
katemcn@comcast.net	1	0.1%
kathleenmarieparker78@gmail.com	1	0.1%
katiedobe@yahoo.com	1	0.1%
Kayhall@mindspring.com	1	0.1%
kdalessandro8884@msn.com	1	0.1%
Keaston@pcc.edu	1	0.1%
keeshawallace73@gmail.com	1	0.1%
Keithdaly@gmail.com	1	0.1%
Kendrakw@gmail.com	1	0.1%
khut.rithy@gmail.com	1	0.1%
Kirk@kirkdeford.com	1	0.1%
kjschuman@msn.com	1	0.1%
kmillion@verizon.net	1	0.1%
kmpozzi@comcast.net	1	0.1%
kmt6336@gmail.com	1	0.1%
koshtra@yahoo.com	1	0.1%
kpedery@gmail.com	1	0.1%
krisancan@comcast.net	1	0.1%
kristinrosling@hotmail.com	1	0.1%
kundalini@climbatree.com	1	0.1%
kurtmarionlmt@gmail.com	1	0.1%
Kvnwoodruff@gmail.com	1	0.1%
labordav@me.com	1	0.1%
ladychimche@yahoo.com	1	0.1%
lambhash@yahoo.com	1	0.1%
laurenelizabethmoreno@gmail.com	1	0.1%
laurentoby@yahoo.com	1	0.1%
lauriesonnenfeld@gmail.com	1	0.1%
lazytoo@centurylink.net	1	0.1%
lesliechester53@yahoo.com	1	0.1%
leslierose8@gmail.com	1	0.1%
lgreif@juno.com	1	0.1%
lindasheeley@yahoo.com	1	0.1%
Lindsaytallon@gmail.com	1	0.1%
lisagreent@gmail.com	1	0.1%
Liscum@gmail.com	1	0.1%
lizziemccann@gmail.com	1	0.1%

lknagase@gmail.com	1	0.1%
lloyd.lemmermann@gmail.com	1	0.1%
lora_britt@yahoo.com	1	0.1%
loretta@spiritone.com	1	0.1%
louisar78@gmail.com	1	0.1%
Lubell750@hotmail.com	1	0.1%
Lucykissa@yahoo.com	1	0.1%
lukedolkas@yahoo.com	1	0.1%
lymphocyte58@hotmail.com	1	0.1%
lynn@hevanet.com	1	0.1%
lynnfein.register@comcast.net	1	0.1%
mandy@mandykruger.com	1	0.1%
marisa_kula@yahoo.com	1	0.1%
marjinb@hotmail.com	1	0.1%
mark.owen@puralytics.com	1	0.1%
Markw@tvaarchitects.com	1	0.1%
martrese@gmail.com	1	0.1%
marty_mitchell_99@yahoo.com	1	0.1%
mattbutler2006@gmail.com	1	0.1%
mattgordon23@gmail.com	1	0.1%
matticellc@me.com	1	0.1%
mckate@zoho.com	1	0.1%
mcneesejim@yahoo.com	1	0.1%
meadowbgoldman@gmail.com	1	0.1%
meera.hays@gmail.com	1	0.1%
mel@rios.org	1	0.1%
merlinsgarden@yahoo.com	1	0.1%
Mgodet@comcast.net	1	0.1%
michele@theyogaspace.com	1	0.1%
micheleglazer@gmail.com	1	0.1%
midgepierce@gmail.com	1	0.1%
mike@therawdiet.com	1	0.1%
Mikeztaps@gmail.com	1	0.1%
milonrosie@msn.com	1	0.1%
mindyfitch@yahoo.com	1	0.1%
Misterbencarter@gmail.com	1	0.1%
Mizjprice@gmail.com	1	0.1%
mjlapine@gmail.com	1	0.1%

mlgibb@gmail.com	1	0.1%
Mmagnus2407@msn.com	1	0.1%
mmrobertson@comcast.net	1	0.1%
molinaroarchitect@gmail.com	1	0.1%
molliestar11@gmail.com	1	0.1%
moodarea52@yahoo.com	1	0.1%
mrvogt@comcast.net	1	0.1%
msanbo@gmail.com	1	0.1%
mtmorrow@comcast.net	1	0.1%
Mwhizzy@gmail.com	1	0.1%
mzadikov@gmail.com	1	0.1%
n/a	1	0.1%
Nagual@spiritone.com	1	0.1%
nancyt@inseportland.com	1	0.1%
nathan503@gmail.com	1	0.1%
Nicholasbminer@gmail.com	1	0.1%
nintu9@yahoo.com	1	0.1%
nirvanasurf@gmail.com	1	0.1%
Nleeborg@gmail.com	1	0.1%
noraharbison@gmail.com	1	0.1%
norjacw1@gmail,com	1	0.1%
notsoshie@hotmail.com	1	0.1%
odessapdx@gmail.com	1	0.1%
Omaried@mac.com	1	0.1%
oneida.trainor@gmail.com	1	0.1%
organic.brian@yahoo.com	1	0.1%
othertucker@gmail.com	1	0.1%
page.scott42@gmail.com	1	0.1%
pamelaanboyd@yahoo.com	1	0.1%
pamjay60@yahoo.com	1	0.1%
paradeva@yahoo.com	1	0.1%
patrainport@msn.com	1	0.1%
patricia.h.no@gmail.com	1	0.1%
patriciadair@gmail.com	1	0.1%
paul@100fires.com	1	0.1%
pauleck@q.com	1	0.1%
Pdxhalfpint@yahoo.com	1	0.1%
pdxjoan@yahoo.com	1	0.1%

plumblyne@gmail.com	1	0.1%
pol@netstruct.com	1	0.1%
portlandoregon.gov@kenricashe.com	1	0.1%
portlandpearl@gmail.com	1	0.1%
potterd42@hotmail.com	1	0.1%
primitivemodern@comcast.net	1	0.1%
pulsjohn@hotmail.com	1	0.1%
Punches1@msn.com	1	0.1%
puroemily@gmail.com	1	0.1%
quanyondove@yahoo.com	1	0.1%
queenbee@herbnwisdom.com	1	0.1%
quickcard@gmail.com	1	0.1%
radicalselfcare@gmail.com	1	0.1%
radman2938@netscape.net	1	0.1%
raemullin@me.com	1	0.1%
rainrelief@yahoo.com	1	0.1%
rainsoaked1@comcast.net	1	0.1%
raku_loren@yahoo.com	1	0.1%
ranchodelcarter@comcast.net	1	0.1%
Ravencallstudio@comcast.net	1	0.1%
reale.alexis@gmail.com	1	0.1%
rebeccaxcasanova@gmail.com	1	0.1%
renamusic23@yahoo.com	1	0.1%
rex@efn.org	1	0.1%
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susiesnyder@msn.com	1	0.1%
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PORTLAND WATER BUREAU

2009 Drinking Water Quality Report

PORTLAND WATER BUREAU
FROM FOREST TO FAUCET

From Commissioner Randy Leonard

You've probably heard me say this before: "From forest to faucet, the Portland Water Bureau delivers the best drinking water in the world!" And do you know what? I truly believe in that slogan.

I believe that the employees of the Portland Water Bureau strive to be the best in everything they do; every action they take, every decision they make, every interaction they have with a customer. In fact, they try so hard to be the best, I'm confident that if you had a choice in your drinking water provider, you would still choose the Portland Water Bureau.

The Water Bureau produces this Drinking Water Quality Report every year as mandated by the federal government. This report is very important to your understanding of the quality of Portland's drinking water, so please don't overlook it. I want you to fully comprehend the high quality drinking water you have access to as a customer of the Portland Water Bureau; some might even call it "...the best drinking water in the world!"

Randy Leonard
Commissioner-In-Charge

From the Administrator

The most important information contained in this report is that *Portland's drinking water quality continues to meet all state and federal regulations.*

If you have questions or comments about this report, please call Portland Water Bureau Customer Service at **503-823-7770**. We welcome your interest in Portland's water system.

David G. Shaff
Administrator

Frequently Asked Questions About Water Quality

Is my water treated by filtration?
No. Bull Run water is not filtered. The Bull Run source meets the filtration avoidance criteria of the Surface Water Treatment Rule. The state approved Portland's compliance with these criteria in 1992.

Does the Portland Water Bureau add fluoride to drinking water?
No. The Portland Water Bureau does not add fluoride to the water. Although fluoride is not detected in Bull Run surface water, it is a naturally occurring trace element in groundwater. The U.S. Public Health Service and the Centers for Disease Control and Prevention (CDC) consider the fluoride levels in Portland's water sources to be lower than optimal for the prevention of tooth decay. You may want to consult with your dentist about fluoride treatment to help prevent tooth decay, especially for young children.

Is Portland's water soft or hard?
Portland's water is very soft. The hardness of Bull Run water is typically 4-13 parts per million (ppm) – approximately ½ a grain of hardness per gallon. Portland's groundwater hardness is approximately 86 ppm (about 5 grains per gallon), which is considered moderately hard.

What is the pH of Portland's water?
The pH of Portland's drinking water typically ranges from 7.2 to 8.2.

Are sodium levels in Portland's drinking water affecting my health?
There is currently no drinking water standard for sodium. Sodium is an essential nutrient. Sodium in Portland's water ranges between 2 and 8 ppm, a level unlikely to contribute to adverse health effects.

Who can I call about water quality or pressure concerns?
The Water Line, **503-823-7525**, can answer your questions and concerns about water quality or pressure. The Water Line is available Monday–Friday from 8:30 a.m.– 4:30 p.m. If you have an emergency after these hours, please contact the after-hours number at **503-823-4874**.

How can I get my water tested?
Contact the LeadLine at **503-988-4000** or **www.leadline.org** for information about free lead-in-water testing. For more extensive testing, private laboratories can test your tap water for a fee. Not all labs are accredited to test for all contaminants. For information about accredited labs, call the Oregon Department of Human Services, Oregon Environmental Laboratory Accreditation Program at **503-693-4122**.

Public Involvement Opportunities

The Portland Water Bureau sponsors a variety of public involvement and public outreach opportunities connected to its many projects and programs. The bureau posts public meeting times online. If you have questions about Portland Water Bureau meetings, projects, or programs, please contact Jimmy Brown, Community Involvement and Information Manager, at **503-823-3028**, or visit the Portland Water Bureau's Web site: **www.portlandonline.com/water**.

Visit the Water Blog for daily water news: **www.portlandonline.com/water/blog**.

Drinking Water Treatment

The first step in the treatment process for Portland's drinking water is disinfection using chlorine. Next, ammonia is added, forming chloramines, to ensure that disinfection remains adequate throughout the distribution system.

The Portland Water Bureau also adds sodium hydroxide to increase the pH of the water to reduce corrosion of plumbing systems. This treatment helps control lead and copper levels at customers' taps should these metals be present in home plumbing.

Water Testing

The Portland Water Bureau monitors for approximately 200 regulated and unregulated contaminants in drinking water, including pesticides and radioactive contaminants. All monitoring data in this report are from 2008. **If a health-related contaminant is not listed in this report, the Portland Water Bureau did not detect it in drinking water.**

Special Notice for Immuno-compromised Persons

Some people may be more vulnerable to contaminants in drinking water than the general population.

Immuno-compromised persons such as persons with cancer undergoing chemotherapy, persons who have undergone organ transplants, people with HIV/AIDS or other immune system disorders, some elderly, and infants can be particularly at risk from infections. These people should seek advice about drinking water from their health care providers. Environmental Protection Agency (EPA) and Centers for Disease Control and Prevention guidelines on appropriate means to lessen the risk of infection by *Cryptosporidium* and other microbial contaminants are available from the Safe Drinking Water Hotline at **800-426-4791**.

What the EPA Says About Drinking Water Contaminants

Drinking water, including bottled water, may reasonably be expected to contain at least small amounts of some contaminants. The presence of contaminants does not necessarily indicate that water poses a health risk. More information about contaminants and potential health effects can be obtained by calling the Environmental Protection Agency's Safe Drinking Water Hotline at **800-426-4791** or at **www.epa.gov/safewater**.

The sources of drinking water (both tap water and bottled water) include rivers, lakes, streams, ponds, reservoirs, springs, and wells. As water travels over the surface of the land or through the ground, it dissolves naturally occurring minerals and, in some cases, radioactive material, and can pick up substances resulting from the presence of animals or from human activity.

Contaminants in drinking water sources may include:

Microbial contaminants, such as viruses and bacteria, which may come from wildlife or septic systems.

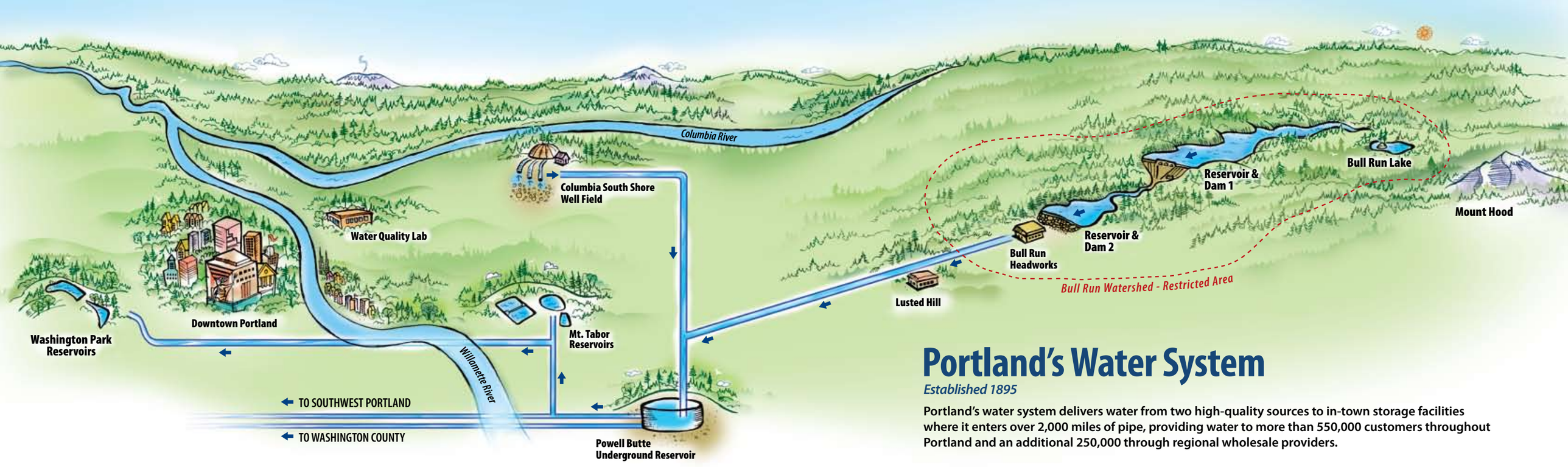
Inorganic contaminants, such as salts and metals, which can occur naturally or result from urban stormwater runoff, industrial or domestic wastewater discharges or farming.

Pesticides and herbicides, which may come from a variety of sources such as farming, urban stormwater runoff and home or business use.

Organic chemical contaminants, including synthetic and volatile organic chemicals, which are byproducts of industrial processes, and can also come from gas stations, urban stormwater runoff and septic systems.

Radioactive contaminants, which can occur naturally.

In order to ensure that tap water is safe to drink, the EPA has regulations that limit the amount of certain contaminants in water provided by public water systems and require monitoring for these contaminants. Food and Drug Administration regulations establish limits for contaminants in bottled water, which must provide the same protection for public health.



Portland's Water System

Established 1895

Portland's water system delivers water from two high-quality sources to in-town storage facilities where it enters over 2,000 miles of pipe, providing water to more than 550,000 customers throughout Portland and an additional 250,000 through regional wholesale providers.

The Bull Run Watershed

is a surface water supply within the Bull Run Watershed Management Unit located in the Mt. Hood National Forest. A geological ridge separates the watershed from Mount Hood. Current regulations, and the availability of the Columbia South Shore Well Field, allow Portland to meet federal drinking water standards without filtering this high-quality Bull Run water supply. The watershed has an area of 102 square miles, and typically receives 80-170 inches of rainfall a year. The heaviest rains occur from late fall through spring. Two reservoirs store water for use year-round, particularly during the dry summer months.

The watershed is only used for producing drinking water. Federal laws restrict human entry. No recreational, residential, or industrial uses occur within its boundaries. The Portland Water Bureau carefully monitors water quality and quantity. The Oregon Department of Human Services Drinking Water Program regularly inspects the watershed and related treatment and distribution facilities.

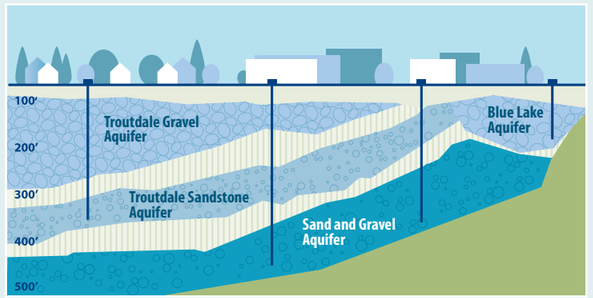
Eighty years ago construction of the first dam in the Bull Run was completed. Dam One, a concrete gravity arch dam, took two years to build, is 200 feet high and created a reservoir capable of storing approximately 10 billion gallons of drinking water.

The Portland Water Bureau has completed a Source Water Assessment for the Bull Run water supply to comply with the 1996 Safe Drinking Water Act amendments. The only known contaminants of concern for the Bull Run water supply are naturally occurring microbial contaminants such as *Giardia lamblia, Cryptosporidium,* fecal coliform bacteria, and total coliform bacteria. These organisms are found in virtually all freshwater ecosystems and are present in the Bull Run supply at very low levels. The Bull Run supply complies with all applicable state and federal regulations for source water, including the 1989 Surface Water Treatment Rule filtration-avoidance criteria. The Source Water Assessment report is available at **www.portlandonline.com/water** and by calling **503-823-7404**.

The Columbia South Shore Well Field

is a groundwater source of drinking water that provides high-quality water from production wells located in three different aquifers. In 2008, the City of Portland supplemented the Bull Run drinking water supply with approximately 30 million gallons of groundwater over a six-day period beginning on August 18th . This was done as part of a groundwater maintenance exercise. Additionally, the City of Portland used 648 million gallons of groundwater over a nine-day period beginning November 13th, due to a storm that caused elevated turbidity in the Bull Run watershed.

Portland has a long history of groundwater protection. The wellhead protection area encompasses portions of Portland, Gresham and Fairview. Together, these cities regulate businesses in the wellhead protection area to prevent hazardous materials spills that could seep into the ground. The cities also educate local residents on what can be done to help protect groundwater with events such as Aquifer Adventure, Cycle the Well Field and Groundwater 101. To learn more about Portland's wellhead protection program, upcoming events and how to protect groundwater, go to **www.portlandonline.com/water/groundwater** or call **503-823-7404**.



There are 27 usable wells capable of pumping water from three aquifers on the south shore of the Columbia river. The well field serves as a backup water supply for turbidity events and emergencies and can produce up to 102 million gallons of water per day.

The Clackamas River Water District, City of Lake Oswego, Rockwood Water People's Utility District, the Sunrise Water Authority and the Tualatin Valley Water District provide drinking water to some Portland customers who live near service area boundaries. Customers who receive water from these providers will also receive detailed water quality reports about these sources in addition to this report.

Regulated Contaminants Detected in 2008

Regulated Contaminant	Minimum Detected	Maximum Detected	Maximum Contaminant Level (MCL) or Treatment Technique	Maximum Contaminant Level Goal (MCLG)	Sources of Contaminant
Source Water from Bull Run Watershed					
Turbidity	0.2 NTU	5 NTU	Cannot exceed 5 NTU more than two times in twelve months.	Not Applicable	Erosion of natural deposits
Giardia	Not Detected	One sample of 50 liters had 5 *Giardia* cysts	Treatment technique required: Disinfection to inactivate 99.9% of cysts	Not Applicable	Animal wastes
Fecal Coliform Bacteria	Not Detected	1 sample had 10 bacterial colonies (100% of samples had fewer than 20 bacterial colonies) per 100 milliliters of water	At least 90% of samples measured during the previous six months must have 20 or fewer bacterial colonies per 100 milliliters of water.	Not Applicable	Animal wastes
Entry Points to Distribution System — from Bull Run Watershed and Columbia South Shore Well Field					
NUTRIENTS					
Nitrate Nitrogen	< 0.01 parts per million	0.2 parts per million	10 parts per million	10 parts per million	Found in natural aquifer deposits, animal wastes
METALS AND MINERALS					
Arsenic	< 1 part per billion	2 parts per billion	10 parts per billion	0 parts per billion	Found in natural aquifer deposits
Barium	< 0.005 parts per million	0.03 parts per million	2 parts per million	2 parts per million	Found in natural aquifer deposits
Fluoride	< 0.05 parts per million	0.22 parts per million	4 parts per million	4 parts per million	Found in natural aquifer deposits
ORGANIC CONTAMINANTS					
***P*-Dichlorobenzene**	<0.5 parts per billion	1 part per billion	75 parts per billion	75 parts per billion	Used in the manufacture of dyes, agrochemicals, pharmaceuticals and plastic
RADIONUCLIDES					
Radium-226/228	1.67 picocuries per liter	1.67 picocuries per liter	5 picocuries per liter for combined Radium-226 and Radium-228	0 picocuries per liter	Found in natural aquifer deposits
Distribution System of Reservoirs, Tanks and Mains					
MICROBIOLOGICAL CONTAMINANTS					
Total Coliform Bacteria	Not Detected	6 samples of 274 in August (2.2%) had detectable coliform bacteria.	Must not detect coliform bacteria in more than 5% of samples in any month	0% of samples with detectable coliform bacteria	Found throughout the environment
DISINFECTION BYPRODUCTS					
TOTAL TRIHALOMETHANES					
Running annual average of all sites	13 parts per billion	19 parts per billion	80 parts per billion	Not Applicable	Byproduct of drinking water disinfection
Single result at any one site	9.4 parts per billion	22 parts per billion	Not Applicable		
HALOACETIC ACIDS					
Running annual average of all sites	21 parts per billion	29 parts per billion	60 parts per billion	Not Applicable	Byproduct of drinking water disinfection
Single result at any one site	18 parts per billion	28 parts per billion	Not Applicable		

Regulated Contaminant	Minimum Detected	Maximum Detected	Maximum Residual Disinfectant Level (MRDL)	Maximum Residual Disinfectant Level Goal (MRDLG)	Sources of Contaminant
DISINFECTANT RESIDUAL					
Total Chlorine Residual	Not Detected	2.1 parts per million	4 parts per million	4 parts per million	Chlorine and ammonia are used to disinfect Bull Run Watershed and Columbia South Shore Well Field

Notes on Regulated Contaminants

Turbidity
Bull Run is an unfiltered surface water supply. Rules for public water systems have strict standards for unfiltered surface water supplies. Turbidity levels in unfiltered water must not exceed 5 NTU (nephelometric turbidity units) more than two times in a twelve-month period. The typical cause of turbidity is tiny particles of sediment in the water that can interfere with disinfection and provide a medium for microbial growth. Large storm events can result in increased turbidity, causing the Portland Water Bureau to shut down the Bull Run system and serve water from the Columbia South Shore Well Field.

Giardia
Wildlife in the watershed may be hosts to *Giardia lamblia*, the organism that causes giardiasis. Chlorine is effective in inactivating *Giardia*.

Fecal Coliform
The presence of fecal coliform bacteria in source water indicates that water may be contaminated with animal wastes. Although fecal coliforms are measured for compliance, there are instances when the Portland Water Bureau submits total coliform bacteria for compliance sampling. The Portland Water Bureau uses chlorine to control these bacteria.

Nitrate - Nitrogen
Nitrate, measured as nitrogen, can support microbial growth (bacteria and algae). Nitrate levels exceeding the standards can contribute to health problems.

Arsenic, Barium and Fluoride
Metals and minerals are elements found in the earth's crust, and can dissolve into water that is in contact with soil or in groundwater aquifers. At the levels found in Portland's drinking water, they are unlikely to contribute to adverse health effects.

P-Dichlorobenzene
P-Dichlorobenzene, a volatile organic compound (VOC) that is a byproduct of chemical and plastic manufacturing, was detected in the distribution system during special sampling for a short period of time in May 2008. Although the exact source of *p*-Dichlorobenzene is unknown, one possibility is that it was introduced as a result of construction work on one of the transmission conduits. *P*-Dichlorobenzene was not detected in Portland's compliance sample, in source waters or after extensive follow-up sampling and has not been detected since. At the levels detected, 1.3% of the MCL, *p*-Dichlorobenzene does not pose a health risk.

Radium-226/228
Radium is a naturally occurring radioactive gas that cannot be seen, tasted or smelled. Radium has never been detected in the Bull Run supply. It was detected in Portland's groundwater.

Total Coliform Bacteria
Coliform bacteria are naturally present in the environment. Their presence is an indicator that other potentially harmful bacteria may be present. The Portland Water Bureau uses chlorine to control these bacteria. Total coliform samples are collected from both the source water and the distribution system.

Disinfection Byproducts
During disinfection, certain byproducts form as a result of chemical reactions between chlorine and naturally occurring organic matter in the water. These byproducts can have negative health effects. Monitoring in Portland's system detected trihalomethanes and haloacetic acids, regulated disinfection byproducts. The disinfection process is carefully controlled to remain effective, while keeping byproduct levels low.

Total Chlorine Residual
Total chlorine residual is a measure of free chlorine and combined chlorine and ammonia in our distribution system. Chlorine residual is necessary to maintain disinfection throughout the distribution system. Adding ammonia to chlorine results in a more stable disinfectant and helps to minimize the formation of disinfection byproducts.

Definitions

Action Level
The concentration of a contaminant which, if exceeded, triggers treatment or other requirements which a water system must follow.

Maximum Contaminant Level or MCL
The highest level of a contaminant that is allowed in drinking water. MCLs are set as close to the MCLGs as feasible using the best available treatment technology.

Maximum Contaminant Level Goal or MCLG
The level of a contaminant in drinking water below which there is no known or expected risk to health. MCLGs allow for a margin of safety.

Maximum Residual Disinfectant Level or MRDL
The highest level of a disinfectant allowed in drinking water. There is convincing evidence that addition of a disinfectant is necessary for control of microbial contaminants.

Maximum Residual Disinfectant Level Goal or MRDLG
The level of a drinking water disinfectant below which there is no known or expected risk to health. MRDLGs do not reflect the benefits of the use of disinfectants to control microbial contaminants.

Part Per Million
One part per million corresponds to one penny in $10,000 or approximately one minute in two years. One part per million is equal to 1,000 parts per billion.

Part Per Billion
One part per billion corresponds to one penny in $10,000,000 or approximately one minute in 2,000 years. One part per billion is equal to 1,000 parts per trillion.

Part Per Trillion
One part per trillion corresponds to one penny in $10,000,000,000 or approximately one second in 32,000 years.

Picocuries Per Liter
Picocurie is a measurement of radioactivity. One picocurie is a trillion times smaller than one curie.

Treatment Technique
A required process intended to reduce the level of a contaminant in drinking water.

Unregulated Contaminants Detected in 2008

Contaminant	Minimum Detected	Average Detected	Maximum Amount Detected	Sources of Contaminant
Entry Points to the Distribution System, the Bull Run Watershed and the Columbia South Shore Well Field				
Radon	264 picocuries per liter	264 picocurries per liter	264 picocuries per liter	Found in natural aquifer deposits
Sodium	2.6 parts per million	8.0 parts per million	18 parts per million	Added to water during treatment, erosion of natural deposits.
Estradiol	Not Detected	Not Applicable	5 parts per trillion	Source unknown, possible percolation into groundwater aquifer
17 Alpha - Ethinyl Estradiol	Not Detected	Not Applicable	18 parts per trillion	
Distribution System of Reservoirs, Tanks and Mains				
Total Trihalomethanes (IDSE Monitoring)	4.9 parts per billion	16 parts per billion	29 parts per billion	Byproduct of drinking water disinfection
Haloacetic Acids (IDSE Monitoring)	Not Detected	23 parts per billion	41 parts per billion	Byproduct of drinking water disinfection

Notes on Unregulated Contaminants

Unregulated contaminant monitoring helps the EPA to determine where certain contaminants occur and whether it needs to regulate those contaminants in the future.

Radon

Radon is a naturally occurring radioactive gas that cannot be seen, tasted or smelled. Radon has never been detected in the Bull Run supply. It is detected at varying levels in Portland's groundwater wells. For information about radon, call the EPA's Radon Hotline (**800-SOS-RADON**) or **www.epa.gov/radon/rnwater.html**.

Sodium

There is currently no drinking water standard for sodium. Sodium is an essential nutrient. At the levels found in drinking water, it is unlikely to contribute to adverse health effects.

Pharmaceuticals and Personal Care Products (PPCPs) in Portland's Drinking Water

In 2006, drinking water from the Bull Run was tested for PPCPs, with a single detection for caffeine. In 2007, groundwater was tested for PPCPs, with detections for acetaminophen and ibuprofen (over-the-counter pain killers), sulfamethoxazole (an antibiotic) and caffeine in extremely low levels, parts per trillion. In 2008, no PPCPs were detected in the Bull Run. However, in April 2008, estradiol and 17 alpha-ethinyl estradiol (hormones found in birth control) were detected in groundwater, also in parts per trillion. During the same testing, fluoxetine (commonly known as Prozac) and esterone (hormone found in birth control) were detected in field blanks (purified water used to monitor potential contamination introduced by the collection, handling, shipping and analysis procedures). During further sampling in August and November, 2008, no PPCPs were detected in groundwater.

The Portland Water Bureau understands that customers take this issue very seriously and plans to continue to regularly test for PPCPs in our source waters. The Portland Water Bureau will also continue to take actions to protect our drinking water from these and other emerging contaminants. In addition to protections in the Bull Run and the Columbia South Shore Well Field Well Head Protection Program, the City of Portland is currently working with health officials to initiate a pharmaceutical take-back program to reduce the amount of pharmaceuticals released in the environment. The Portland Water Bureau will continue to report any detections to our customers.

Total Trihalomethanes and Haloacetic Acids

These results are from the Initial Distribution System Evaluation (IDSE) as required by the Stage 2 Disinfectants and Disinfection Byproducts Rule that requires drinking water providers to perform an analysis to identify distribution system locations with high concentrations of trihalomethanes (THMs) and haloacetic acids (HAAs). These results have been used to select monitoring locations for compliance with this rule.

Although most people think of the Portland Water Bureau as a provider of drinking water, the bureau also maintains and supplies water to nearly 16,000 fire hydrants. The first fire hydrant was installed in 1864. Today hydrants are spaced at a minimum of 1,000 feet apart, closer in high-density residential areas, and two at every intersection in downtown.

Improving Your Water Quality

Road Decommissioning

One of the measures used to protect water quality in the Bull Run watershed is road decommissioning. In the late 1990s and the early part of this decade, the Water Bureau and the Mt. Hood National Forest, Portland's long-term partner in watershed protection for the Bull Run, evaluated the roads that are essential for maintenance of the water-supply system and for maintaining fire protection.

Beginning in 1997, the Forest Service began decommissioning old logging roads in the Bull Run watershed that were no longer needed and that posed a risk to water quality. Decommissioning involves using large excavators to remove culverts and the surrounding road fill material located in stream crossings, and then replanting the excavated areas. This helps protect water quality by removing road fill material that would otherwise be at risk of eroding during large storm events. The other benefit of road decommissioning is that it reduces costs by allowing the Water Bureau to focus its attention on maintaining only the roads that are essential for operation and protection of the Bull Run water supply.

The Water Bureau's primary role in the road decommissioning program has been to lobby Congress to urge it to provide sufficient funding for the Forest Service to complete the necessary decommissioning work in the watershed. Forest Service contractors completed about 18 miles of road decommissioning in the Bull Run water-supply drainage during 2008. A total of 61 miles of roads have been decommissioned in the Bull Run drainage to date. Less than four miles of roads remain to be decommissioned to complete the program. Those remaining roads are set to be completed by the end of 2010.

Large Meter Replacement

As part of the Water Bureau's Lead Hazard Reduction Program, the bureau has been removing potential sources of lead in the distribution system to reduce customer exposure to lead in drinking water. One potential source of lead has been large meters, those connected to service lines larger than one inch. Certain large meters installed before 1986 contain lead components that contact drinking water as it passes through the meter.

Three-inch domestic meter, circa 1931

Since 2001, the Portland Water Bureau has been prioritizing the removal of all pre-1986 large meters that serve populations vulnerable to lead exposure, and replacing them with lead-free meters. In June of 2008, the last known large meter with lead components serving water to vulnerable populations was replaced. In total, 364 large meters serving schools, hospitals, childcare facilities, community centers, public housing complexes and large apartment buildings were replaced.

The replacement of these meters was a complex project involving temporary street closures, or after-hours work. These meters could not have been replaced without the hard work of the meter shop and the maintenance and construction crews and supervisors who were willing to work with the Lead Hazard Reduction Program to make replacement a priority.

For more information visit **www.portlandonline.com/water/lead**.

Intensive Monitoring for Disinfection Byproducts (DBPs)

In 2008, Portland completed EPA's Initial Distribution System Evaluation or IDSE. The goal of the IDSE is to characterize the distribution system and identify monitoring sites where customers may be exposed to high levels of total trihalomethanes (TTHM) and haloacetic acids (HAAs).

The good news is that there were no hot spots for disinfection byproducts found in the Portland distribution system. Because Portland uses chloramines as a disinfectant, there is little additional formation of byproducts in Portland's distribution system. The results for each location were within Portland's historical range of byproduct detection (with the exception of one site that had lower results than in the past).

Portland took advantage of the completeness of this data collection effort to review operational factors that may be utilized to minimize disinfection byproducts. The concentration of disinfection byproducts (HAAs and THMs) was strongly related to total organic carbon (TOC), chlorine dosage, and contact time with a level of chlorine (CT). More TOC and CT, and higher chlorine dosage, can cause more disinfection byproducts. This understanding will help operations staff to adjust treatment to minimize DBPs.

Cryptosporidium

Cryptosporidium is a microorganism (protozoan) naturally present in bodies of surface water throughout the world. Symptoms of *Cryptosporidium* infection include nausea, diarrhea and abdominal cramps. Most healthy individuals are able to overcome the disease within a few weeks. However, immuno-compromised people have more difficulty and are at greater risk of developing severe, life-threatening illness. *Cryptosporidium* must be ingested for it to cause disease, and may be spread through means other than drinking water. For more information about *Cryptosporidium* visit **www.epa.gov/safewater/crypto.html**.

Surface water supplies are particularly vulnerable if they receive runoff or are exposed to human or animal wastes. Since wildlife inhabit the Bull Run watershed, the Portland Water Bureau regularly monitors for *Cryptosporidium* and has done so for more than ten years. Occasionally, the Portland Water Bureau has found *Cryptosporidium* at low levels. No *Cryptosporidium* oocysts have been detected in Portland water samples since 2002.

In January 2006, the EPA issued a drinking water rule called the Long Term 2 Enhanced Surface Water Treatment Rule (LT2) establishing new national standards to further reduce the risks of illness from *Cryptosporidium*. These standards, as written, require additional treatment processes by 2012 for unfiltered water systems such as Portland's (States may grant up to an additional 2 years for systems such as Portland who would need to make capital improvements.) The rule also requires that Portland eliminate the use of open finished drinking water reservoirs. Because of the protected status of Portland's Bull Run source, and the very low incidence of *Cryptosporidium* in Bull Run source water, Portland filed a legal challenge to the new federal rule. The legal challenge sought to establish alternative and less expensive methods of compliance. On November 6, 2007, a three-judge panel of the Washington, DC District Court of Appeals issued a unanimous decision, rejecting the City of Portland's challenge to the rule.

In response to the court ruling, Portland is pursuing parallel compliance strategies. Commissioner Randy Leonard has directed the Portland Water Bureau to begin planning and budgeting to achieve compliance with the new rule as written. This includes the evaluation, selection and development of one of the treatment approaches prescribed in the rule. In addition, Commissioner Leonard has directed the bureau to attempt to obtain a variance to the treatment portion of the rule from the federal EPA. A variance could conceivably enable Portland to avoid the expenses associated with building a new treatment facility if Portland can demonstrate to the EPA that, due to the nature of the Bull Run source, such action is unnecessary.

Finally, Portland has also included a request for congressional intervention by the Oregon congressional delegation in its 2009 federal legislative agenda. If Congress passes legislation exempting Portland from the new federal requirements, it would enable Portland to avoid additional treatment and to continue using open finished drinking water reservoirs. For updates on the Portland Water Bureau's response to the LT2 rule visit **www.portlandonline.com/water/LT2**.

Lead and Copper Samplings at High Risk Residential Water Taps*

90th Percentile Values	Number of Sites Exceeding Action Levels**	Lead and Copper Rule Exceedance	Maximum Contaminant Level Goal (MCLG)	Sources of Contaminant
COPPER				
0.34 parts per million	Zero samples exceeded the copper action level of 1.3 parts per million	More than 10% of the homes tested have copper levels greater than 1.3 parts per million	1.3 parts per million	Corrosion of household and commercial building plumbing systems
LEAD				
10 parts per billion	6 of 116 samples (5%) exceeded the lead action level of 15 parts per billion	More than 10% of the homes tested have lead levels greater than 15 parts per billion	Zero parts per billion	Corrosion of household and commercial building plumbing systems

** See Water Testing on the next page for more information on testing.*
*** Action Level: The concentration of a contaminant which, if exceeded, triggers treatment or other requirements that a water system must follow.*

Lead was not detected in Portland's water sources. Portland has removed all known lead service connections from its distribution system. Exposure to lead through drinking water is possible if materials in a building's plumbing contain lead. The level of lead in water can increase when water stands in contact with lead-based solder and brass faucets containing lead.

If present, elevated levels of lead can cause serious health problems, especially for pregnant women and young children. Lead in drinking water is primarily from materials and components associated with service lines and home plumbing. The Portland Water Bureau is responsible for providing high quality drinking water, but cannot control the variety of materials used in plumbing components. When your water has been sitting for several hours, you can minimize the potential for lead exposure by flushing your tap for 30 seconds to 2 minutes before using water for drinking or cooking. If you are concerned about lead in your drinking water, you may wish to have your water tested. Information on lead in drinking water, testing methods and steps you can take to minimize exposure is available from the **LeadLine, 503-988-4000**, **www.leadline.org** or the Safe Drinking Water Hotline **800-426-4791**, **www.epa.gov/safewater/lead**.

People are exposed to lead in many other ways. In the Portland area, dust from paint in homes built before 1978 is the most common source of exposure to lead. Other sources include soil, pottery, traditional folk medicines or cosmetics, some sports equipment such as fishing weights and ammunition, and some occupations and hobbies.

Reducing Exposure to Lead

Easy steps to avoid possible exposure to lead from plumbing.

- **Run your water to flush out lead.** If the water has not been used for several hours, run each tap for 30 seconds to 2 minutes or until it becomes colder before drinking or cooking. This flushes water which may contain lead from the pipes.
- **Use cold, fresh water for cooking and preparing baby formula.** Do not cook with or drink water from the hot water tap; lead dissolves more easily into hot water. Do not use water from the hot water tap to make baby formula.
- **Do not boil water to remove lead.** Boiling water will not reduce lead.
- **Consider using a filter.** Check whether it reduces lead – not all filters do. Be sure to maintain and replace a filter device in accordance with the manufacturer's instructions to protect water quality. Contact NSF International at **800-NSF-8010** or **www.nsf.org** for information on performance standards for water filters.
- **Test your water for lead.** Call the **LeadLine** at **503-988-4000** to find out how to get a FREE lead-in-water test.
- **Test your child for lead.** Ask your physician or call the **LeadLine** to find out how to have your child tested for lead. A blood lead level test is the only way to know whether your child is being exposed to lead.
- **Consider buying low-lead fixtures.** New brass faucets, fittings, and valves, may contribute to lead in your drinking water. Federal law currently allows brass fixtures, such as faucets, to contain up to 8% lead. These fixtures are labeled as "lead-free." When buying new fixtures, consumers should seek out those with the lowest lead content. Visit **www.nsf.org** to learn more about lead content in plumbing fixtures.

Leadline - 503-988-4000
Call the **LeadLine** at **503-988-4000** or visit **www.leadline.org** for information about lead hazards, free lead-in-water testing, free childhood blood lead testing and referrals to other lead reduction services.

www.leadline.org

Corrosion Treatment

The Portland Water Bureau's corrosion control treatment reduces corrosion in plumbing by increasing the pH of the water. Comparison of monitoring results with and without pH adjustment shows over 50 percent reduction in lead at the tap with pH adjustment.

Water Testing

Twice each year the Portland Water Bureau monitors for lead in tap water from a sample group of more than 100 homes. These are homes in Portland's service area where the plumbing is known to contain lead solder which is more likely to contribute to elevated lead levels. Samples are collected after the water has been standing in the household plumbing for more than 6 hours. These houses represent a worst-case scenario for lead in water. A Lead and Copper Rule exceedance for lead occurs when more than 10 percent of these homes exceed the lead action level of 15 parts per billion. In the most recent round of testing, less than 10 percent of homes exceeded the lead action level.

If you are concerned that your home tap water may have lead, call the LeadLine for a free lead-in-water test kit and to learn ways to reduce your exposure to all sources of lead. This program targets testing the water in households most at risk from lead in water. These are homes built between 1970 and 1985 with pregnant women or children ages six or younger in the home.

PORTLAND WATER BUREAU
FROM FOREST TO FAUCET


Bull Run Lake

If this information looks familiar, it should.

The city has mailed similar information to customers each year since 1997. Why every year? Drinking water regulations require the city to produce and mail this information every year.

Most of the language is also required – Congress and the EPA want to be sure people know what is in their drinking water. The Portland Water Bureau agrees.

The Portland Water Bureau takes the effort to make this complex information readable at a low cost.

The Portland Water Bureau produced and mailed this report for 30 cents each.

Printed on recycled paper
JUNE 2009

CONTACT INFORMATION

Portland Water Bureau
1120 SW Fifth Avenue
Portland, Oregon 97204
www.portlandonline.com/water
Public Water System #4100657

Portland Water Bureau
Customer Service: 503-823-7770

Portland Water Bureau
Water Line: 503-823-7525

FOR ADDITIONAL INFORMATION

Oregon Department of Human Services – Drinking Water Program:
971-673-0405
www.oregon.gov/DHS/ph/dwp/

The City of Portland will provide auxiliary aids/services to persons with disabilities. To request an ADA accommodation, please call 503-823-7404 or by TTY at 503-823-6868. Copies of this report are available in Braille, large format, and on the Portland Water Bureau's web site — **www.portlandonline.com/water**.

Spanish
Para obtener una copia de este reporte en español, por favor llame al **503-823-7770** o visite www.portlandonline.com/water

Russian
Чтобы получить копию этого отчета на русском языке, пожалуйста, позвоните **503-823-7770** или зайдите на сайт www.portlandonline.com/water

Vietnamese
Để được một bản báo cáo này bằng tieng Việt, xin gọi số **503-823-7770** hoặc đến mạng lưới www.portlandonline.com/water

Chinese
若想获得本报告的中文版本，请拨打**503-823-7770** 或访问：www.portlandonline.com/water

PORTLAND WATER BUREAU

2010 Drinking Water Quality Report

PORTLAND WATER BUREAU

FROM FOREST TO FAUCET

From Commissioner Randy Leonard

I am pleased to share the 2010 Water Quality Report with you. The Portland Water Bureau produces this report every year as mandated by the federal government. The report provides you with an easy-to-understand overview of your drinking water.

One thing you might note is that the Water Bureau monitors Portland's drinking water for more than 200 regulated and unregulated contaminants. That makes me feel incredibly confident in the water we serve and the water you drink. Portland's water is some of the highest-quality drinking water in the world. High quality is the Water Bureau way. It's the Portland way.

I urge you to take a minute to look through this report; learn about your water system and some of what goes into delivering water to your tap. Learn why we believe, "From forest to faucet, the Portland Water Bureau delivers the best drinking water in the world!"

Randy Leonard
Commissioner-In-Charge

From the Administrator

Since 1997, the federal government has required municipal water providers to send customers a yearly report detailing their water system. This report, the 2010 Water Quality Report, is essentially the nutritional label for the substance you probably consume more than any other; water.

If you have questions or comments about this, please call Portland Water Bureau Customer Service at 503-823-7770.
We welcome your interest in Portland's water system.

David G. Shaff
Administrator

Frequently Asked Questions About Water Quality

Is my water treated by filtration?

No. Bull Run water is not filtered. The Bull Run source meets the filtration avoidance criteria of the Surface Water Treatment Rule. The state approved Portland's compliance with these criteria in 1992. Portland continues to meet these criteria on an ongoing basis.

Does the Portland Water Bureau add fluoride to drinking water?

No. The Portland Water Bureau does not add fluoride to the water. Although fluoride is not detected in Bull Run surface water, it is a naturally occurring trace element in groundwater. The U.S. Public Health Service and the Centers for Disease Control and Prevention consider the fluoride levels in Portland's water sources to be lower than optimal for the prevention of tooth decay. You may want to consult with your dentist about fluoride treatment to help prevent tooth decay, especially for young children.

Is Portland's water soft or hard?

Portland's water is very soft. The hardness of Bull Run water is typically 4-13 parts per million (ppm) – approximately ½ a grain of hardness per gallon. Portland's groundwater hardness is approximately 86 ppm (about 5 grains per gallon), which is considered moderately hard.

What is the pH of Portland's water?

The pH of Portland's drinking water typically ranges from 7.2 to 8.2.

Are sodium levels in Portland's drinking water affecting my health?

There is currently no drinking water standard for sodium. Sodium is an essential nutrient. Sodium in Portland's water ranges between 2 and 9 ppm, a level unlikely to contribute to adverse health effects.

Who can I call about water quality or pressure concerns?

The Water Line, **503-823-7525**, can answer your questions and concerns about water quality or pressure. The Water Line is available Monday–Friday from 8:30 a.m.– 4:30 p.m. If you have an emergency after these hours, please contact the after-hours number at **503-823-4874**.

How can I get my water tested?

Contact the LeadLine at **503-988-4000** or **www.leadline.org** for information about free lead-in-water testing. For more extensive testing, private laboratories can test your tap water for a fee. Not all labs are accredited to test for all contaminants. For information about accredited labs, call the Oregon Department of Human Services, Oregon Environmental Laboratory Accreditation Program at **503-693-4122**.

Public Involvement Opportunities

The Portland Water Bureau provides a variety of public information, public involvement and community outreach opportunities. If you have questions about Portland Water Bureau meetings, projects, or programs, please contact Jimmy Brown, Community Involvement and Information Manager, at **503-823-3028**, or visit the Water Blog to learn more about the bureau or leave a comment: **www.portlandoregon.gov/water/blog**.

COVER PHOTO: ROMAN JOHNSTON

Drinking Water Treatment

The first step in the treatment process for Portland's drinking water is disinfection using chlorine. Next, ammonia is added to form chloramines which ensure that disinfection remains adequate throughout the distribution system.

The Portland Water Bureau also adds sodium hydroxide to increase the pH of the water to reduce corrosion of plumbing systems. This treatment helps control lead and copper levels at customers' taps, should these metals be present in home plumbing.

Water Testing

The Portland Water Bureau monitors for over 200 regulated and unregulated contaminants in drinking water, including pesticides and radioactive contaminants. All monitoring data in this report are from 2009. **If a health-related contaminant is not listed in this report, the Portland Water Bureau did not detect it in drinking water.**

Special Notice for Immuno-Compromised Persons

Some people may be more vulnerable to contaminants in drinking water than the general population.

Immuno-compromised persons such as persons with cancer undergoing chemotherapy, persons who have undergone organ transplants, people with HIV/AIDS or other immune system disorders, some elderly, and infants can be particularly at-risk from infections. These people should seek advice about drinking water from their health-care providers. Environmental Protection Agency and Centers for Disease Control and Prevention guidelines on appropriate means to lessen the risk of infection by *Cryptosporidium* and other microbial contaminants are available from the Safe Drinking Water Hotline at **800-426-4791**.

What the EPA Says About Drinking Water Contaminants

Drinking water, including bottled water, may reasonably be expected to contain at least small amounts of some contaminants. The presence of contaminants does not necessarily indicate that water poses a health risk. More information about contaminants and potential health effects can be obtained by calling the Environmental Protection Agency's Safe Drinking Water Hotline at **800-426-4791** or at **www.epa.gov/safewater**.

The sources of drinking water (both tap water and bottled water) include rivers, lakes, streams, ponds, reservoirs, springs, and wells. As water travels over the surface of the land or through the ground, it dissolves naturally occurring minerals and, in some cases, radioactive material, and can pick up substances resulting from the presence of animals or from human activity.

Contaminants in drinking water sources may include:

Microbial contaminants, such as viruses and bacteria, which may come from wildlife or septic systems

Inorganic contaminants, such as salts and metals, which can occur naturally or result from urban stormwater runoff, industrial or domestic wastewater discharges or farming

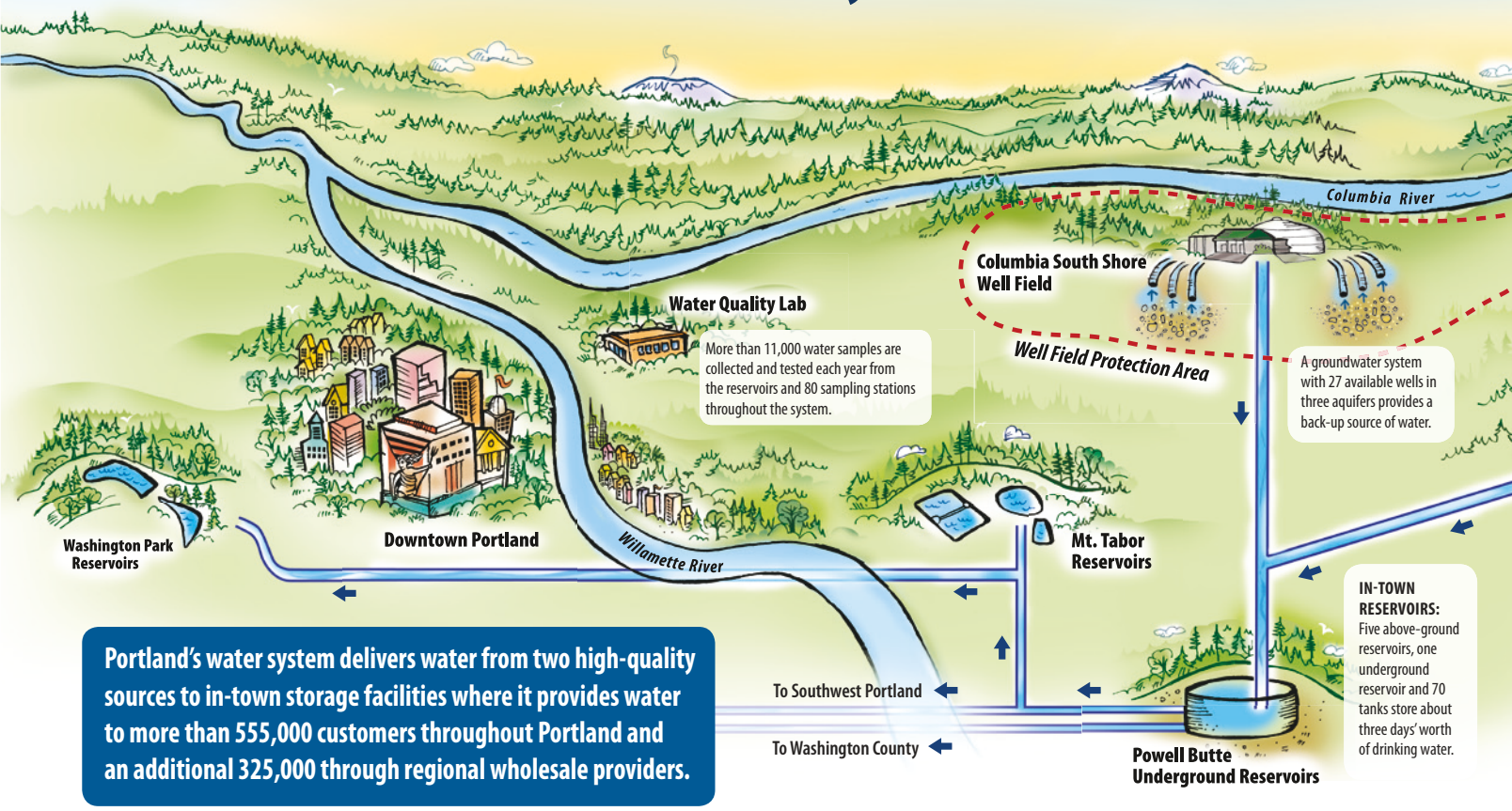
Pesticides and herbicides, which may come from a variety of sources such as farming, urban stormwater runoff and home or business use

Organic chemical contaminants, including synthetic and volatile organic chemicals, which are byproducts of industrial processes, and can also come from gas stations, urban stormwater runoff and septic systems

Radioactive contaminants, which can occur naturally

In order to ensure that tap water is safe to drink, the EPA has regulations that limit the amount of certain contaminants in water provided by public water systems and require monitoring for these contaminants. Food and Drug Administration regulations establish limits for contaminants in bottled water, which must provide the same protection for public health.

Portland's Water System *Established 1895*



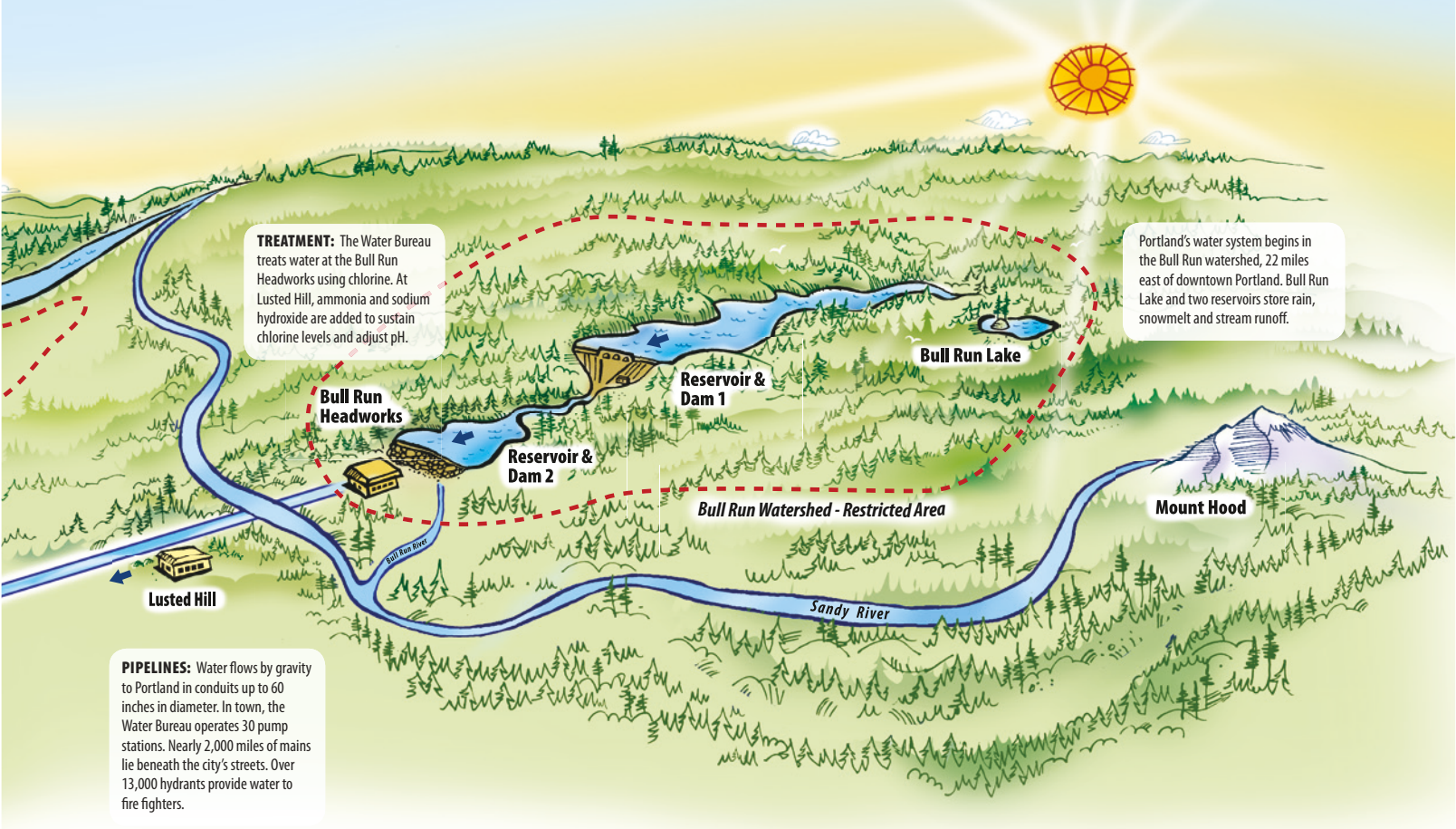
Portland's water system delivers water from two high-quality sources to in-town storage facilities where it provides water to more than 555,000 customers throughout Portland and an additional 325,000 through regional wholesale providers.

The Bull Run Watershed is a surface water supply within the Bull Run Watershed Management Unit located in the Mt. Hood National Forest. A geological ridge separates the watershed from Mount Hood. Current regulations, and the availability of the Columbia South Shore Well Field, allow Portland to meet federal drinking water standards without filtering this high-quality Bull Run water supply. The watershed has an area of 102 square miles, and typically receives 80-170 inches of rainfall a year. The heaviest rains occur from late fall through spring. Two reservoirs store water for use year-round, particularly during the dry summer months.

The watershed is only used for producing drinking water. Federal laws restrict public entry. No recreational, residential, or industrial uses occur within its boundaries. The Portland Water Bureau carefully monitors water quality and quantity. The Oregon Department of Human Services Drinking Water Program regularly inspects the watershed and related treatment and distribution facilities.

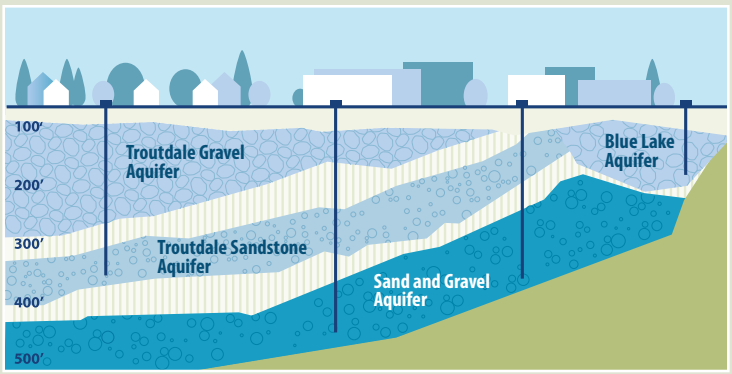
For 105 years, the Bull Run has provided high-quality drinking water to the City of Portland. On January 2, 1895, the first water from the Bull Run flowed into Portland.

The Portland Water Bureau has completed a Source Water Assessment for the Bull Run water supply to comply with the 1996 Safe Drinking Water Act amendments. The only known contaminants of concern for the Bull Run water supply are naturally occurring microbial contaminants such as *Giardia lamblia, Cryptosporidium,* fecal coliform bacteria, and total coliform bacteria. These organisms are found in virtually all freshwater ecosystems and are present in the Bull Run supply at very low levels. The Bull Run supply complies with all applicable state and federal regulations for source water, including the 1989 Surface Water Treatment Rule filtration-avoidance criteria. The Source Water Assessment report is available at **www.portlandoregon.gov/water** and by calling **503-823-7404**.



The Columbia South Shore Well Field is a groundwater source of drinking water that provides high-quality water from production wells located in three different aquifers. In 2009, the City of Portland supplemented the Bull Run drinking water supply with approximately 32 million gallons of groundwater over a 9-day period beginning on August 5th. This was done as part of a groundwater maintenance exercise. Additionally, the City of Portland used 1.1 billion gallons of groundwater over a 31-day period beginning September 28th to augment the summer water supply.

Portland has a long history of groundwater protection. The wellhead protection area encompasses portions of Portland, Gresham and Fairview. Together, these cities regulate businesses in the well-head protection area to prevent hazardous materials spills that could seep into the ground. The cities also educate local residents on what can be done to help protect groundwater with events such as Aquifer Adventure, Cycle the Well Field and Groundwater 101. To learn more about Portland's wellhead protection program, upcoming events and how to protect groundwater, go to **www.portlandoregon.gov/water/groundwater** or call **503-823-7404**.



There are 27 usable wells capable of pumping water from three aquifers on the south shore of the Columbia River. The well field serves as a backup water supply during turbidity events and emergencies and when the bureau needs additional summer supply. The well field can produce up to 102 million gallons of water per day.

The Clackamas River Water District, City of Gresham, City of Lake Oswego, Rockwood Water People's Utility District, the Sunrise Water Authority and the Tualatin Valley Water District provide drinking water to some Portland customers who live near service area boundaries. Customers who receive water from these providers will also receive detailed water quality reports about these sources in addition to this report.

Regulated Contaminants Detected in 2009

Regulated Contaminant	Minimum Detected	Maximum Detected	Maximum Contaminant Level (MCL) or Treatment Technique	Maximum Contaminant Level Goal (MCLG)	Sources of Contaminant
SOURCE WATER FROM BULL RUN WATERSHED					
Turbidity	0.20 NTU	3.8 NTU	Cannot exceed 5 NTU more than two times in twelve months	Not Applicable	Erosion of natural deposits
Giardia	Not Detected	One sample of 50 liters had 3 *Giardia* cysts	Treatment technique required: Disinfection to kill 99.9% of cysts	Not Applicable	Animal wastes
Fecal Coliform Bacteria	Not Detected	1 sample had 6 bacterial colonies (100% of samples had fewer than 20 bacterial colonies per 100 milliliters of water)	At least 90% of samples measured during the previous six months must have 20 or fewer bacterial colonies per 100 milliliters of water	Not Applicable	Animal wastes
ENTRY POINTS TO DISTRIBUTION SYSTEM — from Bull Run Watershed and Columbia South Shore Well Field					
NUTRIENTS					
Nitrate Nitrogen	< 0.01 parts per million	0.18 parts per million	10 parts per million	10 parts per million	Found in natural aquifer deposits; animal wastes
METALS AND MINERALS					
Arsenic	< 0.5 parts per billion	3 parts per billion	10 parts per billion	0 parts per billion	Found in natural aquifer deposits
Barium	< 0.005 parts per million	0.013 parts per million	2 parts per million	2 parts per million	Found in natural aquifer deposits
Fluoride	< 0.05 parts per million	0.14 parts per million	4 parts per million	4 parts per million	Found in natural aquifer deposits
Lead	< 1 part per billion	5 parts per billion	Not Applicable	0 parts per billion	Found in natural aquifer deposits
INORGANIC CONTAMINANTS					
Cyanide	<10 parts per billion	46 parts per billion	200 parts per billion	200 parts per billion	Produced by algae and plants naturally found in the Bull Run watershed
RADIONUCLIDES					
Gross Beta	3.4 picocuries per liter	3.4 picocuries per liter	Not applicable; Screening level of 50 picocuries per liter	0 picocuries per liter	Decay of natural deposits
DISTRIBUTION SYSTEM OF RESERVOIRS, TANKS AND MAINS					
MICROBIOLOGICAL CONTAMINANTS					
***E. Coli* Bacteria**	Not Detected	A routine sample and a repeat sample in November had detectable *E. coli* bacteria	A routine sample and a repeat sample are total coliform positive, and one is also *E. coli* positive	0% of samples with detectable *E. coli* bacteria	Human and animal fecal waste
Total Coliform Bacteria	Not Detected	8 samples out of 319 in October (2.5%) had detectable coliform bacteria	Must not detect coliform bacteria in more than 5.0% of samples in any month	0% of samples with detectable coliform bacteria	Found throughout the environment
DISINFECTION BYPRODUCTS					
TOTAL TRIHALOMETHANES					
Running Annual Average of All Sites	15 parts per billion	21 parts per billion	80 parts per billion	Not Applicable	Byproduct of drinking water disinfection
Single Result at Any One Site	11 parts per billion	33 parts per billion	Not Applicable		
HALOACETIC ACIDS					
Running Annual Average of All Sites	21 parts per billion	25 parts per billion	60 parts per billion	Not Applicable	Byproduct of drinking water disinfection
Single Result at Any One Site	11 parts per billion	42 parts per billion	Not Applicable		

Regulated Contaminant	Minimum Detected	Maximum Detected	Maximum Contaminant Level or Maximum Residual Disinfectant Level (MRDL)	MaximumContaminant Level Goal or Maximum Residual Disinfectant Level Goal (MRDLG)	Sources of Contaminant
DISINFECTANT RESIDUAL					
Total Chlorine Residual	Not Detected	2.0 parts per million	4 parts per million	4 parts per million	Chlorine and ammonia are used to disinfect water

Regulated Contaminant	90th Percentile Values	Number of Sites Exceeding Action Levels	Lead and Copper Rule Exceedance	Maximum Contaminant Level Goal (MCIG)	Sources of Contaminant
LEAD AND COPPER SAMPLINGS AT HIGH-RISK RESIDENTIAL WATER TAPS					
Copper	0.34 parts per million	0 samples exceeded the copper action level of 1.3 parts per million	More than 10% of the homes tested have copper levels greater than 1.3 parts per million	1.3 parts per million	Corrosion of household and commercial building plumbing systems
Lead	10 parts per billion	6 of 116 samples (5%) exceeded the lead action level of 15 parts per billion	More than 10% of the homes tested have lead levels greater than 15 parts per billion	0 parts per billion	Corrosion of household and commercial building plumbing systems

Unregulated Contaminants Detected in 2009

Contaminant	Minimum Detected	Average Detected	Maximum Amount Detected	Sources of Contaminant
ENTRY POINTS TO THE DISTRIBUTION — from Bull Run Watershed and Columbia South Shore Well Field				
Radon	Not detected	145 picocuries per liter	290 picocuries per liter	Decay of natural deposits
Sodium	2.6 parts per million	8.8 parts per million	19 parts per million	Added to water during treatment, erosion of natural deposits
Ibuprofen*	Not Detected	0.6 parts per trillion	3.5 parts per trillion	Source unknown, possible percolation into groundwater aquifer

See Notes on Regulated and Unregulated Contaminants on page 7 for more information. **See notes on Pharmaceuticals and Personal Care Products on page 7.*

Definitions

Action Level
The concentration of a contaminant which, if exceeded, triggers treatment or other requirements which a water system must follow.

Maximum Contaminant Level or MCL
The highest level of a contaminant that is allowed in drinking water. MCLs are set as close to the MCLGs as feasible using the best available treatment technology.

Maximum Contaminant Level Goal or MCLG
The level of a contaminant in drinking water below which there is no known or expected risk to health. MCLGs allow for a margin of safety.

Maximum Residual Disinfectant Level or MRDL
The highest level of a disinfectant allowed in drinking water. There is convincing evidence that addition of a disinfectant is necessary for control of microbial contaminants.

Maximum Residual Disinfectant Level Goal or MRDLG
The level of a drinking water disinfectant below which there is no known or expected risk to health. MRDLGs do not reflect the benefits of the use of disinfectants to control microbial contaminants.

Part Per Million
One part per million corresponds to one penny in $10,000 or approximately one minute in two years. One part per million is equal to 1,000 parts per billion.

Part Per Billion
One part per billion corresponds to one penny in $10,000,000 or approximately one minute in 2,000 years. One part per billion is equal to 1,000 parts per trillion.

Part Per Trillion
One part per trillion corresponds to one penny in $10,000,000,000 or approximately one second in 32,000 years.

Picocuries Per Liter
Picocurie is a measurement of radioactivity. One picocurie is a trillion times smaller than one curie.

Treatment Technique
A required process intended to reduce the level of a contaminant in drinking water.

Notes on Regulated Contaminants

Turbidity
Bull Run is an unfiltered surface water supply. The rules for public water systems have strict standards for unfiltered surface water supplies. Turbidity levels in unfiltered water must not exceed 5 NTU (nephelometric turbidity units) more than two times in a twelve-month period. The typical cause of turbidity is sediment suspended in the water that can interfere with disinfection and provide a medium for microbial growth. Large storm events can result in increased turbidity, causing the Portland Water Bureau to shut down the Bull Run system and serve water from the Columbia South Shore Well Field.

Giardia
Wildlife in the watershed may be hosts to *Giardia lamblia*, the organism that causes giardiasis. The Portland Water Bureau uses chlorine to kill these organisms.

Fecal Coliform Bacteria
The presence of fecal coliform bacteria in source water indicates that water may be contaminated with animal wastes. The Portland Water Bureau uses chlorine to kill these bacteria.

Nitrate - Nitrogen
Nitrate, measured as nitrogen, can support microbial growth (bacteria and algae). Nitrate levels exceeding the standards can contribute to health problems.

Arsenic, Barium, Fluoride and Lead
Metals and minerals are elements found in the earth's crust; they can dissolve into water that is in contact with soil or in groundwater aquifers. At the levels found in Portland's drinking water, they are unlikely to contribute to adverse health effects. There is no maximum contaminant level (MCL) for lead at the entry point to the distribution system. Lead is regulated at customers' taps. See ***Reducing Exposure to Lead*** for more information.

Cyanide
Cyanide is produced by certain bacteria, fungi and algae and is found in a number of plants. It is rarely detected in Portland's source waters. At the levels detected, cyanide is unlikely to contribute to adverse health effects.

Gross Beta
Certain minerals are radioactive and may emit forms of radiation known as photons and beta radiation. Gross Beta was detected in Portland's groundwater at the entry point to the distribution system. The screening level for Gross Beta is not a health-based level but is a level at which additional and increased monitoring would be necessary.

E. Coli Bacteria
E. coli are bacteria that indicate that the water may be contaminated with human or animal wastes. Microbes in these wastes can cause short-term effects, such as diarrhea, cramps, nausea, headaches or other symptoms. The microbes may pose a special health risk for infants, young children, some of the elderly and people with severely compromised immune systems. The Portland Water Bureau uses chlorine to kill these bacteria.

Total Coliform Bacteria
Coliforms are bacteria which are naturally present in the environment and are used as an indicator that other potentially-harmful bacteria may be present.

Disinfection Byproducts
During disinfection, certain byproducts form as a result of chemical reactions between chlorine and naturally occurring organic matter in the water. These byproducts can have negative health effects. Trihalomethanes and haloacetic acids are regulated disinfection byproducts which have been detected in Portland's water. The disinfection process is carefully controlled to keep byproduct levels low.

Total Chlorine Residual
Total chlorine residual is a measure of free chlorine and combined chlorine and ammonia in our distribution system. Chlorine residual is necessary to maintain disinfection throughout the distribution system. Adding ammonia to chlorine results in a more stable disinfectant and helps to minimize the formation of disinfection byproducts.

Notes on Unregulated Contaminants

Unregulated contaminant monitoring helps the EPA to determine where certain contaminants occur and whether it needs to regulate those contaminants in the future.

Radon
Radon is a naturally occurring radioactive gas that cannot be seen, tasted, or smelled. Radon has never been detected in the Bull Run supply. It is detected at varying levels in Portland's groundwater wells. For information about radon, call the EPA's Radon Hotline **800-SOS-RADON** or **www.epa.gov/radon/rnwater.html**.

Sodium
There is currently no drinking water standard for sodium. Sodium is an essential nutrient. At the levels found in drinking water, it is unlikely to contribute to adverse health effects.

Pharmaceuticals and Personal Care Products (PPCPs) in Portland's Drinking Water
In 2009, samples for PPCPs were collected from treated and untreated water from the Bull Run and groundwater sources. Ibuprofen was only detected at the inlet to the Groundwater treatment plant. However, ibuprofen was not detected in the water after it was treated. The Portland Water Bureau takes this issue very seriously. The Portland Water Bureau will continue to test for PPCPs in our source waters and report any detections to our customers. The Portland Water Bureau will also continue to take actions to protect our drinking water from these and other emerging contaminants.

Reducing Exposure to Lead

Portland has removed all known lead service connections from its distribution system. Exposure to lead through drinking water is possible if materials in a building's plumbing contain lead. The level of lead in water can increase when water stands in contact with lead-based solder and brass faucets containing lead.

If present, elevated levels of lead can cause serious health problems, especially for pregnant women and young children. Lead in drinking water is primarily from materials and components associated with service lines and home plumbing. The Portland Water Bureau is responsible for providing high-quality drinking water, but cannot control the variety of materials used in plumbing components. When your water has been sitting for several hours, you can minimize the potential for lead exposure by flushing your tap for 30 seconds to 2 minutes before using water for drinking or cooking. If you are concerned about lead in your drinking water, you may wish to request a free lead-in-water test from the LeadLine. Information on lead in drinking water, testing methods and steps you can take to minimize exposure is available from the **LeadLine, 503-988-4000**, **www.leadline.org** or the Safe Drinking Water Hotline **800-426-4791**, **www.epa.gov/safewater/lead**.

People are exposed to lead in many other ways. In the Portland area, dust from paint in homes built before 1978 is the most common source of exposure to lead. Other sources include soil, pottery, traditional folk medicines or cosmetics, some sports equipment such as fishing weights and ammunition, and some occupations and hobbies.

Corrosion Treatment

The Portland Water Bureau's corrosion control treatment reduces corrosion in plumbing by increasing the pH of the water. Comparison of monitoring results with and without pH adjustment shows more than 50 percent reduction in lead and 80 percent reduction in copper at the tap with pH adjustment.

Water Testing

Twice each year the Portland Water Bureau monitors for lead and copper in tap water from a sample group of more than 100 homes. These are homes in Portland's service area where the plumbing is known to contain lead solder which is more likely to contribute to elevated lead levels. These houses represent a worst-case scenario for lead in water. Samples are collected after the water has been standing in the household plumbing for more than 6 hours. A Lead and Copper Rule exceedance for lead occurs when more than 10 percent of these homes exceed the lead action level of 15 parts per billion. In the most recent round of testing, less than 10 percent of homes exceeded the lead action level.

If you are concerned that your home tap water may have lead, call the LeadLine for a free lead-in-water test kit and to learn ways to reduce your exposure to all sources of lead. This program targets testing the water in households most at-risk from lead in water. These are homes built between 1970 and 1985 with pregnant women or children ages six or younger in the home.

Easy steps to avoid possible exposure to lead from plumbing

- **Run your water to flush out lead.** If the water has not been used for several hours, run each tap for 30 seconds to 2 minutes or until it becomes colder before drinking or cooking. This flushes water which may contain lead from the pipes.
- **Use cold, fresh water for cooking and preparing baby formula.** Do not cook with or drink water from the hot water tap; lead dissolves more easily into hot water. Do not use water from the hot water tap to make baby formula.
- **Do not boil water to remove lead.** Boiling water will not reduce lead.
- **Consider using a filter.** Check whether it reduces lead – not all filters do. Be sure to maintain and replace a filter device in accordance with the manufacturer's instructions to protect water quality. Contact NSF International at **800-NSF-8010** or **www.nsf.org** for information on performance standards for water filters.
- **Test your water for lead.** Call the **LeadLine** at **503-988-4000** to find out how to get a **FREE** lead-in-water test.
- **Test your child for lead.** Ask your physician or call the **LeadLine** to find out how to have your child tested for lead. A blood lead level test is the only way to know whether your child is being exposed to lead.
- **Regularly clean your faucet aerator.** Particles containing lead from solder or household plumbing can become trapped in your faucet aerator. Regular cleaning every few months will remove these particles and reduce your exposure to lead.
- **Consider buying low-lead fixtures.** New brass faucets, fittings, and valves, may contribute to lead in your drinking water. Federal law currently allows brass fixtures, such as faucets, to contain up to 8% lead. These fixtures are labeled as "lead-free." When buying new fixtures, consumers should seek out those with the lowest lead content. Visit **www.nsf.org** to learn more about lead content in plumbing fixtures.

Leadline - 503-988-4000

Call the **LeadLine** at **503-988-4000** or visit **www.leadline.org** for information about lead hazards, free lead-in-water testing, free childhood blood lead testing and referrals to other lead reduction services.

www.leadline.org

Cryptosporidium and LT2

Cryptosporidium is a microorganism (protozoan) naturally present in bodies of surface water throughout the world. Surface water supplies are particularly vulnerable to *Cryptosporidium* contamination if they receive runoff exposed to human or animal wastes. Since wildlife inhabit the Bull Run watershed, the Portland Water Bureau regularly monitors for *Cryptosporidium* and has done so for more than ten years. Occasionally, the Portland Water Bureau has found *Cryptosporidium* at low levels. No *Cryptosporidium* oocysts have been detected in Portland water samples since August 2002.

Symptoms of *Cryptosporidium* infection include nausea, diarrhea and abdominal cramps. Most healthy individuals are able to overcome the disease within a few weeks. However, immuno-compromised people have more difficulty and are at greater risk of developing severe, life-threatening illness. *Cryptosporidium* must be ingested for it to cause disease, and may be spread through means other than drinking water.

The LT2 Rule

In January 2006, the Environmental Protection Agency (EPA) issued a drinking water rule called the Long Term 2 Enhanced Surface Water Treatment Rule (LT2) establishing new national standards to further reduce the risks of illness from *Cryptosporidium*. The LT2 rule has two principal requirements which affect Portland:

1) The installation of additional treatment processes to address *Cryptosporidium* in Bull Run source water by 2014, and
2) Ending the use of open finished drinking water reservoirs in Mt. Tabor and Washington Parks.

Treatment Requirements: A Parallel Path

The Safe Drinking Water Act enables Portland to apply for a variance to the treatment requirements of the LT2 rule if it can demonstrate that such treatment isn't necessary to protect public health. In November 2009, the Water Bureau developed a comprehensive sampling plan and study to investigate whether *Cryptosporidium* is a public health risk in the Bull Run watershed. Over the course of 2010, the City will be testing and studying Bull Run water to determine whether or not there is evidence to support a variance request. If the sampling and study results support a variance request, the City will submit a variance application in early 2011.

The City is also in the process of designing an Ultraviolet light (UV) treatment facility to meet the treatment requirements of the LT2 rule should the treatment variance effort fail. The UV design phase is scheduled to be completed by mid-2011 when a final decision on the City's eligibility for a treatment variance is anticipated. This timing will enable the City to meet the 2014 deadline for constructing the UV treatment facility, if it proves to be necessary. The Portland City Council must approve the construction of the UV treatment facility before it can be built.

Open Reservoir Requirements: A Ten-Year Plan

In November 2009, the City requested direction from EPA regarding the possibility of a variance to the open reservoir requirements of the LT2 rule. In December 2009, the EPA replied back that no such option exists. As required by the LT2 Rule, the City is currently implementing a multi-year plan to end the use of its open finished drinking water reservoirs in Mt. Tabor and Washington Parks by December 31, 2020.

For updates on the Portland Water Bureau's response to the LT2 rule visit **www.portlandonline.com\water\LT2**.

Powell Butte II

In December 2009, the Portland Water Bureau broke ground on the construction of a second underground reservoir at Powell Butte Nature Park in southeast Portland. When completed, the reservoir will provide an additional 50 million gallons of drinking water storage. The reservoir is necessary as part of the Water Bureau's long range storage plan and supports compliance with the storage requirements of the Long Term 2 Enhanced Surface Water Treatment Rule (LT2). The rule requires drinking water systems to eliminate the use of open finished drinking water reservoirs, such as those at Mt. Tabor Park and Washington Park.

Construction of the Powell Butte reservoir is occurring in two phases. In phase one, completed in April 2010, approximately 323,000 cubic yards of material were excavated to an average depth of 30 feet. This excavation was one of the largest to occur in the history of Portland. During excavation, fully loaded dump trucks left Powell Butte every four minutes, making an average 400 trips daily to a nearby quarry.

Phase two, to begin in spring 2011, will involve the construction of the buried concrete reservoir, pipes, vaults and emergency overflow. In addition, a number of park improvements are included under terms of a conditional use master plan. The reservoir is scheduled to be completed and in service in time to discontinue use of the open reservoirs at Mt. Tabor by December 31, 2015.

Excavation for the Powell Butte storage reservoir

Developments in Water Quality

November Boil Water Notice

On November 26, 2009, the Portland Water Bureau received results showing the presence of *E. coli* in a sample from Reservoir 3, an open finished drinking water reservoir at Washington Park. As required by drinking water regulations, a second sample was collected from the reservoir. On November 28th, the results for the second sample were positive for *E. coli*. This constituted a violation of the Total Coliform Rule, which required that a boil water notice be issued to customers being served water from this reservoir.

On November 28th a boil water notice was issued to all Portland Water Bureau customers west of the Willamette River and customers of Burlington, Palatine Hill and Valley View water districts. As a result, the open reservoir was taken out of service, and additional water quality samples were collected throughout the affected area. On Sunday, November 29th, results from all samples were negative for *E. coli* and other indicator bacteria, and the boil water notice was lifted. Throughout the incident, the Portland Water Bureau coordinated with the Multnomah County Health Department to monitor for evidence of a widespread water-borne disease outbreak. No such evidence was detected, leading to the belief that the contamination was limited and had little to no effect on the health of the general public.

Following the incident, the Portland Water Bureau conducted a thorough investigation into the cause of the contamination. The reservoir was drained and inspected, sample lines were investigated and a DNA analysis was performed on the two positive samples. No source of contamination was found and results of the DNA analysis were inconclusive.

In response to this incident, the Portland Water Bureau has instituted several operational changes. As part of these changes, routine sampling has been updated to include additional sampling sites. This will assist in determining the extent of potential contamination. In addition, all follow-up samples will now be collected on the same day of a positive result notification even though regulations allow for twenty-four hours between sampling. Also, should a single sample from an open reservoir be positive for *E. coli*, the reservoir will immediately be taken out of service, when feasible, to limit distribution of the potentially contaminated water while further sampling is performed. The Portland Water Bureau is conducting a condition assessment on reservoir sampling lines to ensure integrity and sanitary conditions. Finally, the Portland Water Bureau, in coordination with other agencies in the City of Portland, is implementing an auto-dial and text communication system that will allow the Portland Water Bureau to directly contact customers more quickly and accurately in the future. The Portland Water Bureau encourages customers to register to receive emergency notifications at **www.publicalerts.org**.

Unregulated Contaminant Monitoring Rule

In 2009, the Portland Water Bureau monitored for 25 chemicals as part of the Unregulated Contaminant Monitoring Rule, or UCMR. The Safe Drinking Water Act requires the U.S. Environmental Protection Agency (EPA) to establish criteria for a program for public water systems to monitor for unregulated contaminants every five years. On December 2, 2006, the UCMR was signed. The UCMR requires systems that serve more than 10,000 people to monitor for all 25 contaminants. The contaminants include flame retardants, explosives, pesticide constituents and disinfection by-products.

For four consecutive quarters in 2009, the Portland Water Bureau collected samples for all 25 contaminants at the entry point to the distribution system and at an additional location in the distribution system for nitrosamines, a group of carcinogens.

Through all four quarters, none of the contaminants was detected from any of the sample locations. This is good news for Portland Water Bureau customers, and is also useful information for the EPA to determine the occurrence of these contaminants in drinking water and the level at which they occur. This information will be used to determine which, if any, of these contaminants should be regulated nationwide.

In the remote Bull Run watershed, the Portland Water Bureau maintains four stations to monitor water quality and stream flow on the major tributaries of the Bull Run reservoirs.

PORTLAND WATER BUREAU
FROM FOREST TO FAUCET

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POSTAL CUSTOMER

If this information looks familiar, it should.

The city has mailed similar information to customers each year since 1997. Why every year? It's the law. Drinking water regulations require the city to produce and mail this information every year.

Most of the language is also required — Congress and the EPA want to be sure that people know what is in their drinking water. The Portland Water Bureau agrees.

The Portland Water Bureau makes significant efforts to produce this complex information readable at a low cost. ***The Portland Water Bureau produced and mailed this report for 30 cents each.***

Sunrise in the Bull Run watershed

ROMAN JOHNSTON

Printed on recycled paper
JUNE 2010

CONTACT INFORMATION

Portland Water Bureau
1120 SW Fifth Avenue/ Room 600
Portland, Oregon 97204
www.portlandoregon.gov/water
Public Water System #4100657

Portland Water Bureau
Customer Service: 503-823-7770

Portland Water Bureau
Water Line: 503-823-7525

FOR ADDITIONAL INFORMATION

Oregon Department of Human Services – Drinking Water Program: 971-673-0405
www.oregon.gov/DHS/ph/dwp/

The City of Portland will provide auxiliary aids/services to persons with disabilities. To request an ADA accommodation, please call 503-823-7404 or by TTY at 503-823-6868. Copies of this report are available in Braille, large format type and on the Portland Water Bureau's Web site — www.portlandoregon.gov/water.

Spanish
Para obtener una copia de este reporte en español, por favor llame al **503-823-7770** o visite www.portlandoregon.gov/water

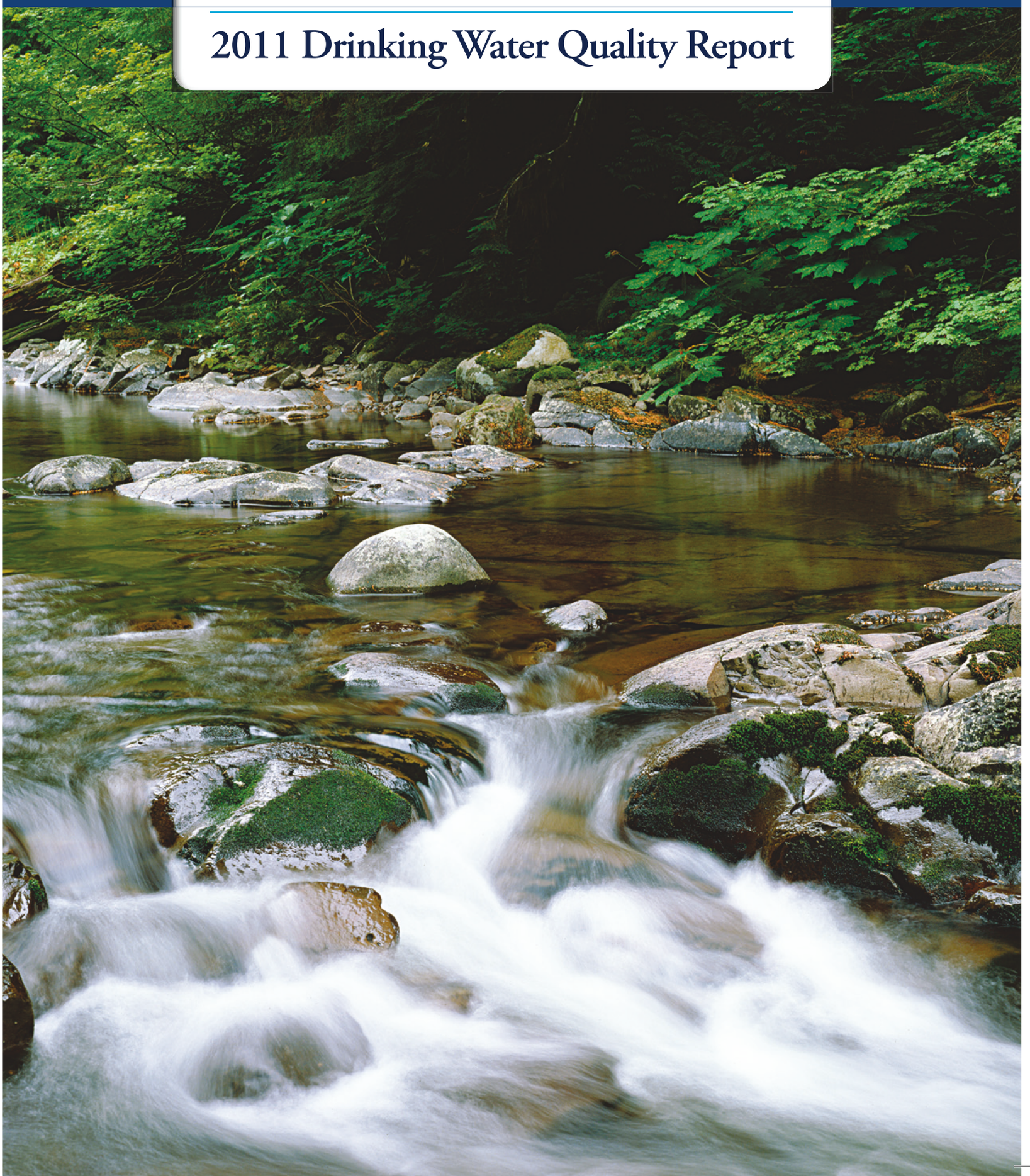
Russian
Чтобы получить копию этого отчета на русском языке, пожалуйста, позвоните **503-823-7770** или зайдите на сайт www.portlandoregon.gov/water

Vietnamese
Để được một bản báo cáo này bằng tieng Việt, xin gọi số **503-823-7770** hoặc đến mạng lưới www.portlandoregon.gov/water

Chinese
若想获得本报告的中文版本，请拨打**503-823-7770** 或访问：www.portlandoregon.gov/water

PORTLAND WATER BUREAU

2011 Drinking Water Quality Report



PORTLAND WATER BUREAU
FROM FOREST TO FAUCET

From Commissioner Randy Leonard

I am pleased to share the 2011 Drinking Water Quality Report with you. The Portland Water Bureau produces this report every year as mandated by the federal government. The report provides you with an easy-to-understand overview of your drinking water.

One thing you might note is that the Water Bureau monitors Portland's drinking water for more than 200 regulated and unregulated contaminants. That makes me feel incredibly confident in the water we serve and the water you drink. Portland's water is some of the highest-quality drinking water in the world. High quality is the Water Bureau way. It's the Portland way.

I urge you to take a minute to look through this report; learn about your water system and some of what goes into delivering water to your tap. Learn why we believe, "From forest to faucet, the Portland Water Bureau delivers the best drinking water in the world!"

Randy Leonard
Commissioner-In-Charge

From the Administrator

Since 1997, the federal government has required municipal water providers to send customers a yearly report detailing their water system. This report, the 2011 Drinking Water Quality Report, is essentially the nutritional label for the substance you probably consume more than any other – water.

If you have questions or comments about this, please call Portland Water Bureau Customer Service at 503-823-7770.
We welcome your interest in Portland's water system.

David G. Shaff
Administrator

Frequently Asked Questions About Water Quality

Is my water treated by filtration?

No. Bull Run water is not filtered. The Bull Run source meets the filtration avoidance criteria of the Surface Water Treatment Rule. The State approved Portland's compliance with these criteria in 1992. Portland continues to meet these criteria on an ongoing basis.

Does the Portland Water Bureau add fluoride to drinking water?

No. The Portland Water Bureau does not add fluoride to the water. Fluoride is a naturally occurring trace element in surface and groundwater. The U.S. Public Health Service and the Centers for Disease Control and Prevention consider the fluoride levels in Portland's water sources to be lower than optimal for the prevention of tooth decay. You may want to consult with your dentist about fluoride treatment to help prevent tooth decay, especially for young children.

Is Portland's water soft or hard?

Portland's water is very soft. The hardness of Bull Run water is typically 4-13 parts per million (ppm) – approximately ½ a grain of hardness per gallon. Portland's groundwater hardness is approximately 86 ppm (about 5 grains per gallon), which is considered moderately hard.

What is the pH of Portland's water?

The pH of Portland's drinking water typically ranges from 7.2 to 8.2.

Are sodium levels in Portland's drinking water affecting my health?

There is currently no drinking water standard for sodium. Sodium is an essential nutrient. Sodium in Portland's water typically ranges between 2 and 8 ppm, a level unlikely to contribute to adverse health effects.

Who can I call about water quality or pressure concerns?

The Water Line, **503-823-7525**, can answer your questions and concerns about water quality or pressure. The Water Line is available Monday–Friday from 8:30 a.m.– 4:30 p.m. If you have an emergency after these hours, please contact the after-hours number at **503-823-4874**.

How can I get my water tested?

Contact the LeadLine at **503-988-4000** or **www.leadline.org** for information about free lead-in-water testing. For more extensive testing, private laboratories can test your tap water for a fee. Not all labs are accredited to test for all contaminants. For information about accredited labs, call the Oregon Health Authority, Oregon Environmental Laboratory Accreditation Program at **503-693-4122**.

Public Involvement Opportunities

The Portland Water Bureau provides a variety of public information, public involvement and community outreach opportunities. If you have questions about Portland Water Bureau meetings, projects, or programs, please contact Jimmy Brown, Community Involvement and Information Manager, at **503-823-3028**, or visit the Water Blog to learn more about the bureau or leave a comment: **www.portlandoregon.gov/water/blog**.

Drinking Water Treatment

The first step in the treatment process for Portland's drinking water is disinfection using chlorine. Next, ammonia is added to form chloramines which ensure that disinfection remains adequate throughout the distribution system.

The Portland Water Bureau also adds sodium hydroxide to increase the pH of the water to reduce corrosion of plumbing systems. This treatment helps control lead and copper levels at customers' taps, should these metals be present in home plumbing.

Water Testing

The Portland Water Bureau monitors for over 200 regulated and unregulated contaminants in drinking water, including pesticides and radioactive contaminants. All monitoring data in this report are from 2010 unless otherwise noted.
If a known health-related contaminant is not listed in this report, the Portland Water Bureau did not detect it in drinking water.

Collecting groundwater samples for water quality analysis.

Special Notice for Immuno-Compromised Persons

Some people may be more vulnerable to contaminants in drinking water than the general population.

Immuno-compromised persons such as persons with cancer undergoing chemotherapy, persons who have undergone organ transplants, people with HIV/AIDS or other immune system disorders, some elderly, and infants can be particularly at-risk from infections. These people should seek advice about drinking water from their health-care providers. Environmental Protection Agency and Centers for Disease Control and Prevention guidelines on appropriate means to lessen the risk of infection by *Cryptosporidium* and other microbial contaminants are available from the Safe Drinking Water Hotline at **800-426-4791**.

What the EPA Says About Drinking Water Contaminants

Drinking water, including bottled water, may reasonably be expected to contain at least small amounts of some contaminants. The presence of contaminants does not necessarily indicate that water poses a health risk. More information about contaminants and potential health effects can be obtained by calling the Environmental Protection Agency's Safe Drinking Water Hotline at **800-426-4791** or at **www.epa.gov/safewater**.

The sources of drinking water (both tap water and bottled water) include rivers, lakes, streams, ponds, reservoirs, springs, and wells. As water travels over the surface of the land or through the ground, it dissolves naturally occurring minerals and, in some cases, radioactive material, and can pick up substances resulting from the presence of animals or from human activity.

Contaminants in drinking water sources may include:

Microbial contaminants, such as viruses and bacteria, which may come from wildlife or septic systems

Inorganic contaminants, such as salts and metals, which can occur naturally or result from urban stormwater runoff, industrial or domestic wastewater discharges or farming

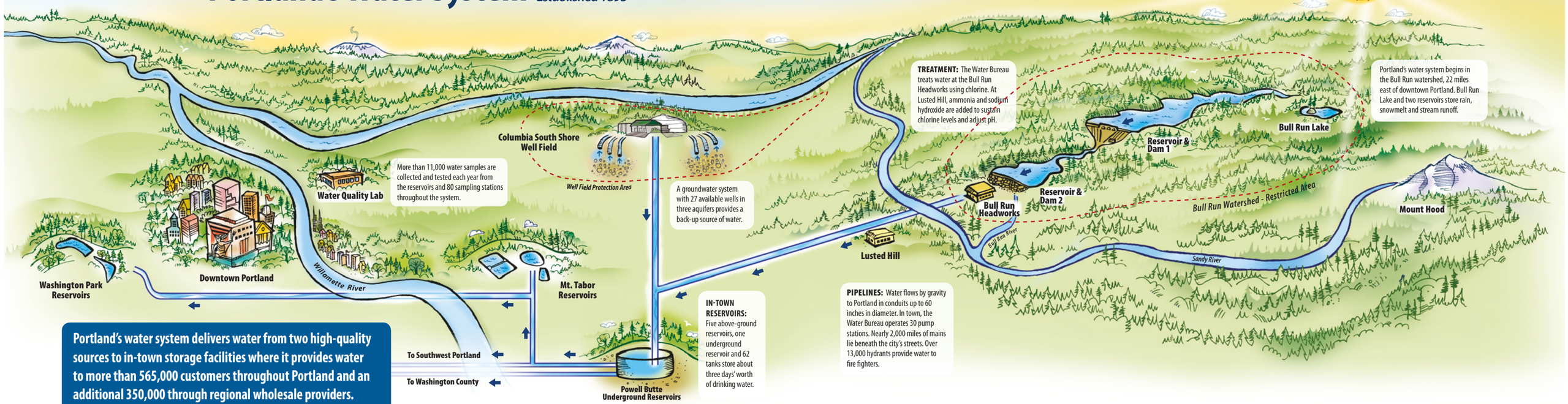
Pesticides and herbicides, which may come from a variety of sources such as farming, urban stormwater runoff and home or business use

Organic chemical contaminants, including synthetic and volatile organic chemicals, which are byproducts of industrial processes, and can also come from gas stations, urban stormwater runoff and septic systems

Radioactive contaminants, which can occur naturally

In order to ensure that tap water is safe to drink, the EPA has regulations that limit the amount of certain contaminants in water provided by public water systems and require monitoring for these contaminants. Food and Drug Administration regulations establish limits for contaminants in bottled water, which must provide the same protection for public health.

Portland's Water System *Established 1895*



Portland's water system delivers water from two high-quality sources to in-town storage facilities where it provides water to more than 565,000 customers throughout Portland and an additional 350,000 through regional wholesale providers.

Benson Bubblers are Portland's iconic drinking fountains. The City currently maintains 52 of the four-bowl fountains and 74 one-bowl variations. The installation of the four-bowl fountains is limited to certain downtown boundaries so as not to diminish the uniqueness of them.

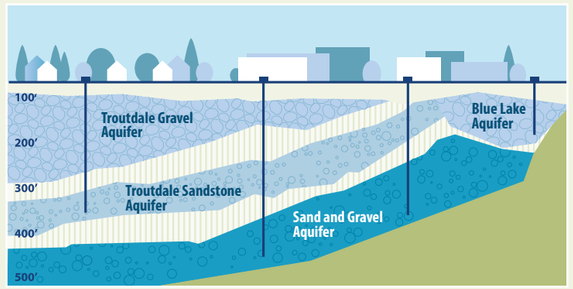
The Bull Run Watershed is a surface water supply within the Bull Run Watershed Management Unit located in the Mt. Hood National Forest. A geological ridge separates the watershed from Mount Hood. Current regulations, and the availability of the Columbia South Shore Well Field, allow Portland to meet federal drinking water standards without filtering this high-quality Bull Run water supply. The watershed has an area of 102 square miles, and typically receives 80-170 inches of rainfall a year. The heaviest rains occur from late fall through spring. Two reservoirs store water for use year-round, particularly during the dry summer months.

The watershed is only used for producing drinking water. Federal laws restrict public entry. No recreational, residential or industrial uses occur within its boundaries. The Portland Water Bureau carefully monitors water quality and quantity. The Oregon Health Authority Drinking Water Program regularly inspects the watershed and related treatment and distribution facilities.

The Portland Water Bureau has completed a Source Water Assessment for the Bull Run water supply to comply with the 1996 Safe Drinking Water Act amendments. The only contaminants of concern for the Bull Run water supply are naturally occurring microbial contaminants such as *Giardia lamblia, Cryptosporidium,* fecal coliform bacteria, and total coliform bacteria. These organisms are found in virtually all freshwater ecosystems and may be present in the Bull Run supply at very low levels. The Bull Run supply complies with all applicable state and federal regulations for source water, including the 1989 Surface Water Treatment Rule filtration-avoidance criteria. The Source Water Assessment report is available at **www.portlandoregon.gov/water** and by calling **503-823-7404**.

The Columbia South Shore Well Field provides high-quality drinking water from groundwater production wells located in three different aquifers. In 2010, the City of Portland supplemented the Bull Run drinking water supply with approximately 28 million gallons of groundwater over a 6-day period beginning on August 9th. This was done as part of a groundwater maintenance exercise.

Portland has a long history of groundwater protection. The groundwater protection area encompasses portions of Portland, Gresham and Fairview. Together, these cities regulate businesses in the groundwater protection area to prevent hazardous material spills that could seep into the ground. The cities also educate local residents on what can be done to help protect groundwater with events such as Aquifer Adventure, Cycle the Well Field and Groundwater 101. To learn more about Portland's groundwater protection program, upcoming events and how to protect groundwater, visit **www.portlandoregon.gov/water/groundwater** or call **503-823-7404**.



There are 27 usable wells capable of pumping water from three aquifers on the south shore of the Columbia River. The well field serves as a backup water supply during turbidity events and emergencies and when the bureau needs additional summer supply. The well field can produce up to 102 million gallons of water per day.

The Clackamas River Water District, City of Gresham, City of Lake Oswego, Rockwood Water People's Utility District, the Sunrise Water Authority and the Tualatin Valley Water District provide drinking water to some Portland customers who live near service area boundaries. Customers who receive water from these providers will also receive detailed water quality reports about these sources in addition to this report.

Regulated Contaminants Detected in 2010

Regulated Contaminant	Minimum Detected	Maximum Detected	Maximum Contaminant Level (MCL), Treatment Technique or Maximum Residual Disinfectant Level (MRDL)	Maximum Contaminant Level Goal (MCLG) or Maximum Residual Disinfectant Level Goal (MRDLG)	Sources of Contaminant
SOURCE WATER FROM THE BULL RUN WATERSHED					
Turbidity	0.23 NTU	2.0 NTU	Cannot exceed 5 NTU more than two times in twelve months	Not Applicable	Erosion of natural deposits
Giardia	Not Detected	8 samples of 10 liters each had 1 *Giardia* cyst	Treatment technique required: Disinfection to kill 99.9% of cysts	Not Applicable	Animal wastes
Fecal Coliform Bacteria	Not Detected	3 samples each had 4 bacterial colonies (100% of samples had 20 or fewer bacterial colonies per 100 milliliters of water)	At least 90% of samples measured during the previous six months must have 20 or fewer bacterial colonies per 100 milliliters of water	Not Applicable	Animal wastes
ENTRY POINTS TO THE DISTRIBUTION SYSTEM — from the Bull Run Watershed and Columbia South Shore Well Field					
NUTRIENTS					
Nitrate Nitrogen	0.01 parts per million	0.09 parts per million	10 parts per million	10 parts per million	Erosion of natural aquifer deposits; animal wastes
METALS AND MINERALS					
Antimony	<0.05 parts per billion	0.12 parts per billion	6 parts per billion	6 parts per billion	Found in natural deposits
Arsenic	<0.5 parts per billion	1.4 parts per billion	10 parts per billion	0 parts per billion	
Barium	0.00079 parts per million	0.00959 parts per million	2 parts per million	2 parts per million	
Chromium (total)	<0.2 parts per billion	0.3 parts per billion	100 parts per billion	100 parts per billion	
Copper[1]	<0.03 parts per million	0.0036 parts per million	Not Applicable	1.3 parts per million	
Fluoride	<0.050 parts per million	0.13 parts per million	4 parts per million	4 parts per million	
Lead	<0.02 parts per billion	0.15 parts per billion	Not Applicable	0 parts per billion	
RADIONUCLIDES					
Gross Beta[2]	3.4 picocuries per liter	3.4 picocuries per liter	50 picocuries per liter [3]	0 picocuries per liter	From man-made sources and natural deposits
DISTRIBUTION SYSTEM OF RESERVOIRS, TANKS AND MAINS					
MICROBIOLOGICAL CONTAMINANTS					
***E. Coli* Bacteria**	Not Detected	Routine samples in April and June had detectable *E. coli* bacteria	A routine sample and a repeat sample are total coliform positive, and one is also *E. coli* positive	0% of samples with detectable *E. coli* bacteria	Human and animal waste
Total Coliform Bacteria	Not Detected	6 samples out of 248 in October (2.42 %) had detectable coliform bacteria	Must not detect coliform bacteria in more than 5.0% of samples in any month	0% of samples with detectable coliform bacteria	Found throughout the environment
DISINFECTION BYPRODUCTS					
TOTAL TRIHALOMETHANES					
Running Annual Average of All Sites	21 parts per billion		80 parts per billion	Not Applicable	Byproduct of drinking water disinfection
Single Result at Any One Site	15 parts per billion	30 parts per billion	Not Applicable		
HALOACETIC ACIDS					
Running Annual Average of All Sites	25 parts per billion		60 parts per billion	Not Applicable	Byproduct of drinking water disinfection
Single Result at Any One Site	13 parts per billion	36 parts per billion	Not Applicable		
DISINFECTANT RESIDUAL					
Total Chlorine Residual	0.1 parts per million	2.2 parts per million	4 parts per million	4 parts per million	Chlorine and ammonia are used to disinfect water

Regulated Contaminant	90th Percentile Values	Number of Sites Exceeding Action Levels	Lead and Copper Rule Exceedance	Maximum Contaminant Level Goal (MCLG)	Sources of Contaminant
LEAD AND COPPER SAMPLINGS AT HIGH-RISK RESIDENTIAL WATER TAPS					
Copper	0.34 parts per million	0 of 112 samples exceeded the copper action level of 1.3 parts per million	More than 10% of the homes tested have copper levels greater than 1.3 parts per million	1.3 parts per million	Corrosion of household and commercial building plumbing systems
Lead	12 parts per billion	10 of 112 samples (8.9%) exceeded the lead action level of 15 parts per billion	More than 10% of the homes tested have lead levels greater than 15 parts per billion	0 parts per billion	Corrosion of household and commercial building plumbing systems

1 *During the year, two different methods with different method reporting limits (MRLs) were used to analyze copper. The sample with results of <0.03 was analyzed by the method with the less sensitive MRL.*

2 *These results are from 2009. The Oregon Health Authority – Drinking Water Program allows water utilities to monitor for some contaminants less than once per year because the concentrations of these contaminants do not change frequently.*

3 *The MCL for gross beta is 4 mrem/yr. EPA considers 50 picocurries per liter to be the level of concern for gross beta.*

Unregulated Contaminants Detected in 2010

Contaminant	Minimum Detected	Average Detected	Maximum Detected	Sources of Contaminant
ENTRY POINTS TO THE DISTRIBUTION SYSTEM — from the Bull Run Watershed and Columbia South Shore Well Field				
Nickel	<0.2 parts per billion	<0.2 parts per billion	0.7 parts per billion	Found in natural aquifer deposits
Radon	310 picocuries per liter	310 picocuries per liter	310 picocuries per liter	Found in natural aquifer deposits
Sodium	2.5 parts per million	8.5 parts per million	24.4 parts per million	Added to water during treatment Erosion of natural deposits
Vanadium	4.9 parts per billion	4.9 parts per billion	4.9 parts per billion	Found in natural aquifer deposits

*See **Notes on Regulated and Unregulated Contaminants** for more information.*

Definitions

Action Level
The concentration of a contaminant which, if exceeded, triggers treatment or other requirements which a water system must follow.

Maximum Contaminant Level or MCL
The highest level of a contaminant that is allowed in drinking water. MCLs are set as close to the MCLGs as feasible using the best available treatment technology.

Maximum Contaminant Level Goal or MCLG
The level of a contaminant in drinking water below which there is no known or expected risk to health. MCLGs allow for a margin of safety.

Maximum Residual Disinfectant Level or MRDL
The highest level of a disinfectant allowed in drinking water. There is convincing evidence that addition of a disinfectant is necessary for control of microbial contaminants.

Maximum Residual Disinfectant Level Goal or MRDLG
The level of a drinking water disinfectant below which there is no known or expected risk to health. MRDLGs do not reflect the benefits of the use of disinfectants to control microbial contaminants.

Part Per Billion
One part per billion corresponds to one penny in $10,000,000 or approximately one minute in 2,000 years.

Part Per Million
One part per million corresponds to one penny in $10,000 or approximately one minute in two years. One part per million is equal to 1,000 parts per billion.

Picocuries Per Liter
Picocurie is a measurement of radioactivity. One picocurie is a trillion times smaller than one curie.

Treatment Technique
A required process intended to reduce the level of a contaminant in drinking water.

Notes on Regulated Contaminants

Turbidity
The Bull Run is an unfiltered surface water supply. The rules for public water systems have strict standards for unfiltered surface water supplies. Turbidity levels in unfiltered water must not exceed 5 NTU (nephelometric turbidity units) more than two times in a twelve-month period. The typical cause of turbidity is sediment suspended in the water that can interfere with disinfection and provide a medium for microbial growth. Large storm events can result in increased turbidity, causing the Portland Water Bureau to shut down the Bull Run system and serve water from the Columbia South Shore Well Field.

Giardia
Wildlife in the watershed may be hosts to *Giardia lamblia*, the organism that causes giardiasis. The Portland Water Bureau uses chlorine to control these organisms.

Fecal Coliform Bacteria
The presence of fecal coliform bacteria in source water indicates that water may be contaminated with animal wastes. The Portland Water Bureau uses chlorine to kill these bacteria.

Nitrate - Nitrogen
Nitrate, measured as nitrogen, can support microbial growth (bacteria and algae). Nitrate levels exceeding the standards can contribute to health problems.

Antimony, Arsenic, Barium, Chromium (total), Copper, Fluoride and Lead
These metals are elements found in the earth's crust which can dissolve into water that is in contact with natural deposits. At the levels found in Portland's drinking water, they are unlikely to contribute to adverse health effects. There is no maximum contaminant level (MCL) for copper or lead at the entry point to the distribution system. Copper and lead are regulated at customers' taps. For more information see ***Chromium-6*** on page 10 and ***Reducing Exposure to Lead*** on page 8.

Gross Beta
Certain elements are radioactive and may emit forms of radiation known as photons and beta radiation. Gross beta was detected in Portland's groundwater at the entry point to the distribution system in 2009. At levels detected in Portland's drinking water, gross beta is unlikely to contribute to adverse health effects.

***E. Coli* Bacteria**
E. coli are bacteria that indicate that the water may be contaminated with human or animal wastes. Microbes in these wastes can cause short-term effects, such as diarrhea, cramps, nausea, headaches or other symptoms. The microbes may pose a special health risk for infants, young children, some of the elderly and people with severely compromised immune systems. The Portland Water Bureau uses chlorine to kill these bacteria.

Total Coliform Bacteria
Coliforms are bacteria which are naturally present in the environment and are used as an indicator that other potentially-harmful bacteria may be present.

Disinfection Byproducts
During disinfection, certain byproducts form as a result of chemical reactions between chlorine and naturally occurring organic matter in the water. These byproducts can have negative health effects. Trihalomethanes and haloacetic acids are regulated disinfection byproducts which have been detected in Portland's water. The disinfection process is carefully controlled to keep byproduct levels low.

Total Chlorine Residual
Total chlorine residual is a measure of free chlorine and combined chlorine and ammonia in our distribution system. Chlorine residual is necessary to maintain disinfection throughout the distribution system. Adding ammonia to chlorine results in a more stable disinfectant and helps to minimize the formation of disinfection byproducts.

Notes on Unregulated Contaminants

Unregulated contaminant monitoring helps the EPA to determine where certain contaminants occur and whether it needs to regulate those contaminants in the future.

Nickel
Nickel is a metal found in the earth's crust; it can dissolve into water that is in contact with natural deposits. There is currently no maximum contaminant level for nickel. At the levels found in Portland's drinking water, it is unlikely to contribute to adverse health effects.

Radon
Radon is a naturally occurring radioactive gas that cannot be seen, tasted or smelled. Radon has not been detected in the Bull Run supply. It has been detected at varying levels in Portland's groundwater supply. For information about radon, call the EPA's Radon Hotline **(800-SOS-RADON)** or **www.epa.gov/radon/rnwater.html**.

Sodium
Sodium is a metal found in the Earth's crust; it can dissolve into water that is in contact with natural deposits or added to water during treatment. There is currently no drinking water standard for sodium. Sodium is an essential nutrient. At the levels found in drinking water, it is unlikely to contribute to adverse health effects.

Vanadium
Vanadium is a metal found in the earth's crust, which can dissolve into water that is in contact with natural deposits. Based on concerns regarding vanadium as a potential emerging contaminant, the Portland Water Bureau tested water from the Columbia South Shore Well Field for vanadium in 2010. All of the results for vanadium were below the 50 parts per billion Notification Level set by the State of California. At these levels it is unlikely to contribute to adverse health effects.

Reducing Exposure to Lead

Portland has removed all known lead service connections from its distribution system. Exposure to lead through drinking water is possible if materials in a building's plumbing contain lead. The level of lead in water can increase when water stands in contact with lead-based solder and brass faucets containing lead.

If present, elevated levels of lead can cause serious health problems, especially for pregnant women and young children. Lead in drinking water is primarily from materials and components associated with service lines and home plumbing. The Portland Water Bureau is responsible for providing high-quality drinking water, but cannot control the variety of materials used in plumbing components. When your water has been sitting for several hours, you can minimize the potential for lead exposure by flushing your tap for 30 seconds to 2 minutes before using water for drinking or cooking. If you are concerned about lead in your drinking water, you may wish to request a free lead-in-water test from the LeadLine. Information on lead in drinking water, testing methods and steps you can take to minimize exposure is available from the **LeadLine, 503-988-4000**, **www.leadline.org** or the Safe Drinking Water Hotline **800-426-4791**, **www.epa.gov/safewater/lead**.

People are exposed to lead in many other ways. In the Portland area, dust from paint in homes built before 1978 is the most common source of exposure to lead. Other sources include soil, pottery, traditional folk medicines or cosmetics, some sports equipment such as fishing weights and ammunition, and some occupations and hobbies.

Corrosion Treatment

The Portland Water Bureau's corrosion control treatment reduces corrosion in plumbing by increasing the pH of the water. Comparison of monitoring results with and without pH adjustment shows more than 50 percent reduction in lead and 80 percent reduction in copper at the tap with pH adjustment.

Water Testing

Twice each year the Portland Water Bureau monitors for lead and copper in tap water from a sample group of more than 100 homes. These are homes in Portland's service area where the plumbing is known to contain lead solder which is more likely to contribute to elevated lead levels. These houses represent a worst-case scenario for lead in water. Samples are collected after the water has been standing in the household plumbing for more than 6 hours. A Lead and Copper Rule exceedance for lead occurs when more than 10 percent of these homes exceed the lead action level of 15 parts per billion. In the most recent round of testing, less than 10 percent of homes exceeded the lead action level.

If you are concerned that your home tap water may have lead, call the LeadLine for a free lead-in-water test kit and to learn ways to reduce your exposure to all sources of lead. This program targets testing the water in households most at-risk from lead in water. These are homes built between 1970 and 1985 with pregnant women or children ages six or younger in the home.

Easy steps to avoid possible exposure to lead in drinking water

- **Run your water to flush out lead.** If the water has not been used for several hours, run each tap for 30 seconds to 2 minutes or until it becomes colder before drinking or cooking. This flushes water which may contain lead from the pipes.
- **Use cold, fresh water for cooking and preparing baby formula.** Do not cook with or drink water from the hot water tap; lead dissolves more easily into hot water. Do not use water from the hot water tap to make baby formula.
- **Do not boil water to remove lead.** Boiling water will not reduce lead.
- **Consider using a filter.** Check whether it reduces lead – not all filters do. Be sure to maintain and replace a filter device in accordance with the manufacturer's instructions to protect water quality. Contact NSF International at **800-NSF-8010** or **www.nsf.org** for information on performance standards for water filters.
- **Test your water for lead.** Call the **LeadLine** at **503-988-4000** to find out how to get a **FREE** lead-in-water test.
- **Test your child for lead.** Ask your physician or call the **LeadLine** to find out how to have your child tested for lead. A blood lead level test is the only way to know whether your child is being exposed to lead.
- **Regularly clean your faucet aerator.** Particles containing lead from solder or household plumbing can become trapped in your faucet aerator. Regular cleaning every few months will remove these particles and reduce your exposure to lead.
- **Consider buying low-lead fixtures.** New brass faucets, fittings and valves, may contribute to lead in your drinking water. Federal law currently allows brass fixtures, such as faucets, to contain up to 8% lead. These fixtures are labeled as "lead-free." When buying new fixtures, consumers should seek out those with the lowest lead content. Visit **www.nsf.org** to learn more about lead content in plumbing fixtures. See ***Reduction of Lead in Drinking Water Act*** on page 10 for more information.

Leadline - 503-988-4000
Call the **LeadLine** or visit **www.leadline.org** for information about lead hazards, free lead-in-water testing, free childhood blood lead testing and referrals to other lead reduction services.

www.leadline.org

The LT2 Rule

In January 2006, the federal Environmental Protection Agency (EPA) issued a drinking water rule called the Long Term 2 Enhanced Surface Water Treatment Rule (LT2) principally to reduce the risks of illness from *Cryptosporidium*, a protozoan parasite found in the intestines and fecal material of mammals. If ingested, infectious forms of *Cryptosporidium* can cause cryptosporidiosis which results in gastrointestinal illness in humans and more serious illness in immunocompromised populations (see ***Special Notice for Immuno-Compromised Persons*** on page 2 in this report). The LT2 rule has two principal requirements which affect Portland's water system: 1) the installation of additional treatment processes to address *Cryptosporidium* in Bull Run source water by 2014, and 2) ending the use of uncovered finished drinking water reservoirs in Mt. Tabor and Washington Parks.

Compliance with Additional Treatment Requirements

Portland's Request for a Treatment Variance

The Safe Drinking Water Act enables Portland to apply for a variance to the surface water treatment requirements of the LT2 rule if it can demonstrate that such treatment is not necessary to protect public health. In December 2009, the Water Bureau began a comprehensive water sampling program to investigate whether *Cryptosporidium* is a public health risk in the Bull Run watershed. For a one year period the City conducted intensive testing of water samples from its untreated source water. After collecting 449 water samples at the water supply intake and an additional 315 samples from several upstream watershed locations, zero instances of *Cryptosporidium* were detected. These results build on those from previous testing for *Cryptosporidium* in the Bull Run watershed. Although *Cryptosporidium* has been detected in the past, monthly tests from the watershed have not detected the pathogen since August 2002.

The absence of *Cryptosporidium* in the City's water quality sampling results is consistent with the natural conditions and legal protections in place for the Bull Run watershed which serve to reduce the risk of *Cryptosporidium* exposure for Portland's drinking water.

No Cryptosporidium *were found in the year-long water quality monitoring in support of a variance request to the treatment requirements of the LT2 rule.*

Because public entry and any associated recreational, agricultural or development activities are prohibited in the Bull Run watershed, wildlife is the only significant potential *Cryptosporidium* source in the watershed. Analysis of wildlife in the predominant old growth forest conditions in the watershed indicates that total population density of animals is relatively low and that incidence of animals shedding *Cryptosporidium* in the watershed is extremely low. From August 2009 through December 2010, the Water Bureau collected and analyzed 251 wildlife scat samples in and around the watershed for the presence of *Cryptosporidium*. Only a single sample tested positive containing just two individual *Cryptosporidium* oocysts.

Vegetation and hydrologic conditions in the watershed may further reduce the limited risk of *Cryptosporidium* contamination by restricting the movement of potential pathogens through the watershed. The dense forest canopy, low to moderate rainfall intensities, and porous soil that have a high capacity for infiltration result in most water flow occurring below the ground surface. This flow through vegetation and soil can trap pathogens, preventing them from reaching streams and the drinking water supply reservoirs.

An analysis of available health related data appears to show that the majority of the reported cases of cryptosporidiosis in the Portland region are sporadic in nature and that there was no evidence which would suggest that drinking water has been a significant source of cryptosporidiosis. This health data shows that under current conditions in the Bull Run, adding additional water treatment is not likely to result in a measurable decrease in the occurrence of reported cases of cryptosporidiosis in the Bull Run service area.

Based on these sampling results and analysis, the City intends to submit a treatment variance request to the Oregon Drinking Water Program in June 2011 and anticipates hearing back regarding its request by the end of 2011.

UV Treatment as a Last Resort

In the event the Oregon Drinking Water Program rejects the City's request for a treatment variance, the City is also in the process of designing an ultraviolet light (UV) treatment facility to meet the treatment requirements of the LT2 rule. The UV design phase is scheduled to be completed by the end of 2011 when a final decision on the City's eligibility for a treatment variance is anticipated. This timing will enable the City to meet the April 1, 2014 deadline for constructing the UV treatment facility if it proves to be necessary.

Uncovered Finished Drinking Reservoirs: Storage Replacement Underway

In November 2009, the City requested direction from EPA regarding the possibility of a variance to the uncovered finished drinking reservoir requirements of the LT2 rule. In December 2009, the EPA replied that no such option exists. As required by the LT2 Rule, the City is currently implementing a multi-year plan to develop alternative enclosed storage and end the use of its open finished drinking water reservoirs in Mt. Tabor and Washington Parks by December 31, 2020. For updates on the Portland Water Bureau's response to the LT2 rule visit **www.portlandonline.com/water/LT2**.

Developments in Water Quality

Chromium-6

The progress on research into chromium-6 made news in December 2010 when the Environmental Working Group, an environmental advocacy group, said it had found chromium-6 in the water of 31 cities and urged the EPA to adopt new rules regarding the regulation of this compound.

Currently, there are no federal regulations or requirements to test for chromium-6 in drinking water. In January 2011, the EPA issued recommendations for enhanced chromium-6 monitoring of surface water supplies quarterly and groundwater supplies semi-annually. Portland is voluntarily following these recommendations and has contracted with an accredited laboratory to conduct chromium-6 analysis of the Bull Run water supply quarterly and groundwater in summer 2011.

Chromium is a naturally occurring element found in rocks, animals, plants, soil, and in volcanic dust and gases. Chromium can exist in a variety of forms, but is typically found in the environment and drinking water in two main forms: trivalent chromium (chromium-3) and hexavalent chromium (chromium-6). Chromium-3 occurs naturally in the environment and is an essential human dietary nutrient. Chromium-6 is the more toxic form and is generally associated with industrial processes. Recent studies have shown that ingestion of drinking water or food containing chromium-6 may cause cancer in laboratory mice and rats. Chromium can transform from one form to another in water and soil, depending on the conditions present.

EPA's final toxicological review of chromium-6 is expected in 2011. This risk assessment will form the basis of any regulations that may be developed. PWB will continue to work closely with the EPA and with organizations such as the American Water Works Association to monitor this issue as developments emerge.

Reduction of Lead in Drinking Water Act

In December 2010, US Congress passed the Reduction of Lead in Drinking Water Act. The new law will reduce the amount of lead in new household plumbing fixtures. Currently, "lead-free" plumbing fixtures can contain up to 8% lead. Under the new law the maximum lead content allowed will be 0.25%. The new regulations only apply to new faucets and fixtures and will take effect in three years. The new law will not have any effect on existing home plumbing. The Portland Water Bureau supports the passage of this law and submitted a letter of support for passage of the bill. Household plumbing is the largest source of lead in water in the Portland area.

The Portland Water Bureau encourages customers to carefully choose new faucets and fixtures for their home. Many manufacturers are already producing components that meet the new standards. These components can most easily be purchased through retailers in California, Vermont and Maryland where the new standards have already been implemented. By 2014, all components sold in Portland will meet the higher standards.

The Portland Water Bureau has 184 water quality sampling stations throughout the distribution system to monitor water quality on a regular basis.

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CITY OF PORTLAND, OREGON
Portland Water Bureau
Commissioner Randy Leonard
Administrator David G. Shaff
1120 SW Fifth Avenue / Room 600
Portland, Oregon 97204

***************ECRWSS**
POSTAL CUSTOMER

Drinking water regulations require the city to mail this information to customers each year — It's the law.

Most of the language is also required – Congress and the EPA want to be sure that people know what is in their drinking water. The Portland Water Bureau agrees.

The Portland Water Bureau makes significant efforts to produce this complex information readable and at a low cost. ***The Portland Water Bureau produced and mailed this report for 29 cents each.***

ROMAN JOHNSTON

Dam 1 in the Bull Run watershed

Printed on recycled paper
JUNE 2011

CONTACT INFORMATION

Portland Water Bureau
1120 SW Fifth Avenue/ Room 600
Portland, Oregon 97204
www.portlandoregon.gov/water
Public Water System #4100657

Portland Water Bureau
Customer Service: 503-823-7770

Portland Water Bureau
Water Line: 503-823-7525

FOR ADDITIONAL INFORMATION

Oregon Health Authority – Drinking Water Program:
971-673-0405
www.public.health.oregon.gov/HealthyEnvironments/DrinkingWater

The City of Portland will provide auxiliary aids/services to persons with disabilities. To request an ADA accommodation, please call 503-823-7404 or by TTY at 503-823-6868. Copies of this report are available in Braille, large format type and on the Portland Water Bureau's website — www.portlandoregon.gov/water.

Spanish
Para obtener una copia de este reporte en español, por favor llame al **503-823-7770** o visite www.portlandoregon.gov/water

Russian
Чтобы получить копию этого отчета на русском языке, пожалуйста, позвоните **503-823-7770** или зайдите на сайт www.portlandoregon.gov/water

Vietnamese
Để đuợc một bản báo cáo này bằng tieng Việt, xin gọi số **503-823-7770** hoặc đến mạng lưới www.portlandoregon.gov/water

Chinese
若想获得本报告的中文版本，请拨打**503-823-7770** 或访问：www.portlandoregon.gov/water

PORTLAND WATER BUREAU

2012 Drinking Water Quality Report

PORTLAND WATER BUREAU
FROM FOREST TO FAUCET

From Commissioner Randy Leonard

I am pleased to share the 2012 Drinking Water Quality Report with you. The Portland Water Bureau produces this report every year as mandated by the federal government. The report provides you with an easy-to-understand overview of your drinking water.

One thing you might note is that the Water Bureau monitors Portland's drinking water for more than 200 regulated and unregulated contaminants. That makes me feel incredibly confident in the water we serve and the water you drink. Portland's water is some of the highest-quality drinking water in the world. High quality is the Water Bureau way. It's the Portland way.

I urge you to take a minute to look through this report; learn about your water system and some of what goes into delivering water to your tap. Learn why we believe, "From forest to faucet, the Portland Water Bureau delivers the best drinking water in the world!"

Randy Leonard
Commissioner-In-Charge

From the Administrator

Since 1997, the federal government has required municipal water providers to send customers a yearly report detailing their water system. This report, the 2012 Drinking Water Quality Report, is essentially the nutritional label for the substance you probably consume more than any other – water.

If you have questions or comments about this, please call Portland Water Bureau Customer Service at 503-823-7770. We welcome your interest in Portland's water system.

David G. Shaff
Administrator

Frequently Asked Questions About Water Quality

Is my water treated by filtration?

No. Bull Run water is not filtered. The Bull Run source meets the filtration avoidance criteria of the Surface Water Treatment Rule. The State of Oregon approved Portland's compliance with these criteria in 1992. Portland continues to meet these criteria on an ongoing basis.

Does the Portland Water Bureau add fluoride to drinking water?

No. The Portland Water Bureau does not add fluoride to the water. Fluoride is a naturally occurring trace element in surface and groundwater. The U.S. Public Health Service and the Centers for Disease Control and Prevention consider the fluoride levels in Portland's water sources to be lower than optimal for the prevention of tooth decay. You may want to consult with your dentist about fluoride treatment to help prevent tooth decay, especially for young children.

Is Portland's water soft or hard?

Portland's water is very soft. The hardness of Bull Run water is typically 3-14 parts per million (ppm) – approximately ½ a grain of hardness per gallon. Portland's groundwater hardness is approximately 83 ppm (about 5 grains per gallon), which is considered moderately hard.

What is the pH of Portland's water?

The pH of Portland's drinking water typically ranges between 7.2 and 8.2.

Are sodium levels in Portland's drinking water affecting my health?

There is currently no drinking water standard for sodium. Sodium is an essential nutrient. Sodium in Portland's water typically ranges between 2 and 9 ppm, a level unlikely to contribute to adverse health effects.

Who can I call about water quality or pressure concerns?

The Water Line, **503-823-7525**, can answer your questions and concerns about water quality or pressure. The Water Line is available Monday–Friday from 8:30 a.m.– 4:30 p.m. If you have an emergency after these hours, please contact the after-hours number at **503-823-4874**.

How can I get my water tested?

Contact the LeadLine at **www.leadline.org** or **503-988-4000** for information about free lead-in-water testing. For more extensive testing, private laboratories can test your tap water for a fee. Not all labs are accredited to test for all contaminants. For information about accredited labs, call the Oregon Health Authority, Oregon Environmental Laboratory Accreditation Program at **503-693-4122**.

Public Involvement Opportunities

The Portland Water Bureau provides a variety of public information, public involvement and community outreach opportunities. If you have questions about Portland Water Bureau meetings, projects, or programs, please contact Portland Water Bureau Public Information, at 503-823-8064, or visit the Water Blog to learn more about the bureau or leave a comment: **www.portlandoregon.gov/water/blog.**

COVER PHOTO: ROMAN JOHNSTON

Drinking Water Treatment

The first step in the treatment process for Portland's drinking water is disinfection using chlorine. Next, ammonia is added to form chloramines which ensure that disinfection remains adequate throughout the distribution system.

The Portland Water Bureau also adds sodium hydroxide to increase the pH of the water to reduce corrosion of plumbing systems. This treatment helps control lead and copper levels at customers' taps, should these metals be present in home plumbing.

Water Testing

The Portland Water Bureau monitors for over 200 regulated and unregulated contaminants in drinking water, including pesticides and radioactive contaminants. All monitoring data in this report are from 2011. **If a known health-related contaminant is not listed in this report, the Portland Water Bureau did not detect it in drinking water.**

The Portland Water Bureau collects and analyzes more than 11,000 samples each year.

Special Notice for Immuno-Compromised Persons

Some people may be more vulnerable to contaminants in drinking water than the general population.

Immuno-compromised persons such as persons with cancer undergoing chemotherapy, persons who have undergone organ transplants, people with HIV/AIDS or other immune system disorders, some elderly people, and infants can be particularly at risk from infections. These people should seek advice about drinking water from their health-care providers. Guidelines from the Environmental Protection Agency and Centers for Disease Control and Prevention on appropriate means to lessen the risk of infection by *Cryptosporidium* and other microbial contaminants are available from the Safe Drinking Water Hotline at **800-426-4791**.

What the EPA Says About Drinking Water Contaminants

Drinking water, including bottled water, may reasonably be expected to contain at least small amounts of some contaminants. The presence of contaminants does not necessarily indicate that water poses a health risk. More information about contaminants and potential health effects can be obtained by calling the Environmental Protection Agency's Safe Drinking Water Hotline at **800-426-4791** or at **www.epa.gov/safewater**.

The sources of drinking water (both tap water and bottled water) include rivers, lakes, streams, ponds, reservoirs, springs, and wells. As water travels over the surface of the land or through the ground, it dissolves naturally occurring minerals and, in some cases, radioactive material, and can pick up substances resulting from the presence of animals or from human activity.

Contaminants in drinking water sources may include:

Microbial contaminants, such as viruses and bacteria, which may come from wildlife or septic systems

Inorganic contaminants, such as salts and metals, which can occur naturally or result from urban stormwater runoff, industrial or domestic wastewater discharges or farming

Pesticides and herbicides, which may come from a variety of sources such as farming, urban stormwater runoff and home or business use

Organic chemical contaminants, including synthetic and volatile organic chemicals, which are byproducts of industrial processes, and can also come from gas stations, urban stormwater runoff and septic systems

Radioactive contaminants, which can occur naturally

In order to ensure that tap water is safe to drink, the EPA has regulations that limit the amount of certain contaminants in water provided by public water systems and require monitoring for these contaminants. Food and Drug Administration regulations establish limits for contaminants in bottled water, which must provide the same protection for public health.

Portland's Water System *Established 1895*

Columbia River
Columbia South Shore Well Field
Well Field Protection Area
Water Quality Lab
Downtown Portland
Willamette River
Washington Park Reservoirs
Mt. Tabor Reservoirs
To Southwest Portland
To Washington County
Powell Butte Underground Reservoirs
Lusted Hill
Bull Run Headworks
Bull Run River
Reservoir & Dam 2
Reservoir & Dam 1
Bull Run Lake
Bull Run Watershed - Restricted Area
Sandy River
Mount Hood

More than 11,000 water samples are collected and tested each year from the reservoirs and from more than 80 sampling stations throughout the system.

A groundwater system with 27 available wells in three aquifers provides a back-up source of water.

IN-TOWN RESERVOIRS: Five above-ground reservoirs, one underground reservoir and 62 tanks store about three days' worth of drinking water.

PIPELINES: Water flows by gravity to Portland in conduits that are up to 60 inches in diameter. In town, the Water Bureau operates 30 pump stations. Nearly 2,000 miles of mains lie beneath the city's streets. Over 13,000 hydrants can provide water to fight fires.

TREATMENT: The Water Bureau treats water at the Bull Run Headworks using chlorine. At Lusted Hill, ammonia and sodium hydroxide are added to sustain chlorine levels and adjust pH.

Portland's water system begins in the Bull Run watershed, 22 miles east of downtown Portland. Bull Run Lake and two reservoirs store rain, snowmelt and stream runoff.

Portland's water system delivers water from two high-quality sources to in-town storage facilities where it provides water to more than 566,000 customers throughout Portland and an additional 366,000 through regional wholesale providers.

The Water Bureau maintains 18 municipal fountains throughout the Portland area. The Skidmore fountain (above), located on SW 1st Avenue between Burnside and Couch, is Portland's oldest commissioned public art, and stands at what was once the city center. Learn more at ***www.portlandonline.com/water/fountains***

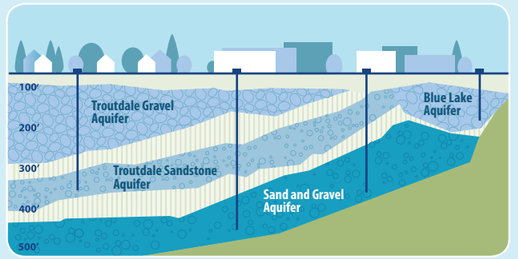
The Bull Run Watershed is a surface water supply within the Bull Run Watershed Management Unit located in the Mt. Hood National Forest. A geological ridge separates the watershed from Mount Hood. Current regulations, and the availability of the Columbia South Shore Well Field, allow Portland to meet federal drinking water standards without filtering this high-quality Bull Run water supply. The watershed has an area of 102 square miles, and typically receives 80-170 inches of rainfall a year. The heaviest rains occur from late fall through spring. Two reservoirs store water for use year-round, particularly during the dry summer months.

The watershed is used only for producing drinking water. Federal laws restrict public entry. No recreational, residential, or industrial uses occur within its boundaries. The Portland Water Bureau carefully monitors water quality and quantity. The Oregon Health Authority Drinking Water Program regularly inspects the watershed and the related treatment and distribution facilities.

The Portland Water Bureau completed a Source Water Assessment for the Bull Run water supply to comply with the 1996 Safe Drinking Water Act amendments. The only known contaminants of concern for the Bull Run water supply are naturally occurring microbial contaminants such as *Giardia lamblia, Cryptosporidium,* fecal coliform bacteria, and total coliform bacteria. These organisms are found in virtually all freshwater ecosystems and are present in the Bull Run supply at very low levels. The Bull Run supply complies with all applicable state and federal regulations for source water, including the 1989 Surface Water Treatment Rule filtration-avoidance criteria. The Source Water Assessment report is available at **www.portlandoregon.gov/water** and by calling **503-823-7404**.

The Columbia South Shore Well Field provides high-quality drinking water from groundwater production wells located in three different aquifers. In 2011, from January 16 to February 1, the Water Bureau used groundwater to provide 100 percent of the drinking water during a storm in the Bull Run watershed that resulted in increased turbidity levels. Over this 17-day period, 1.3 billion gallons of groundwater were served. In August of last year, the Water Bureau supplemented the Bull Run drinking water supply with approximately 27 million gallons of groundwater over the course of six days beginning on August 9. This was part of a groundwater maintenance operation (see page 10 for more information).

Portland has a long history of groundwater protection. In June 2008, the State of Oregon certified the Columbia South Shore Well Field Protection Plan. The protection program, encompassing portions of Portland, Gresham and Fairview, has identified commercial and industrial activities as the most significant potential sources of contamination. Together these cities regulate businesses in the groundwater protection area to prevent hazardous material spills that could seep into the ground. Events such as Aquifer Adventure, Cycle the Well Field and Groundwater 101 educate local residents on what can be done to help protect groundwater. To obtain a copy of Portland's groundwater protection program plan, which includes information on potential sources of contamination call **503-823-7404**, or to learn more about upcoming events and how to protect groundwater, visit **www.portlandonline.com/water/groundwater**.



There are 27 usable wells capable of pumping water from three aquifers on the south shore of the Columbia River. The well field serves as a backup water supply during turbidity events, emergencies and when the bureau needs additional summer supply. The well field can produce up to 102 million gallons of water per day.

The Clackamas River Water District, City of Gresham, City of Lake Oswego, Rockwood Water People's Utility District, the Sunrise Water Authority and the Tualatin Valley Water District provide drinking water to some Portland customers who live near service area boundaries. Customers who receive water from these providers will also receive detailed water quality reports about these sources in addition to this report.

Regulated Contaminants Detected in 2011

Regulated Contaminant	Minimum Detected	Maximum Detected	Maximum Contaminant Level (MCL), Treatment Technique or Maximum Residual Disinfectant Level (MRDL)	Maximum Contaminant Level Goal (MCLG) or Maximum Residual Disinfectant Level Goal (MRDLG)	Sources of Contaminant
Source Water from Bull Run Watershed					
Turbidity	0.20 NTU	4.4 NTU	Cannot exceed 5 NTU more than 2 times in 12 months	Not Applicable	Erosion of natural deposits
Total Organic Carbon	<0.5 parts per million	1.8 parts per million	Not Applicable	Not Applicable	Naturally present in the environment
Giardia lamblia	Not detected	1 sample of 10 liters had 1 *Giardia* cyst	Treatment technique required: Disinfection to kill 99.9% of cysts	Not Applicable	Animal wastes
Cryptosporidium	Not detected	1 sample of 50 liters had 1 *Cryptosporidium* oocyst	Treatment technique required by April 1, 2012	Not Applicable	Animal wastes
Fecal Coliform Bacteria	Not detected	2 samples each had 4 bacterial colonies (100% of samples had 20 or fewer bacterial colonies per 100 milliliters of water)	At least 90% of samples measured during the previous six months must have 20 or fewer bacterial colonies per 100 milliliters of water	Not Applicable	Animal wastes
Entry Points to Distribution System — from Bull Run Watershed and Columbia South Shore Well Field					
NUTRIENTS					
Nitrate - Nitrogen	<0.01 parts per million	0.14 parts per million	10 parts per million	10 parts per million	Found in natural aquifer deposits; animal wastes
METALS AND MINERALS					
Antimony	<0.05 parts per billion	0.23 parts per billion	6 parts per billion	6 parts per billion	Found in natural deposits
Arsenic	<0.5 parts per billion	1.2 parts per billion	10 parts per billion	0 parts per billion	
Barium	<0.002 parts per million	0.0079 parts per million	2 parts per million	2 parts per million	
Chromium (total)	<0.2 parts per billion	0.7 parts per billion	100 parts per billion	100 parts per billion	
Copper[1]	<0.002 parts per million	0.0009 parts per million	Not Applicable	1.3 parts per million	
Fluoride	<0.025 parts per million	0.16 parts per million	4 parts per million	4 parts per million	
Lead	<0.02 parts per billion	0.09 parts per billion	Not Applicable	0 parts per billion	

[1] *During the year, tests with varying method reporting limits (MRLs) were used to analyze copper. The sample with results of <0.002 was analyzed by the test with a less sensitive MRL; this results in data where the minimum appears to be greater than the maximum.*

Distribution System of Reservoirs, Tanks and Mains					
MICROBIOLOGICAL CONTAMINANTS					
Total Coliform Bacteria	Not Detected	3 samples out of 358 in August (0.8%) had detectable coliform bacteria	Must not detect coliform bacteria in more than 5.0% of samples in any month	0% of samples with detectable coliform bacteria	Found throughout the environment
DISINFECTION BYPRODUCTS					
Total Trihalomethanes					
Running Annual Average of All Sites	22 parts per billion		80 parts per billion	Not Applicable	Byproduct of drinking water disinfection
Single Result at Any One Site	16 parts per billion	32 parts per billion	Not Applicable		
Haloacetic Acids					
Running Annual Average of All Sites	26 parts per billion		60 parts per billion	Not Applicable	Byproduct of drinking water disinfection
Single Result at Any One Site	16 parts per billion	33 parts per billion	Not Applicable		
DISINFECTANT RESIDUAL					
Total Chlorine Residual	<0.1 parts per million	2.1 parts per million	4 parts per million	4 parts per million	Chlorine and ammonia are used to disinfect water

Regulated Contaminant	90th Percentile Values	Number of Sites Exceeding the Action Level	Lead and Copper Rule Exceedance	Maximum Contaminant Level Goal (MCLG)	Source of Contaminant
Lead and Copper Samplings at High-Risk Residential Water Taps					
Copper	0.29 parts per million	0 of 111 samples (0%) exceeded the copper action level of 1.3 parts per million	More than 10% of the homes tested have copper levels greater than 1.3 parts per million	1.3 parts per million	Corrosion of household and commercial building plumbing systems
Lead	12 parts per billion	7 of 111 samples (6%) exceeded the lead action level of 15 parts per billion	More than 10% of the homes tested have lead levels greater than 15 parts per billion	0 parts per billion	

Unregulated Contaminants Detected in 2011

Contaminant	Minimum Detected	Average Detected	Maximum Amount Detected	Source of Contaminant
Entry Points to Distribution System — from Bull Run Watershed and Columbia South Shore Well Field				
Nickel	<0.2 parts per billion	0.2 parts per billion	0.6 parts per billion	Found in natural deposits
Radon*	369 picocuries per liter	370 picocuries per liter	370 picocuries per liter	Found in natural aquifer deposits
Sodium	2.4 parts per million	7.5 parts per million	16.9 parts per million	Added to water during treatment; found in natural deposits
Vanadium*	3.3 parts per billion	3.3 parts per billion	3.3 parts per billion	Found in natural aquifer deposits

** Results are only from the entry point for the Columbia South Shore Well Field.*

*See **Notes on Regulated and Unregulated Contaminants** for more information on page 7.*

Definitions

Action Level
The concentration of a contaminant which, if exceeded, triggers treatment or other requirements which a water system must follow.

Maximum Contaminant Level (MCL)
The highest level of a contaminant that is allowed in drinking water. MCLs are set as close to the MCLGs as feasible using the best available treatment technology.

Maximum Contaminant Level Goal (MCLG)
The level of a contaminant in drinking water below which there is no known or expected risk to health. MCLGs allow for a margin of safety.

Maximum Residual Disinfectant Level (MRDL)
The highest level of a disinfectant allowed in drinking water. There is convincing evidence that addition of a disinfectant is necessary for control of microbial contaminants.

Maximum Residual Disinfectant Level Goal (MRDLG)
The level of a drinking water disinfectant below which there is no known or expected risk to health. MRDLGs do not reflect the benefits of the use of disinfectants to control microbial contaminants.

Part Per Million (ppm)
One part per million corresponds to one penny in $10,000 or approximately one minute in two years. One part per million is equal to 1,000 parts per billion.

Part Per Billion (ppb)
One part per billion corresponds to one penny in $10,000,000 or approximately one minute in 2,000 years.

Picocuries Per Liter
Picocurie is a measurement of radioactivity. One picocurie is a trillion times smaller than one curie.

Treatment Technique
A required process intended to reduce the level of a contaminant in drinking water.

Notes on Regulated Contaminants

Turbidity
Bull Run is an unfiltered surface water supply. The rules for public water systems have strict standards for unfiltered surface water supplies. Turbidity levels in unfiltered water must not exceed 5 NTU (nephelometric turbidity units) more than two times in a twelve-month period. The typical cause of turbidity is sediment suspended in the water that can interfere with disinfection and provide a medium for microbial growth. Large storm events can result in increased turbidity, causing the Portland Water Bureau to shut down the Bull Run system and serve water from the Columbia South Shore Well Field. This occurred in early 2011, from January 16 through February 1.

Total Organic Carbon
Total Organic Carbon (TOC) is naturally found in water and can react with disinfectants to produce disinfection by-products (DBPs). The Portland Water Bureau monitors for TOC to qualify for reduced DBP monitoring. Surface water systems are eligible for reduced DBP monitoring when DBP levels are ≤ 50% of the MCL and TOC monitoring is ≤ 4.0 mg/L .

Giardia
Wildlife in the watershed may be hosts to *Giardia lamblia*, the organism that causes giardiasis. The Portland Water Bureau uses chlorine to control these organisms.

Cryptosporidium
Wildlife in the watershed may be hosts to *Cryptosporidium*, the organism that causes cryptosporidiosis. During regular monitoring for *Cryptosporidium,* a single oocyst (organism) was detected in 2011. Consultation with local health officials determined that there was no public health risk associated with the detection. This was the first detection of *Cryptosporidium* since 2002. For more information on *Cryptosporidium* and Portland's treatment variance see page 9.

Fecal Coliform Bacteria
The presence of fecal coliform bacteria in source water indicates that water may be contaminated with animal wastes. The Portland Water Bureau uses chlorine to kill these bacteria.

Nitrate - Nitrogen
Nitrate, measured as nitrogen, can support microbial growth (bacteria and algae). Nitrate levels exceeding the standards can contribute to health problems. At the levels found in Portland's drinking water, Nitrate is unlikely to contribute to adverse health effects.

Antimony, Arsenic, Barium, Chromium (total), Copper, Fluoride and Lead
These metals are elements found in the earth's crust which can dissolve into water that is in contact with natural deposits. At the levels found in Portland's drinking water source, they are unlikely to contribute to adverse health effects. There is no maximum contaminant level (MCL) for copper and lead at the entry point to the distribution system. Copper and lead are regulated at customers' taps. For more information see Chromium-6 on page 10 and Reducing Exposure to Lead on page 8.

Total Coliform Bacteria
Coliforms are bacteria which are naturally present in the environment and are used as an indicator that other potentially-harmful bacteria may be present.

Disinfection Byproducts
During disinfection, certain byproducts form as a result of chemical reactions between chlorine and naturally occurring organic matter in the water. These byproducts can have negative health effects. Trihalomethanes and haloacetic acids are regulated disinfection byproducts that have been detected in Portland's water. The disinfection process is carefully controlled to keep byproduct levels low.

Total Chlorine Residual
Total chlorine residual is a measure of free chlorine and combined chlorine and ammonia in our distribution system. Chlorine residual is necessary to maintain disinfection throughout the distribution system. Adding ammonia to chlorine results in a more stable disinfectant and helps to minimize the formation of disinfection byproducts.

Notes on Unregulated Contaminants

Unregulated contaminant monitoring helps the EPA to determine where certain contaminants occur and whether it needs to regulate those contaminants in the future.

Nickel, Sodium and Vanadium
Nickel, sodium and vanadium are metals found in the earth's crust; they can dissolve into water that is in contact with natural deposits. There are currently no maximum contaminant levels for nickel, sodium or vanadium. At the levels found in Portland's drinking water, they are unlikely to contribute to adverse health effects.

Radon
Radon is a naturally occurring radioactive gas that cannot be seen, tasted or smelled. Radon was not detected in the Bull Run supply. It has been detected at varying levels in Portland's groundwater supply. For information about radon, call the EPA's Radon Hotline **(800-SOS-RADON)** or **www.epa.gov/radon/rnwater.html**.

Reducing Exposure to Lead

Portland has removed all known lead service connections from its distribution system. Exposure to lead through drinking water is possible if materials in a building's plumbing contain lead. The level of lead in water can increase when water stands in contact with lead-based solder and brass faucets containing lead.

If present, lead at elevated levels can cause serious health problems, especially for pregnant women and young children. Lead in drinking water is primarily from materials and components associated with service lines and home plumbing. The Portland Water Bureau is responsible for providing high-quality drinking water, but cannot control the variety of materials used in plumbing components. When your water has been sitting for several hours, you can minimize the potential for lead exposure by flushing your tap for 30 seconds to 2 minutes before using water for drinking or cooking. If you are concerned about lead in your drinking water, you may wish to request a free lead-in-water test from the LeadLine. Information on lead in drinking water, testing methods and steps you can take to minimize exposure is available from the **LeadLine, 503-988-4000**, **www.leadline.org** or the Safe Drinking Water Hotline **800-426-4791**, **www.epa.gov/safewater/lead**.

People are exposed to lead in many other ways. In the Portland area, dust from paint in homes built before 1978 is the most common source of exposure to lead. Other sources include soil, pottery, traditional folk medicines or cosmetics, some sports equipment such as fishing weights and ammunition, and some occupations and hobbies.

Corrosion Treatment
The Portland Water Bureau's corrosion control treatment reduces corrosion in plumbing by increasing the pH of the water. Comparison of monitoring results with and without pH adjustment shows more than 50 percent reduction in lead and 80 percent reduction in copper at the tap with pH adjustment.

Water Testing
Twice each year the Portland Water Bureau monitors for lead and copper in tap water from a sample group of more than 100 homes. These are homes in the Bull Run service area where the plumbing is known to contain lead solder, which is more likely to contribute to elevated lead levels. These houses represent a worst-case scenario for lead in water. Samples are collected after the water has been standing in the household plumbing for more than 6 hours. A Lead and Copper Rule exceedance for lead occurs when more than 10 percent of these homes exceed the lead action level of 15 parts per billion. In the most recent round of testing, less than 10 percent of homes exceeded the lead action level.

If you are concerned that your home tap water may have lead, call the LeadLine for a free lead-in-water test kit and to learn ways to reduce your exposure to all sources of lead. This program targets testing the water in households most at-risk from lead in water. These are homes built between 1970 and 1985 with pregnant women or children ages six or younger in the home.

Easy steps to avoid possible exposure to lead in drinking water

- **Run your water to flush out lead.** If the water has not been used for several hours, run each tap for 30 seconds to 2 minutes or until it becomes colder before drinking or cooking. This flushes water which may contain lead from the pipes.
- **Use cold, fresh water for cooking and preparing baby formula.** Do not cook with or drink water from the hot water tap; lead dissolves more easily into hot water. Do not use water from the hot water tap to make baby formula.
- **Do not boil water to remove lead.** Boiling water will not reduce lead.
- **Consider using a filter.** Check whether it reduces lead – not all filters do. Be sure to maintain and replace a filter device in accordance with the manufacturer's instructions to protect water quality. Contact NSF International at **800-NSF-8010** or **www.nsf.org** for information on performance standards for water filters.
- **Test your water for lead.** Call the **LeadLine** at **503-988-4000** to find out how to get a **FREE** lead-in-water test.
- **Test your child for lead.** Ask your physician or call the **LeadLine** to find out how to have your child tested for lead. A blood lead level test is the only way to know whether your child is being exposed to lead.
- **Regularly clean your faucet aerator.** Particles containing lead from solder or household plumbing can become trapped in your faucet aerator. Regular cleaning every few months will remove these particles and reduce your exposure to lead.
- **Consider buying low-lead fixtures.** New brass faucets, fittings and valves, may contribute to lead in your drinking water. Federal law currently allows brass fixtures, such as faucets, to contain up to 8 percent lead. These fixtures are labeled as "lead-free." When buying new fixtures, consumers should seek out those with the lowest lead content. Visit **www.nsf.org** to learn more about lead content in plumbing fixtures.

LeadLine - 503-988-4000
Call the **LeadLine** or visit **www.leadline.org** for information about lead hazards, free lead-in-water testing, free childhood blood lead testing and referrals to other lead reduction services.
www.leadline.org

The LT2 Rule

In January 2006, the federal Environmental Protection Agency (EPA) issued the Long Term 2 Enhanced Surface Water Treatment Rule (LT2) with the primary purpose of reducing the risks of illness from *Cryptosporidium*, a protozoan parasite found in the intestines and fecal material of most mammals. If ingested, infectious forms of *Cryptosporidium* can cause cryptosporidiosis which results in gastrointestinal illness in humans and more serious illness in immuno-compromised populations (see Special Notice for Immuno-Compromised Persons on page 2). The LT2 rule has two principal requirements that affect Portland's water system: 1) the installation of additional treatment processes to address *Cryptosporidium* in Bull Run source water, and 2) ending the use of uncovered finished drinking water reservoirs in Mt. Tabor and Washington Parks.

Compliance with Additional Treatment Requirements

Portland Achieves Treatment Variance

In December 2009, the Water Bureau began a comprehensive water sampling program and study in the Bull Run watershed to demonstrate that treatment for *Cryptosporidium* isn't necessary to protect public health. During the year-long sampling no *Cryptosporidium* was detected from the Bull Run water source. The low occurrence of *Cryptosporidium* is consistent with the natural conditions and legal protections in place for the Bull Run watershed which serve to reduce the risk of *Cryptosporidium* exposure from Portland's drinking water.

An analysis of available health-related data appears to show that drinking water is not a significant source of cryptosporidiosis. This health data shows that under current conditions in the Bull Run, adding additional water treatment is not likely to result in a measurable decrease in the occurrence of reported cases of cryptosporidiosis in the Bull Run service area.

Based on the results of the intensive sampling and analysis of the Bull Run for *Cryptosporidium*, Portland submitted a treatment variance request to the Oregon Health Authority Drinking Water Program (OHA) in June 2011. On March 14, 2012, OHA approved the City's treatment variance request establishing a 10-year period of compliance beginning on April 1, 2012, provided the City continuously meets a set of rigorous monitoring, watershed protection and reporting conditions.

The treatment variance contains important conditions that provide safeguards to protect the health of Portland customers. These conditions require Portland to continue to monitor Bull Run source water for *Cryptosporidium*, maintain all legal protections in the Bull Run, and monitor and manage any potential sources for *Cryptosporidium* contamination in the watershed. In the event of a detection of *Cryptosporidium*, the Portland Water Bureau will increase its monitoring efforts, coordinate with health officials to determine what, if any, impacts the detection may have, and communicate this information to its customers.

As a result of the variance decision, Portland will not be constructing an ultraviolet light treatment facility to achieve the treatment requirements of the LT2 rule.

Uncovered Finished Drinking Water Reservoirs:

The Portland Water Bureau submitted a plan to the EPA for complying with the covered storage requirements of the LT2 rule on March 25, 2009. The plan outlined dates for the development of replacement storage for Portland's five uncovered drinking water reservoirs by 2021.

In November 2009, the City requested direction from EPA regarding the possibility of a variance to the uncovered finished drinking reservoir requirements of the LT2 rule. In December 2009, the EPA replied that no such option existed. However, in August 2011, EPA agreed to review the uncovered reservoir requirements of the LT2 rule. Per EPA's guidance, Portland submitted a request to the OHA in February 2012, for an extension to its water storage replacement schedule that would extend the final compliance date for replacement of the uncovered reservoirs to June 2026. On May 17, 2012, OHA denied the Water Bureau's request for an adjustment to its regulatory schedule to replace the uncovered drinking water reservoirs at Mt.Tabor and Washington parks. The decision by OHA means that Portland's existing regulatory schedule to end the use of the uncovered reservoirs by December 31, 2020 remains in effect.

For updates on the Portland Water Bureau's actions regarding the LT2 rule visit **www.portlandonline.com/water/LT2**.

On March 14, 2012, the Oregon Health Authority (OHA) Drinking Water Program issued its Final Order granting a variance from the federal and state requirement that the Portland Water Bureau treat Bull Run source water for Cryptosporidium.

Developments in Water Quality

Chromium-6

Chromium is a naturally occurring element found in rocks, animals, plants, soil, and in volcanic dust and gases. Chromium can exist in a variety of forms, but is typically found in the environment and drinking water in two main forms: trivalent chromium (chromium-3) and hexavalent chromium (chromium-6). Chromium-3 occurs naturally in the environment and is an essential human dietary nutrient. Chromium-6 is the more toxic form and is generally associated with industrial processes. Chromium can transform from one form to another in water and soil, depending on the conditions present.

Recent studies have shown that ingestion of drinking water or food containing chromium-6 may cause cancer in laboratory mice and rats. Currently, there are no federal regulations for chromium-6 in drinking water. However, the EPA does have a standard for total chromium, of which chromium-6 is a component, at a level of 100 parts per billion (ppb) in drinking water.

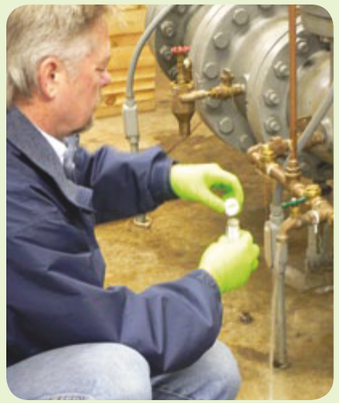
The progress on research into chromium-6 made news in December 2010 when the Environmental Working Group, an environmental advocacy group, said it had found chromium-6 in the water of 31 cities and urged the EPA to adopt new rules regarding the regulation of this compound. In January 2011, the EPA issued a recommendation that drinking water systems monitor for chromium-6 to gain a better understanding of concentrations of the contaminant present in drinking water across the country.

The Portland Water Bureau voluntarily followed EPA's guidance and sampled the Bull Run and distribution system for chromium-6 quarterly in 2011. The Columbia South Shore Well Field was also tested during the annual maintenance operation in August.

2011 Chromium-6 Results

Location	Minimum Detected[1]	Average Detected	Maximum Detected
Source water	<0.05 parts per billion	0.022 parts per billion	0.031 parts per billion
Entry point to the distribution system - from the Bull Run Watershed and Columbia South Shore Well Field	<0.05 parts per billion	0.028 parts per billion	0.048 parts per billion
Distribution System	<0.05 parts per billion	0.028 parts per billion	0.051 parts per billion

[1] During the year, two different method reporting limits (MRLs) were used to analyze chromium-6. The sample with results of <0.05 was analyzed with the test with the less sensitive MRL.



While there is not currently a standard for chromium-6, the very low levels detected in Portland's source waters do not represent an acute health risk based on the best available science. The risks discussed by the EPA are based on a lifetime exposure to chromium-6. EPA's final toxicological review of chromium-6 is expected to be completed in 2013. This risk assessment will form the basis of any federal regulations that may be developed. In addition, the EPA recently added total chromium and chromium-6 to the third Unregulated Contaminant Monitoring Rule (UCMR3) for an additional 12 months of monitoring between 2013 and 2015. PWB will continue to work closely with the EPA and with organizations such as the American Water Works Association to monitor this issue as developments emerge.

Groundwater Pump Station

GW Maintenance Operation

The Portland Water Bureau maintains two high-quality sources of water, the Bull Run watershed and the Columbia South Shore Well Field groundwater supply. The Bull Run, Portland's primary drinking water source, is an unfiltered surface water source. The Columbia South Shore Well Field provides Portland with a back-up drinking water source and is necessary for Portland to maintain its filtration exemption to the Bull Run supply. The ability to maintain its filtration exemption may require Portland to switch to groundwater quickly. The well field may also be used to augment the drinking water supply in summer and early fall when demand is projected to exceed the supply from the Bull Run watershed. Due to the complexity of the groundwater supply, it must be operated regularly to identify maintenance needs and ensure that it can be used on short notice. Each summer the Portland Water Bureau operates the well field for this purpose, operating each well for a short period of time and blending a small amount of groundwater with water from the Bull Run. The maintenance operation also allows the Portland Water Bureau to collect and analyze water quality samples to ensure that groundwater complies with all drinking water quality regulations. These results are included in this report. By performing a maintenance operation, the bureau ensures the reliability and water quality of the groundwater system when needed, either in an emergency or as part of seasonal supply.

PORTLAND WATER BUREAU
FROM FOREST TO FAUCET

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CITY OF PORTLAND, OREGON
Portland Water Bureau
Commissioner Randy Leonard
Administrator David G. Shaff
1120 SW Fifth Avenue / Room 600
Portland, Oregon 97204

***************ECRWSS**
POSTAL CUSTOMER

Drinking water regulations require the city to mail this information to customers each year — it's the law.

Most of the language is also required – Congress and the EPA want to be sure that people know what is in their drinking water. The Portland Water Bureau agrees.

The Portland Water Bureau has tried to make this complex information readable and produce this report at a low cost. ***The Portland Water Bureau produced and mailed this report for 32 cents each.***

Bull Run River

PHOTO: ROMAN JOHNSTON

Printed on recycled paper
JUNE 2012

CONTACT INFORMATION

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Portland, Oregon 97204
www.portlandoregon.gov/water
Public Water System #4100657

Portland Water Bureau
Customer Service: 503-823-7770

Portland Water Bureau
Water Line: 503-823-7525

FOR ADDITIONAL INFORMATION

Oregon Health Authority – Drinking Water Program:
971-673-0405
www.public.health.oregon.gov/HealthyEnvironments/DrinkingWater

The City of Portland will provide auxiliary aids/services to persons with disabilities. To request an ADA accommodation, please call 503-823-7404 or by TTY at 503-823-6868. Copies of this report are available on the Portland Water Bureau's website — www.portlandoregon.gov/water.

Spanish
Para obtener una copia de este reporte en español, por favor llame al **503-823-7770** o visite www.portlandoregon.gov/water

Russian
Чтобы получить копию этого отчета на русском языке, пожалуйста, позвоните **503-823-7770** или зайдите на сайт www.portlandoregon.gov/water

Vietnamese
Để được một bản báo cáo này bằng tieng Việt, xin gọi số **503-823-7770** hoặc đến mạng lưới www.portlandoregon.gov/water

Chinese
若想获得本报告的中文版本，请拨打**503-823-7770** 或访问: www.portlandoregon.gov/water

PORTLAND WATER BUREAU

2009 Drinking Water Quality Report

PORTLAND WATER BUREAU
FROM FOREST TO FAUCET

From Commissioner Randy Leonard

You've probably heard me say this before: "From forest to faucet, the Portland Water Bureau delivers the best drinking water in the world!" And do you know what? I truly believe in that slogan.

I believe that the employees of the Portland Water Bureau strive to be the best in everything they do; every action they take, every decision they make, every interaction they have with a customer. In fact, they try so hard to be the best, I'm confident that if you had a choice in your drinking water provider, you would still choose the Portland Water Bureau.

The Water Bureau produces this Drinking Water Quality Report every year as mandated by the federal government. This report is very important to your understanding of the quality of Portland's drinking water, so please don't overlook it. I want you to fully comprehend the high quality drinking water you have access to as a customer of the Portland Water Bureau; some might even call it "...the best drinking water in the world!"

Randy Leonard
Commissioner-In-Charge

From the Administrator

The most important information contained in this report is that *Portland's drinking water quality continues to meet all state and federal regulations.*

If you have questions or comments about this report, please call Portland Water Bureau Customer Service at **503-823-7770**. We welcome your interest in Portland's water system.

David G. Shaff
Administrator

Frequently Asked Questions About Water Quality

Is my water treated by filtration?

No. Bull Run water is not filtered. The Bull Run source meets the filtration avoidance criteria of the Surface Water Treatment Rule. The state approved Portland's compliance with these criteria in 1992.

Does the Portland Water Bureau add fluoride to drinking water?

No. The Portland Water Bureau does not add fluoride to the water. Although fluoride is not detected in Bull Run surface water, it is a naturally occurring trace element in groundwater. The U.S. Public Health Service and the Centers for Disease Control and Prevention (CDC) consider the fluoride levels in Portland's water sources to be lower than optimal for the prevention of tooth decay. You may want to consult with your dentist about fluoride treatment to help prevent tooth decay, especially for young children.

Is Portland's water soft or hard?

Portland's water is very soft. The hardness of Bull Run water is typically 4-13 parts per million (ppm) – approximately ½ a grain of hardness per gallon. Portland's groundwater hardness is approximately 86 ppm (about 5 grains per gallon), which is considered moderately hard.

What is the pH of Portland's water?

The pH of Portland's drinking water typically ranges from 7.2 to 8.2.

Are sodium levels in Portland's drinking water affecting my health?

There is currently no drinking water standard for sodium. Sodium is an essential nutrient. Sodium in Portland's water ranges between 2 and 8 ppm, a level unlikely to contribute to adverse health effects.

Who can I call about water quality or pressure concerns?

The Water Line, **503-823-7525**, can answer your questions and concerns about water quality or pressure. The Water Line is available Monday–Friday from 8:30 a.m.– 4:30 p.m. If you have an emergency after these hours, please contact the after-hours number at **503-823-4874**.

How can I get my water tested?

Contact the LeadLine at **503-988-4000** or **www.leadline.org** for information about free lead-in-water testing. For more extensive testing, private laboratories can test your tap water for a fee. Not all labs are accredited to test for all contaminants. For information about accredited labs, call the Oregon Department of Human Services, Oregon Environmental Laboratory Accreditation Program at **503-693-4122**.

Public Involvement Opportunities

The Portland Water Bureau sponsors a variety of public involvement and public outreach opportunities connected to its many projects and programs. The bureau posts public meeting times online. If you have questions about Portland Water Bureau meetings, projects, or programs, please contact Jimmy Brown, Community Involvement and Information Manager, at **503-823-3028**, or visit the Portland Water Bureau's Web site: **www.portlandonline.com/water**.

Visit the Water Blog for daily water news: **www.portlandonline.com/water/blog**.

Drinking Water Treatment

The first step in the treatment process for Portland's drinking water is disinfection using chlorine. Next, ammonia is added, forming chloramines, to ensure that disinfection remains adequate throughout the distribution system.

The Portland Water Bureau also adds sodium hydroxide to increase the pH of the water to reduce corrosion of plumbing systems. This treatment helps control lead and copper levels at customers' taps should these metals be present in home plumbing.

Water Testing

The Portland Water Bureau monitors for approximately 200 regulated and unregulated contaminants in drinking water, including pesticides and radioactive contaminants. All monitoring data in this report are from 2008. **If a health-related contaminant is not listed in this report, the Portland Water Bureau did not detect it in drinking water.**

Special Notice for Immuno-compromised Persons

Some people may be more vulnerable to contaminants in drinking water than the general population.

Immuno-compromised persons such as persons with cancer undergoing chemotherapy, persons who have undergone organ transplants, people with HIV/AIDS or other immune system disorders, some elderly, and infants can be particularly at risk from infections. These people should seek advice about drinking water from their health care providers. Environmental Protection Agency (EPA) and Centers for Disease Control and Prevention guidelines on appropriate means to lessen the risk of infection by *Cryptosporidium* and other microbial contaminants are available from the Safe Drinking Water Hotline at **800-426-4791**.

What the EPA Says About Drinking Water Contaminants

Drinking water, including bottled water, may reasonably be expected to contain at least small amounts of some contaminants. The presence of contaminants does not necessarily indicate that water poses a health risk. More information about contaminants and potential health effects can be obtained by calling the Environmental Protection Agency's Safe Drinking Water Hotline at **800-426-4791** or at **www.epa.gov/safewater**.

The sources of drinking water (both tap water and bottled water) include rivers, lakes, streams, ponds, reservoirs, springs, and wells. As water travels over the surface of the land or through the ground, it dissolves naturally occurring minerals and, in some cases, radioactive material, and can pick up substances resulting from the presence of animals or from human activity.

Contaminants in drinking water sources may include:

Microbial contaminants, such as viruses and bacteria, which may come from wildlife or septic systems.

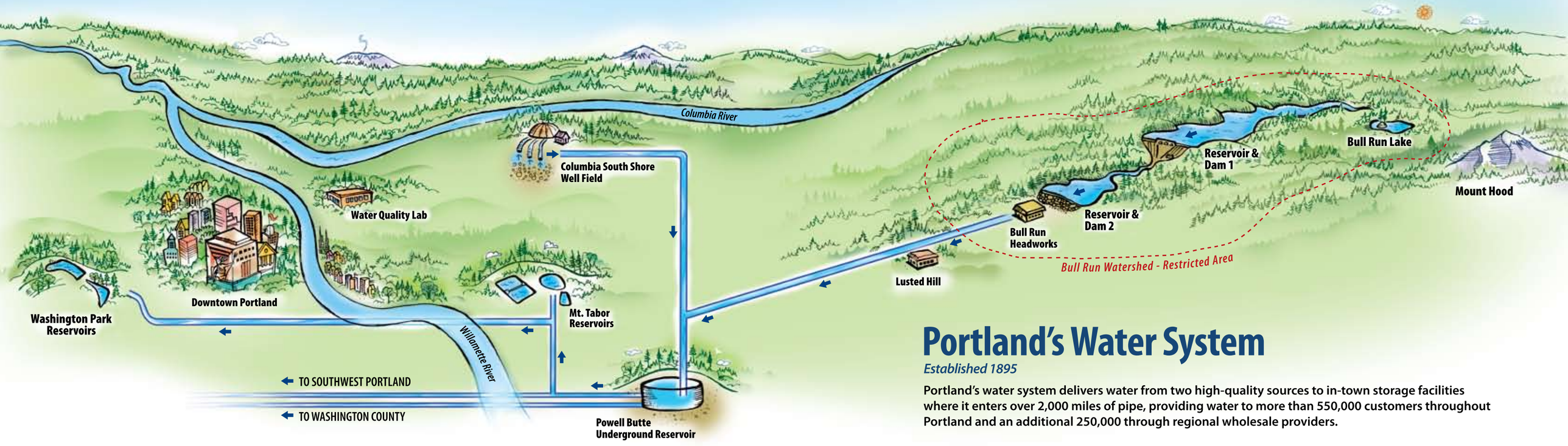
Inorganic contaminants, such as salts and metals, which can occur naturally or result from urban stormwater runoff, industrial or domestic wastewater discharges or farming.

Pesticides and herbicides, which may come from a variety of sources such as farming, urban stormwater runoff and home or business use.

Organic chemical contaminants, including synthetic and volatile organic chemicals, which are byproducts of industrial processes, and can also come from gas stations, urban stormwater runoff and septic systems.

Radioactive contaminants, which can occur naturally.

In order to ensure that tap water is safe to drink, the EPA has regulations that limit the amount of certain contaminants in water provided by public water systems and require monitoring for these contaminants. Food and Drug Administration regulations establish limits for contaminants in bottled water, which must provide the same protection for public health.



Portland's Water System

Established 1895

Portland's water system delivers water from two high-quality sources to in-town storage facilities where it enters over 2,000 miles of pipe, providing water to more than 550,000 customers throughout Portland and an additional 250,000 through regional wholesale providers.

The Bull Run Watershed

is a surface water supply within the Bull Run Watershed Management Unit located in the Mt. Hood National Forest. A geological ridge separates the watershed from Mount Hood. Current regulations, and the availability of the Columbia South Shore Well Field, allow Portland to meet federal drinking water standards without filtering this high-quality Bull Run water supply. The watershed has an area of 102 square miles, and typically receives 80-170 inches of rainfall a year. The heaviest rains occur from late fall through spring. Two reservoirs store water for use year-round, particularly during the dry summer months.

The watershed is only used for producing drinking water. Federal laws restrict human entry. No recreational, residential, or industrial uses occur within its boundaries. The Portland Water Bureau carefully monitors water quality and quantity. The Oregon Department of Human Services Drinking Water Program regularly inspects the watershed and related treatment and distribution facilities.

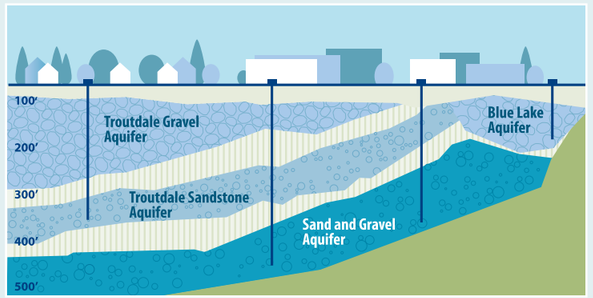
Eighty years ago construction of the first dam in the Bull Run was completed. Dam One, a concrete gravity arch dam, took two years to build, is 200 feet high and created a reservoir capable of storing approximately 10 billion gallons of drinking water.

The Portland Water Bureau has completed a Source Water Assessment for the Bull Run water supply to comply with the 1996 Safe Drinking Water Act amendments. The only known contaminants of concern for the Bull Run water supply are naturally occurring microbial contaminants such as *Giardia lamblia, Cryptosporidium,* fecal coliform bacteria, and total coliform bacteria. These organisms are found in virtually all freshwater ecosystems and are present in the Bull Run supply at very low levels. The Bull Run supply complies with all applicable state and federal regulations for source water, including the 1989 Surface Water Treatment Rule filtration-avoidance criteria. The Source Water Assessment report is available at **www.portlandonline.com/water** and by calling **503-823-7404**.

The Columbia South Shore Well Field

is a groundwater source of drinking water that provides high-quality water from production wells located in three different aquifers. In 2008, the City of Portland supplemented the Bull Run drinking water supply with approximately 30 million gallons of groundwater over a six-day period beginning on August 18th . This was done as part of a groundwater maintenance exercise. Additionally, the City of Portland used 648 million gallons of groundwater over a nine-day period beginning November 13th, due to a storm that caused elevated turbidity in the Bull Run watershed.

Portland has a long history of groundwater protection. The wellhead protection area encompasses portions of Portland, Gresham and Fairview. Together, these cities regulate businesses in the well-head protection area to prevent hazardous materials spills that could seep into the ground. The cities also educate local residents on what can be done to help protect groundwater with events such as Aquifer Adventure, Cycle the Well Field and Groundwater 101. To learn more about Portland's wellhead protection program, upcoming events and how to protect groundwater, go to **www.portlandonline.com/water/groundwater** or call **503-823-7404**.



There are 27 usable wells capable of pumping water from three aquifers on the south shore of the Columbia river. The well field serves as a backup water supply for turbidity events and emergencies and can produce up to 102 million gallons of water per day.

The Clackamas River Water District, City of Lake Oswego, Rockwood Water People's Utility District, the Sunrise Water Authority and the Tualatin Valley Water District provide drinking water to some Portland customers who live near service area boundaries. Customers who receive water from these providers will also receive detailed water quality reports about these sources in addition to this report.

Regulated Contaminants Detected in 2008

Regulated Contaminant	Minimum Detected	Maximum Detected	Maximum Contaminant Level (MCL) or Treatment Technique	Maximum Contaminant Level Goal (MCLG)	Sources of Contaminant
Source Water from Bull Run Watershed					
Turbidity	0.2 NTU	5 NTU	Cannot exceed 5 NTU more than two times in twelve months.	Not Applicable	Erosion of natural deposits
Giardia	Not Detected	One sample of 50 liters had 5 *Giardia* cysts	Treatment technique required: Disinfection to inactivate 99.9% of cysts	Not Applicable	Animal wastes
Fecal Coliform Bacteria	Not Detected	1 sample had 10 bacterial colonies (100% of samples had fewer than 20 bacterial colonies) per 100 milliliters of water	At least 90% of samples measured during the previous six months must have 20 or fewer bacterial colonies per 100 milliliters of water.	Not Applicable	Animal wastes
Entry Points to Distribution System — from Bull Run Watershed and Columbia South Shore Well Field					
NUTRIENTS					
Nitrate Nitrogen	< 0.01 parts per million	0.2 parts per million	10 parts per million	10 parts per million	Found in natural aquifer deposits, animal wastes
METALS AND MINERALS					
Arsenic	< 1 part per billion	2 parts per billion	10 parts per billion	0 parts per billion	Found in natural aquifer deposits
Barium	< 0.005 parts per million	0.03 parts per million	2 parts per million	2 parts per million	Found in natural aquifer deposits
Fluoride	< 0.05 parts per million	0.22 parts per million	4 parts per million	4 parts per million	Found in natural aquifer deposits
ORGANIC CONTAMINANTS					
***P*-Dichlorobenzene**	<0.5 parts per billion	1 part per billion	75 parts per billion	75 parts per billion	Used in the manufacture of dyes, agrochemicals, pharmaceuticals and plastic
RADIONUCLIDES					
Radium-226/228	1.67 picocuries per liter	1.67 picocuries per liter	5 picocuries per liter for combined Radium-226 and Radium-228	0 picocuries per liter	Found in natural aquifer deposits
Distribution System of Reservoirs, Tanks and Mains					
MICROBIOLOGICAL CONTAMINANTS					
Total Coliform Bacteria	Not Detected	6 samples of 274 in August (2.2%) had detectable coliform bacteria.	Must not detect coliform bacteria in more than 5% of samples in any month	0% of samples with detectable coliform bacteria	Found throughout the environment
DISINFECTION BYPRODUCTS					
TOTAL TRIHALOMETHANES					
Running annual average of all sites	13 parts per billion	19 parts per billion	80 parts per billion	Not Applicable	Byproduct of drinking water disinfection
Single result at any one site	9.4 parts per billion	22 parts per billion	Not Applicable		
HALOACETIC ACIDS					
Running annual average of all sites	21 parts per billion	29 parts per billion	60 parts per billion	Not Applicable	Byproduct of drinking water disinfection
Single result at any one site	18 parts per billion	28 parts per billion	Not Applicable		

Regulated Contaminant	Minimum Detected	Maximum Detected	Maximum Residual Disinfectant Level (MRDL)	Maximum Residual Disinfectant Level Goal (MRDLG)	Sources of Contaminant
DISINFECTANT RESIDUAL					
Total Chlorine Residual	Not Detected	2.1 parts per million	4 parts per million	4 parts per million	Chlorine and ammonia are used to disinfect Bull Run Watershed and Columbia South Shore Well Field

Notes on Regulated Contaminants

Turbidity
Bull Run is an unfiltered surface water supply. Rules for public water systems have strict standards for unfiltered surface water supplies. Turbidity levels in unfiltered water must not exceed 5 NTU (nephelometric turbidity units) more than two times in a twelve-month period. The typical cause of turbidity is tiny particles of sediment in the water that can interfere with disinfection and provide a medium for microbial growth. Large storm events can result in increased turbidity, causing the Portland Water Bureau to shut down the Bull Run system and serve water from the Columbia South Shore Well Field.

Giardia
Wildlife in the watershed may be hosts to *Giardia lamblia*, the organism that causes giardiasis. Chlorine is effective in inactivating *Giardia*.

Fecal Coliform
The presence of fecal coliform bacteria in source water indicates that water may be contaminated with animal wastes. Although fecal coliforms are measured for compliance, there are instances when the Portland Water Bureau submits total coliform bacteria for compliance sampling. The Portland Water Bureau uses chlorine to control these bacteria.

Nitrate - Nitrogen
Nitrate, measured as nitrogen, can support microbial growth (bacteria and algae). Nitrate levels exceeding the standards can contribute to health problems.

Arsenic, Barium and Fluoride
Metals and minerals are elements found in the earth's crust, and can dissolve into water that is in contact with soil or in groundwater aquifers. At the levels found in Portland's drinking water, they are unlikely to contribute to adverse health effects.

P-Dichlorobenzene
P-Dichlorobenzene, a volatile organic compound (VOC) that is a byproduct of chemical and plastic manufacturing, was detected in the distribution system during special sampling for a short period of time in May 2008. Although the exact source of *p*-Dichlorobenzene is unknown, one possibility is that it was introduced as a result of construction work on one of the transmission conduits. *P*-Dichlorobenzene was not detected in Portland's compliance sample, in source waters or after extensive follow-up sampling and has not been detected since. At the levels detected, 1.3% of the MCL, *p*-Dichlorobenzene does not pose a health risk.

Radium-226/228
Radium is a naturally occurring radioactive gas that cannot be seen, tasted or smelled. Radium has never been detected in the Bull Run supply. It was detected in Portland's groundwater.

Total Coliform Bacteria
Coliform bacteria are naturally present in the environment. Their presence is an indicator that other potentially harmful bacteria may be present. The Portland Water Bureau uses chlorine to control these bacteria. Total coliform samples are collected from both the source water and the distribution system.

Disinfection Byproducts
During disinfection, certain byproducts form as a result of chemical reactions between chlorine and naturally occurring organic matter in the water. These byproducts can have negative health effects. Monitoring in Portland's system detected trihalomethanes and haloacetic acids, regulated disinfection byproducts. The disinfection process is carefully controlled to remain effective, while keeping byproduct levels low.

Total Chlorine Residual
Total chlorine residual is a measure of free chlorine and combined chlorine and ammonia in our distribution system. Chlorine residual is necessary to maintain disinfection throughout the distribution system. Adding ammonia to chlorine results in a more stable disinfectant and helps to minimize the formation of disinfection byproducts.

Definitions

Action Level
The concentration of a contaminant which, if exceeded, triggers treatment or other requirements which a water system must follow.

Maximum Contaminant Level or MCL
The highest level of a contaminant that is allowed in drinking water. MCLs are set as close to the MCLGs as feasible using the best available treatment technology.

Maximum Contaminant Level Goal or MCLG
The level of a contaminant in drinking water below which there is no known or expected risk to health. MCLGs allow for a margin of safety.

Maximum Residual Disinfectant Level or MRDL
The highest level of a disinfectant allowed in drinking water. There is convincing evidence that addition of a disinfectant is necessary for control of microbial contaminants.

Maximum Residual Disinfectant Level Goal or MRDLG
The level of a drinking water disinfectant below which there is no known or expected risk to health. MRDLGs do not reflect the benefits of the use of disinfectants to control microbial contaminants.

Part Per Million
One part per million corresponds to one penny in $10,000 or approximately one minute in two years. One part per million is equal to 1,000 parts per billion.

Part Per Billion
One part per billion corresponds to one penny in $10,000,000 or approximately one minute in 2,000 years. One part per billion is equal to 1,000 parts per trillion.

Part Per Trillion
One part per trillion corresponds to one penny in $10,000,000,000 or approximately one second in 32,000 years.

Picocuries Per Liter
Picocurie is a measurement of radioactivity. One picocurie is a trillion times smaller than one curie.

Treatment Technique
A required process intended to reduce the level of a contaminant in drinking water.

Unregulated Contaminants Detected in 2008

Contaminant	Minimum Detected	Average Detected	Maximum Amount Detected	Sources of Contaminant
Entry Points to the Distribution System, the Bull Run Watershed and the Columbia South Shore Well Field				
Radon	264 picocuries per liter	264 picocurries per liter	264 picocuries per liter	Found in natural aquifer deposits
Sodium	2.6 parts per million	8.0 parts per million	18 parts per million	Added to water during treatment, erosion of natural deposits.
Estradiol	Not Detected	Not Applicable	5 parts per trillion	Source unknown, possible percolation into groundwater aquifer
17 Alpha - Ethinyl Estradiol	Not Detected	Not Applicable	18 parts per trillion	
Distribution System of Reservoirs, Tanks and Mains				
Total Trihalomethanes (IDSE Monitoring)	4.9 parts per billion	16 parts per billion	29 parts per billion	Byproduct of drinking water disinfection
Haloacetic Acids (IDSE Monitoring)	Not Detected	23 parts per billion	41 parts per billion	Byproduct of drinking water disinfection

Notes on Unregulated Contaminants

Unregulated contaminant monitoring helps the EPA to determine where certain contaminants occur and whether it needs to regulate those contaminants in the future.

Radon

Radon is a naturally occurring radioactive gas that cannot be seen, tasted or smelled. Radon has never been detected in the Bull Run supply. It is detected at varying levels in Portland's groundwater wells. For information about radon, call the EPA's Radon Hotline (**800-SOS-RADON**) or **www.epa.gov/radon/rnwater.html**.

Sodium

There is currently no drinking water standard for sodium. Sodium is an essential nutrient. At the levels found in drinking water, it is unlikely to contribute to adverse health effects.

Pharmaceuticals and Personal Care Products (PPCPs) in Portland's Drinking Water

In 2006, drinking water from the Bull Run was tested for PPCPs, with a single detection for caffeine. In 2007, groundwater was tested for PPCPs, with detections for acetaminophen and ibuprofen (over-the-counter pain killers), sulfamethoxazole (an antibiotic) and caffeine in extremely low levels, parts per trillion. In 2008, no PPCPs were detected in the Bull Run. However, in April 2008, estradiol and 17 alpha-ethinyl estradiol (hormones found in birth control) were detected in groundwater, also in parts per trillion. During the same testing, fluoxetine (commonly known as Prozac) and esterone (hormone found in birth control) were detected in field blanks (purified water used to monitor potential contamination introduced by the collection, handling, shipping and analysis procedures). During further sampling in August and November, 2008, no PPCPs were detected in groundwater.

The Portland Water Bureau understands that customers take this issue very seriously and plans to continue to regularly test for PPCPs in our source waters. The Portland Water Bureau will also continue to take actions to protect our drinking water from these and other emerging contaminants. In addition to protections in the Bull Run and the Columbia South Shore Well Field Well Head Protection Program, the City of Portland is currently working with health officials to initiate a pharmaceutical take-back program to reduce the amount of pharmaceuticals released in the environment. The Portland Water Bureau will continue to report any detections to our customers.

Total Trihalomethanes and Haloacetic Acids

These results are from the Initial Distribution System Evaluation (IDSE) as required by the Stage 2 Disinfectants and Disinfection Byproducts Rule that requires drinking water providers to perform an analysis to identify distribution system locations with high concentrations of trihalomethanes (THMs) and haloacetic acids (HAAs). These results have been used to select monitoring locations for compliance with this rule.

Although most people think of the Portland Water Bureau as a provider of drinking water, the bureau also maintains and supplies water to nearly 16,000 fire hydrants. The first fire hydrant was installed in 1864. Today hydrants are spaced at a minimum of 1,000 feet apart, closer in high-density residential areas, and two at every intersection in downtown.

Improving Your Water Quality

Road Decommissioning

One of the measures used to protect water quality in the Bull Run watershed is road decommissioning. In the late 1990s and the early part of this decade, the Water Bureau and the Mt. Hood National Forest, Portland's long-term partner in watershed protection for the Bull Run, evaluated the roads that are essential for maintenance of the water-supply system and for maintaining fire protection.

Beginning in 1997, the Forest Service began decommissioning old logging roads in the Bull Run watershed that were no longer needed and that posed a risk to water quality. Decommissioning involves using large excavators to remove culverts and the surrounding road fill material located in stream crossings, and then replanting the excavated areas. This helps protect water quality by removing road fill material that would otherwise be at risk of eroding during large storm events. The other benefit of road decommissioning is that it reduces costs by allowing the Water Bureau to focus its attention on maintaining only the roads that are essential for operation and protection of the Bull Run water supply.

The Water Bureau's primary role in the road decommissioning program has been to lobby Congress to urge it to provide sufficient funding for the Forest Service to complete the necessary decommissioning work in the watershed. Forest Service contractors completed about 18 miles of road decommissioning in the Bull Run water-supply drainage during 2008. A total of 61 miles of roads have been decommissioned in the Bull Run drainage to date. Less than four miles of roads remain to be decommissioned to complete the program. Those remaining roads are set to be completed by the end of 2010.

Large Meter Replacement

As part of the Water Bureau's Lead Hazard Reduction Program, the bureau has been removing potential sources of lead in the distribution system to reduce customer exposure to lead in drinking water. One potential source of lead has been large meters, those connected to service lines larger than one inch. Certain large meters installed before 1986 contain lead components that contact drinking water as it passes through the meter.

Three-inch domestic meter, circa 1931

Since 2001, the Portland Water Bureau has been prioritizing the removal of all pre-1986 large meters that serve populations vulnerable to lead exposure, and replacing them with lead-free meters. In June of 2008, the last known large meter with lead components serving water to vulnerable populations was replaced. In total, 364 large meters serving schools, hospitals, childcare facilities, community centers, public housing complexes and large apartment buildings were replaced.

The replacement of these meters was a complex project involving temporary street closures, or after-hours work. These meters could not have been replaced without the hard work of the meter shop and the maintenance and construction crews and supervisors who were willing to work with the Lead Hazard Reduction Program to make replacement a priority.

For more information visit **www.portlandonline.com/water/lead**.

Intensive Monitoring for Disinfection Byproducts (DBPs)

In 2008, Portland completed EPA's Initial Distribution System Evaluation or IDSE. The goal of the IDSE is to characterize the distribution system and identify monitoring sites where customers may be exposed to high levels of total trihalomethanes (TTHM) and haloacetic acids (HAAs).

The good news is that there were no hot spots for disinfection byproducts found in the Portland distribution system. Because Portland uses chloramines as a disinfectant, there is little additional formation of byproducts in Portland's distribution system. The results for each location were within Portland's historical range of byproduct detection (with the exception of one site that had lower results than in the past).

Portland took advantage of the completeness of this data collection effort to review operational factors that may be utilized to minimize disinfection byproducts. The concentration of disinfection byproducts (HAAs and THMs) was strongly related to total organic carbon (TOC), chlorine dosage, and contact time with a level of chlorine (CT). More TOC and CT, and higher chlorine dosage, can cause more disinfection byproducts. This understanding will help operations staff to adjust treatment to minimize DBPs.

Cryptosporidium

Cryptosporidium is a microorganism (protozoan) naturally present in bodies of surface water throughout the world. Symptoms of *Cryptosporidium* infection include nausea, diarrhea and abdominal cramps. Most healthy individuals are able to overcome the disease within a few weeks. However, immuno-compromised people have more difficulty and are at greater risk of developing severe, life-threatening illness. *Cryptosporidium* must be ingested for it to cause disease, and may be spread through means other than drinking water. For more information about *Cryptosporidium* visit **www.epa.gov/safewater/crypto.html**.

Surface water supplies are particularly vulnerable if they receive runoff or are exposed to human or animal wastes. Since wildlife inhabit the Bull Run watershed, the Portland Water Bureau regularly monitors for *Cryptosporidium* and has done so for more than ten years. Occasionally, the Portland Water Bureau has found *Cryptosporidium* at low levels. No *Cryptosporidium* oocysts have been detected in Portland water samples since 2002.

In January 2006, the EPA issued a drinking water rule called the Long Term 2 Enhanced Surface Water Treatment Rule (LT2) establishing new national standards to further reduce the risks of illness from *Cryptosporidium*. These standards, as written, require additional treatment processes by 2012 for unfiltered water systems such as Portland's (States may grant up to an additional 2 years for systems such as Portland who would need to make capital improvements.) The rule also requires that Portland eliminate the use of open finished drinking water reservoirs. Because of the protected status of Portland's Bull Run source, and the very low incidence of *Cryptosporidium* in Bull Run source water, Portland filed a legal challenge to the new federal rule. The legal challenge sought to establish alternative and less expensive methods of compliance. On November 6, 2007, a three-judge panel of the Washington, DC District Court of Appeals issued a unanimous decision, rejecting the City of Portland's challenge to the rule.

In response to the court ruling, Portland is pursuing parallel compliance strategies. Commissioner Randy Leonard has directed the Portland Water Bureau to begin planning and budgeting to achieve compliance with the new rule as written. This includes the evaluation, selection and development of one of the treatment approaches prescribed in the rule. In addition, Commissioner Leonard has directed the bureau to attempt to obtain a variance to the treatment portion of the rule from the federal EPA. A variance could conceivably enable Portland to avoid the expenses associated with building a new treatment facility if Portland can demonstrate to the EPA that, due to the nature of the Bull Run source, such action is unnecessary.

Finally, Portland has also included a request for congressional intervention by the Oregon congressional delegation in its 2009 federal legislative agenda. If Congress passes legislation exempting Portland from the new federal requirements, it would enable Portland to avoid additional treatment and to continue using open finished drinking water reservoirs. For updates on the Portland Water Bureau's response to the LT2 rule visit **www.portlandonline.com/water/LT2**.

Lead and Copper Samplings at High Risk Residential Water Taps*

90th Percentile Values	Number of Sites Exceeding Action Levels**	Lead and Copper Rule Exceedance	Maximum Contaminant Level Goal (MCLG)	Sources of Contaminant
COPPER				
0.34 parts per million	Zero samples exceeded the copper action level of 1.3 parts per million	More than 10% of the homes tested have copper levels greater than 1.3 parts per million	1.3 parts per million	Corrosion of household and commercial building plumbing systems
LEAD				
10 parts per billion	6 of 116 samples (5%) exceeded the lead action level of 15 parts per billion	More than 10% of the homes tested have lead levels greater than 15 parts per billion	Zero parts per billion	Corrosion of household and commercial building plumbing systems

** See Water Testing on the next page for more information on testing.*
*** Action Level: The concentration of a contaminant which, if exceeded, triggers treatment or other requirements that a water system must follow.*

Reducing Exposure to Lead

Easy steps to avoid possible exposure to lead from plumbing.

- **Run your water to flush out lead.** If the water has not been used for several hours, run each tap for 30 seconds to 2 minutes or until it becomes colder before drinking or cooking. This flushes water which may contain lead from the pipes.
- **Use cold, fresh water for cooking and preparing baby formula.** Do not cook with or drink water from the hot water tap; lead dissolves more easily into hot water. Do not use water from the hot water tap to make baby formula.
- **Do not boil water to remove lead.** Boiling water will not reduce lead.
- **Consider using a filter.** Check whether it reduces lead – not all filters do. Be sure to maintain and replace a filter device in accordance with the manufacturer's instructions to protect water quality. Contact NSF International at **800-NSF-8010** or **www.nsf.org** for information on performance standards for water filters.
- **Test your water for lead.** Call the **LeadLine** at **503-988-4000** to find out how to get a FREE lead-in-water test.
- **Test your child for lead.** Ask your physician or call the **LeadLine** to find out how to have your child tested for lead. A blood lead level test is the only way to know whether your child is being exposed to lead.
- **Consider buying low-lead fixtures.** New brass faucets, fittings, and valves, may contribute to lead in your drinking water. Federal law currently allows brass fixtures, such as faucets, to contain up to 8% lead. These fixtures are labeled as "lead-free." When buying new fixtures, consumers should seek out those with the lowest lead content. Visit **www.nsf.org** to learn more about lead content in plumbing fixtures.

Leadline - 503-988-4000

Call the **LeadLine** at **503-988-4000** or visit **www.leadline.org** for information about lead hazards, free lead-in-water testing, free childhood blood lead testing and referrals to other lead reduction services.

www.leadline.org

Lead was not detected in Portland's water sources. Portland has removed all known lead service connections from its distribution system. Exposure to lead through drinking water is possible if materials in a building's plumbing contain lead. The level of lead in water can increase when water stands in contact with lead-based solder and brass faucets containing lead.

If present, elevated levels of lead can cause serious health problems, especially for pregnant women and young children. Lead in drinking water is primarily from materials and components associated with service lines and home plumbing. The Portland Water Bureau is responsible for providing high quality drinking water, but cannot control the variety of materials used in plumbing components. When your water has been sitting for several hours, you can minimize the potential for lead exposure by flushing your tap for 30 seconds to 2 minutes before using water for drinking or cooking. If you are concerned about lead in your drinking water, you may wish to have your water tested. Information on lead in drinking water, testing methods and steps you can take to minimize exposure is available from the **LeadLine, 503-988-4000**, **www.leadline.org** or the Safe Drinking Water Hotline **800-426-4791**, **www.epa.gov/safewater/lead**.

People are exposed to lead in many other ways. In the Portland area, dust from paint in homes built before 1978 is the most common source of exposure to lead. Other sources include soil, pottery, traditional folk medicines or cosmetics, some sports equipment such as fishing weights and ammunition, and some occupations and hobbies.

Corrosion Treatment

The Portland Water Bureau's corrosion control treatment reduces corrosion in plumbing by increasing the pH of the water. Comparison of monitoring results with and without pH adjustment shows over 50 percent reduction in lead at the tap with pH adjustment.

Water Testing

Twice each year the Portland Water Bureau monitors for lead in tap water from a sample group of more than 100 homes. These are homes in Portland's service area where the plumbing is known to contain lead solder which is more likely to contribute to elevated lead levels. Samples are collected after the water has been standing in the household plumbing for more than 6 hours. These houses represent a worst-case scenario for lead in water. A Lead and Copper Rule exceedance for lead occurs when more than 10 percent of these homes exceed the lead action level of 15 parts per billion. In the most recent round of testing, less than 10 percent of homes exceeded the lead action level.

If you are concerned that your home tap water may have lead, call the LeadLine for a free lead-in-water test kit and to learn ways to reduce your exposure to all sources of lead. This program targets testing the water in households most at risk from lead in water. These are homes built between 1970 and 1985 with pregnant women or children ages six or younger in the home.

PORTLAND WATER BUREAU
FROM FOREST TO FAUCET


Bull Run Lake

If this information looks familiar, it should.

The city has mailed similar information to customers each year since 1997. Why every year? Drinking water regulations require the city to produce and mail this information every year.

Most of the language is also required – Congress and the EPA want to be sure people know what is in their drinking water. The Portland Water Bureau agrees.

The Portland Water Bureau takes the effort to make this complex information readable at a low cost.

The Portland Water Bureau produced and mailed this report for 30 cents each.

Printed on recycled paper
JUNE 2009

CONTACT INFORMATION

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1120 SW Fifth Avenue
Portland, Oregon 97204
www.portlandonline.com/water
Public Water System #4100657

Portland Water Bureau
Customer Service: 503-823-7770

Portland Water Bureau
Water Line: 503-823-7525

FOR ADDITIONAL INFORMATION

Oregon Department of Human Services – Drinking Water Program:
971-673-0405
www.oregon.gov/DHS/ph/dwp/

The City of Portland will provide auxiliary aids/services to persons with disabilities. To request an ADA accommodation, please call 503-823-7404 or by TTY at 503-823-6868. Copies of this report are available in Braille, large format, and on the Portland Water Bureau's web site — **www.portlandonline.com/water.**

Spanish
Para obtener una copia de este reporte en español, por favor llame al **503-823-7770** o visite www.portlandonline.com/water

Russian
Чтобы получить копию этого отчета на русском языке, пожалуйста, позвоните **503-823-7770** или зайдите на сайт www.portlandonline.com/water

Vietnamese
Để được một bản báo cáo này bằng tieng Việt, xin gọi số **503-823-7770** hoặc đến mạng lưới www.portlandonline.com/water

Chinese
若想获得本报告的中文版本，请拨打**503-823-7770** 或访问: www.portlandonline.com/water

PORTLAND WATER BUREAU

2010 Drinking Water Quality Report

PORTLAND WATER BUREAU

FROM FOREST TO FAUCET

From Commissioner Randy Leonard

I am pleased to share the 2010 Water Quality Report with you. The Portland Water Bureau produces this report every year as mandated by the federal government. The report provides you with an easy-to-understand overview of your drinking water.

One thing you might note is that the Water Bureau monitors Portland's drinking water for more than 200 regulated and unregulated contaminants. That makes me feel incredibly confident in the water we serve and the water you drink. Portland's water is some of the highest-quality drinking water in the world. High quality is the Water Bureau way. It's the Portland way.

I urge you to take a minute to look through this report; learn about your water system and some of what goes into delivering water to your tap. Learn why we believe, "From forest to faucet, the Portland Water Bureau delivers the best drinking water in the world!"

Randy Leonard
Commissioner-In-Charge

From the Administrator

Since 1997, the federal government has required municipal water providers to send customers a yearly report detailing their water system. This report, the 2010 Water Quality Report, is essentially the nutritional label for the substance you probably consume more than any other; water.

If you have questions or comments about this, please call Portland Water Bureau Customer Service at 503-823-7770.
We welcome your interest in Portland's water system.

David G. Shaff
Administrator

Frequently Asked Questions About Water Quality

Is my water treated by filtration?

No. Bull Run water is not filtered. The Bull Run source meets the filtration avoidance criteria of the Surface Water Treatment Rule. The state approved Portland's compliance with these criteria in 1992. Portland continues to meet these criteria on an ongoing basis.

Does the Portland Water Bureau add fluoride to drinking water?

No. The Portland Water Bureau does not add fluoride to the water. Although fluoride is not detected in Bull Run surface water, it is a naturally occurring trace element in groundwater. The U.S. Public Health Service and the Centers for Disease Control and Prevention consider the fluoride levels in Portland's water sources to be lower than optimal for the prevention of tooth decay. You may want to consult with your dentist about fluoride treatment to help prevent tooth decay, especially for young children.

Is Portland's water soft or hard?

Portland's water is very soft. The hardness of Bull Run water is typically 4-13 parts per million (ppm) – approximately ½ a grain of hardness per gallon. Portland's groundwater hardness is approximately 86 ppm (about 5 grains per gallon), which is considered moderately hard.

What is the pH of Portland's water?

The pH of Portland's drinking water typically ranges from 7.2 to 8.2.

Are sodium levels in Portland's drinking water affecting my health?

There is currently no drinking water standard for sodium. Sodium is an essential nutrient. Sodium in Portland's water ranges between 2 and 9 ppm, a level unlikely to contribute to adverse health effects.

Who can I call about water quality or pressure concerns?

The Water Line, **503-823-7525**, can answer your questions and concerns about water quality or pressure. The Water Line is available Monday–Friday from 8:30 a.m.– 4:30 p.m. If you have an emergency after these hours, please contact the after-hours number at **503-823-4874**.

How can I get my water tested?

Contact the LeadLine at **503-988-4000** or **www.leadline.org** for information about free lead-in-water testing. For more extensive testing, private laboratories can test your tap water for a fee. Not all labs are accredited to test for all contaminants. For information about accredited labs, call the Oregon Department of Human Services, Oregon Environmental Laboratory Accreditation Program at **503-693-4122**.

Public Involvement Opportunities

The Portland Water Bureau provides a variety of public information, public involvement and community outreach opportunities. If you have questions about Portland Water Bureau meetings, projects, or programs, please contact Jimmy Brown, Community Involvement and Information Manager, at **503-823-3028**, or visit the Water Blog to learn more about the bureau or leave a comment: **www.portlandoregon.gov/water/blog**.

COVER PHOTO: ROMAN JOHNSTON

Drinking Water Treatment

The first step in the treatment process for Portland's drinking water is disinfection using chlorine. Next, ammonia is added to form chloramines which ensure that disinfection remains adequate throughout the distribution system.

The Portland Water Bureau also adds sodium hydroxide to increase the pH of the water to reduce corrosion of plumbing systems. This treatment helps control lead and copper levels at customers' taps, should these metals be present in home plumbing.

Water Testing

The Portland Water Bureau monitors for over 200 regulated and unregulated contaminants in drinking water, including pesticides and radioactive contaminants. All monitoring data in this report are from 2009. **If a health-related contaminant is not listed in this report, the Portland Water Bureau did not detect it in drinking water.**

Special Notice for Immuno-Compromised Persons

Some people may be more vulnerable to contaminants in drinking water than the general population.

Immuno-compromised persons such as persons with cancer undergoing chemotherapy, persons who have undergone organ transplants, people with HIV/AIDS or other immune system disorders, some elderly, and infants can be particularly at-risk from infections. These people should seek advice about drinking water from their health-care providers. Environmental Protection Agency and Centers for Disease Control and Prevention guidelines on appropriate means to lessen the risk of infection by *Cryptosporidium* and other microbial contaminants are available from the Safe Drinking Water Hotline at **800-426-4791**.

What the EPA Says About Drinking Water Contaminants

Drinking water, including bottled water, may reasonably be expected to contain at least small amounts of some contaminants. The presence of contaminants does not necessarily indicate that water poses a health risk. More information about contaminants and potential health effects can be obtained by calling the Environmental Protection Agency's Safe Drinking Water Hotline at **800-426-4791** or at **www.epa.gov/safewater**.

The sources of drinking water (both tap water and bottled water) include rivers, lakes, streams, ponds, reservoirs, springs, and wells. As water travels over the surface of the land or through the ground, it dissolves naturally occurring minerals and, in some cases, radioactive material, and can pick up substances resulting from the presence of animals or from human activity.

Contaminants in drinking water sources may include:

Microbial contaminants, such as viruses and bacteria, which may come from wildlife or septic systems

Inorganic contaminants, such as salts and metals, which can occur naturally or result from urban stormwater runoff, industrial or domestic wastewater discharges or farming

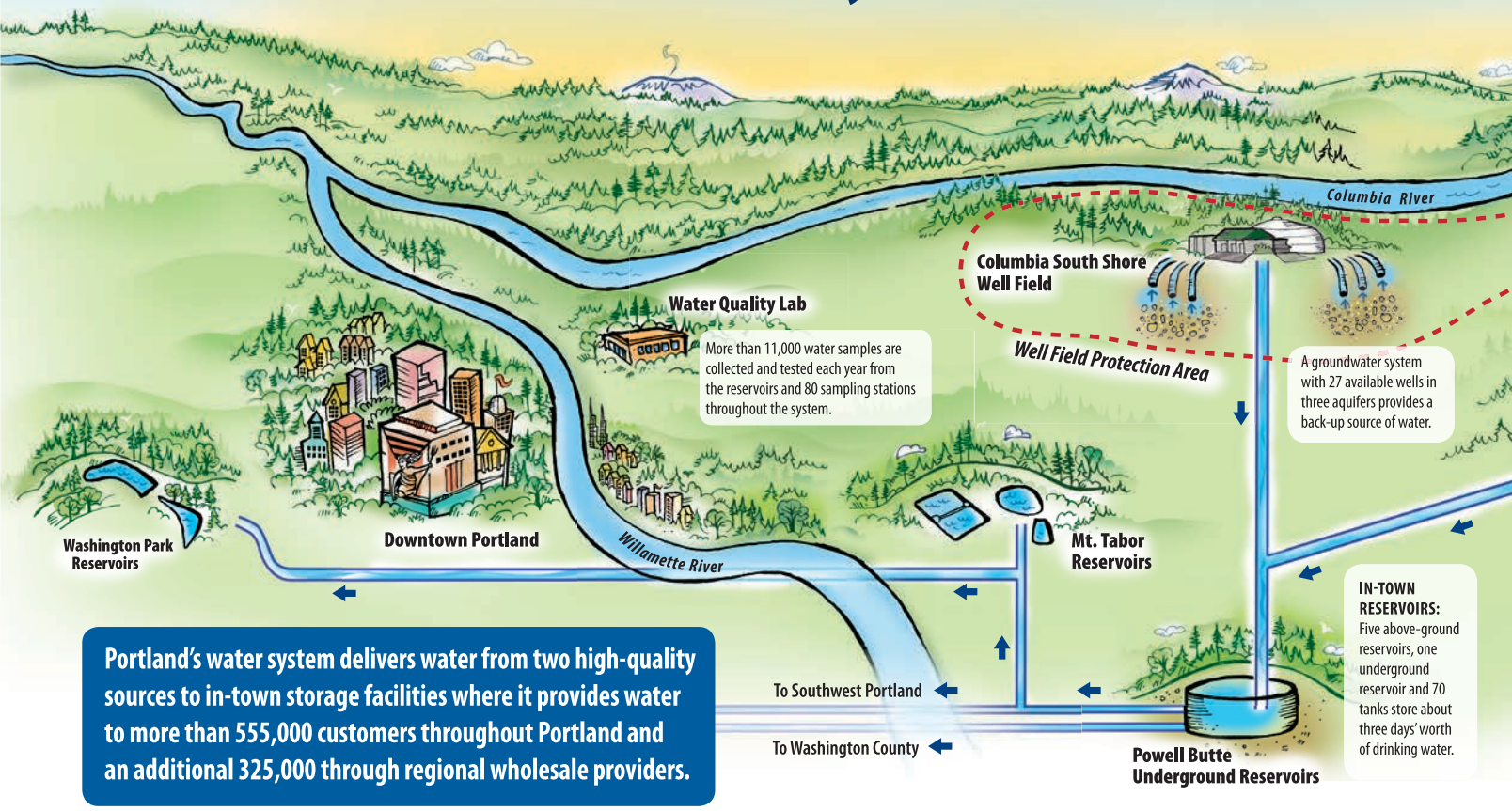
Pesticides and herbicides, which may come from a variety of sources such as farming, urban stormwater runoff and home or business use

Organic chemical contaminants, including synthetic and volatile organic chemicals, which are byproducts of industrial processes, and can also come from gas stations, urban stormwater runoff and septic systems

Radioactive contaminants, which can occur naturally

In order to ensure that tap water is safe to drink, the EPA has regulations that limit the amount of certain contaminants in water provided by public water systems and require monitoring for these contaminants. Food and Drug Administration regulations establish limits for contaminants in bottled water, which must provide the same protection for public health.

Portland's Water System *Established 1895*



Portland's water system delivers water from two high-quality sources to in-town storage facilities where it provides water to more than 555,000 customers throughout Portland and an additional 325,000 through regional wholesale providers.

The Bull Run Watershed is a surface water supply within the Bull Run Watershed Management Unit located in the Mt. Hood National Forest. A geological ridge separates the watershed from Mount Hood. Current regulations, and the availability of the Columbia South Shore Well Field, allow Portland to meet federal drinking water standards without filtering this high-quality Bull Run water supply. The watershed has an area of 102 square miles, and typically receives 80-170 inches of rainfall a year. The heaviest rains occur from late fall through spring. Two reservoirs store water for use year-round, particularly during the dry summer months.

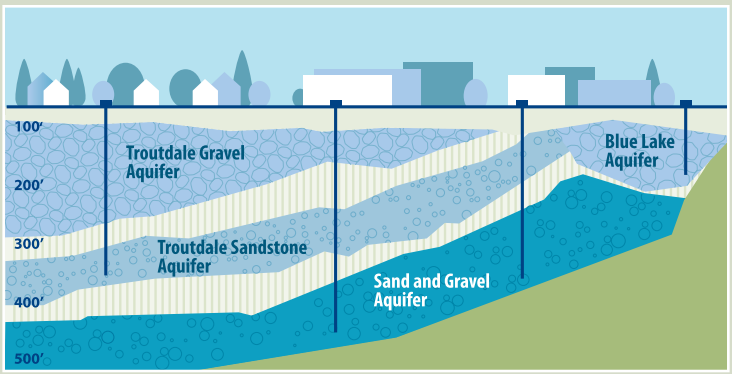
The watershed is only used for producing drinking water. Federal laws restrict public entry. No recreational, residential, or industrial uses occur within its boundaries. The Portland Water Bureau carefully monitors water quality and quantity. The Oregon Department of Human Services Drinking Water Program regularly inspects the watershed and related treatment and distribution facilities.

For 105 years, the Bull Run has provided high-quality drinking water to the City of Portland. On January 2, 1895, the first water from the Bull Run flowed into Portland.

The Portland Water Bureau has completed a Source Water Assessment for the Bull Run water supply to comply with the 1996 Safe Drinking Water Act amendments. The only known contaminants of concern for the Bull Run water supply are naturally occurring microbial contaminants such as *Giardia lamblia, Cryptosporidium,* fecal coliform bacteria, and total coliform bacteria. These organisms are found in virtually all freshwater ecosystems and are present in the Bull Run supply at very low levels. The Bull Run supply complies with all applicable state and federal regulations for source water, including the 1989 Surface Water Treatment Rule filtration-avoidance criteria. The Source Water Assessment report is available at **www.portlandoregon.gov/water** and by calling **503-823-7404**.

The Columbia South Shore Well Field is a groundwater source of drinking water that provides high-quality water from production wells located in three different aquifers. In 2009, the City of Portland supplemented the Bull Run drinking water supply with approximately 32 million gallons of groundwater over a 9-day period beginning on August 5th. This was done as part of a groundwater maintenance exercise. Additionally, the City of Portland used 1.1 billion gallons of groundwater over a 31-day period beginning September 28th to augment the summer water supply.

Portland has a long history of groundwater protection. The wellhead protection area encompasses portions of Portland, Gresham and Fairview. Together, these cities regulate businesses in the well-head protection area to prevent hazardous materials spills that could seep into the ground. The cities also educate local residents on what can be done to help protect groundwater with events such as Aquifer Adventure, Cycle the Well Field and Groundwater 101. To learn more about Portland's wellhead protection program, upcoming events and how to protect groundwater, go to **www.portlandoregon.gov/water/groundwater** or call **503-823-7404**.



There are 27 usable wells capable of pumping water from three aquifers on the south shore of the Columbia River. The well field serves as a backup water supply during turbidity events and emergencies and when the bureau needs additional summer supply. The well field can produce up to 102 million gallons of water per day.

The Clackamas River Water District, City of Gresham, City of Lake Oswego, Rockwood Water People's Utility District, the Sunrise Water Authority and the Tualatin Valley Water District provide drinking water to some Portland customers who live near service area boundaries. Customers who receive water from these providers will also receive detailed water quality reports about these sources in addition to this report.

Regulated Contaminants Detected in 2009

Regulated Contaminant	Minimum Detected	Maximum Detected	Maximum Contaminant Level (MCL) or Treatment Technique	Maximum Contaminant Level Goal (MCLG)	Sources of Contaminant
SOURCE WATER FROM BULL RUN WATERSHED					
Turbidity	0.20 NTU	3.8 NTU	Cannot exceed 5 NTU more than two times in twelve months	Not Applicable	Erosion of natural deposits
Giardia	Not Detected	One sample of 50 liters had 3 *Giardia* cysts	Treatment technique required: Disinfection to kill 99.9% of cysts	Not Applicable	Animal wastes
Fecal Coliform Bacteria	Not Detected	1 sample had 6 bacterial colonies (100% of samples had fewer than 20 bacterial colonies per 100 milliliters of water)	At least 90% of samples measured during the previous six months must have 20 or fewer bacterial colonies per 100 milliliters of water	Not Applicable	Animal wastes
ENTRY POINTS TO DISTRIBUTION SYSTEM — from Bull Run Watershed and Columbia South Shore Well Field					
NUTRIENTS					
Nitrate Nitrogen	< 0.01 parts per million	0.18 parts per million	10 parts per million	10 parts per million	Found in natural aquifer deposits; animal wastes
METALS AND MINERALS					
Arsenic	< 0.5 parts per billion	3 parts per billion	10 parts per billion	0 parts per billion	Found in natural aquifer deposits
Barium	< 0.005 parts per million	0.013 parts per million	2 parts per million	2 parts per million	Found in natural aquifer deposits
Fluoride	< 0.05 parts per million	0.14 parts per million	4 parts per million	4 parts per million	Found in natural aquifer deposits
Lead	< 1 part per billion	5 parts per billion	Not Applicable	0 parts per billion	Found in natural aquifer deposits
INORGANIC CONTAMINANTS					
Cyanide	<10 parts per billion	46 parts per billion	200 parts per billion	200 parts per billion	Produced by algae and plants naturally found in the Bull Run watershed
RADIONUCLIDES					
Gross Beta	3.4 picocuries per liter	3.4 picocuries per liter	Not applicable; Screening level of 50 picocuries per liter	0 picocuries per liter	Decay of natural deposits
DISTRIBUTION SYSTEM OF RESERVOIRS, TANKS AND MAINS					
MICROBIOLOGICAL CONTAMINANTS					
***E. Coli* Bacteria**	Not Detected	A routine sample and a repeat sample in November had detectable *E. coli* bacteria	A routine sample and a repeat sample are total coliform positive, and one is also *E. coli* positive	0% of samples with detectable *E. coli* bacteria	Human and animal fecal waste
Total Coliform Bacteria	Not Detected	8 samples out of 319 in October (2.5%) had detectable coliform bacteria	Must not detect coliform bacteria in more than 5.0% of samples in any month	0% of samples with detectable coliform bacteria	Found throughout the environment
DISINFECTION BYPRODUCTS					
TOTAL TRIHALOMETHANES					
Running Annual Average of All Sites	15 parts per billion	21 parts per billion	80 parts per billion	Not Applicable	Byproduct of drinking water disinfection
Single Result at Any One Site	11 parts per billion	33 parts per billion	Not Applicable		
HALOACETIC ACIDS					
Running Annual Average of All Sites	21 parts per billion	25 parts per billion	60 parts per billion	Not Applicable	Byproduct of drinking water disinfection
Single Result at Any One Site	11 parts per billion	42 parts per billion	Not Applicable		

Regulated Contaminant	Minimum Detected	Maximum Detected	Maximum Contaminant Level or Maximum Residual Disinfectant Level (MRDL)	MaximumContaminant Level Goal or Maximum Residual Disinfectant Level Goal (MRDLG)	Sources of Contaminant
DISINFECTANT RESIDUAL					
Total Chlorine Residual	Not Detected	2.0 parts per million	4 parts per million	4 parts per million	Chlorine and ammonia are used to disinfect water

Regulated Contaminant	90th Percentile Values	Number of Sites Exceeding Action Levels	Lead and Copper Rule Exceedance	Maximum Contaminant Level Goal (MCIG)	Sources of Contaminant
LEAD AND COPPER SAMPLINGS AT HIGH-RISK RESIDENTIAL WATER TAPS					
Copper	0.34 parts per million	0 samples exceeded the copper action level of 1.3 parts per million	More than 10% of the homes tested have copper levels greater than 1.3 parts per million	1.3 parts per million	Corrosion of household and commercial building plumbing systems
Lead	10 parts per billion	6 of 116 samples (5%) exceeded the lead action level of 15 parts per billion	More than 10% of the homes tested have lead levels greater than 15 parts per billion	0 parts per billion	Corrosion of household and commercial building plumbing systems

Unregulated Contaminants Detected in 2009

Contaminant	Minimum Detected	Average Detected	Maximum Amount Detected	Sources of Contaminant
ENTRY POINTS TO THE DISTRIBUTION — from Bull Run Watershed and Columbia South Shore Well Field				
Radon	Not detected	145 picocuries per liter	290 picocuries per liter	Decay of natural deposits
Sodium	2.6 parts per million	8.8 parts per million	19 parts per million	Added to water during treatment, erosion of natural deposits
Ibuprofen*	Not Detected	0.6 parts per trillion	3.5 parts per trillion	Source unknown, possible percolation into groundwater aquifer

See Notes on Regulated and Unregulated Contaminants on page 7 for more information. **See notes on Pharmaceuticals and Personal Care Products on page 7.*

Definitions

Action Level
The concentration of a contaminant which, if exceeded, triggers treatment or other requirements which a water system must follow.

Maximum Contaminant Level or MCL
The highest level of a contaminant that is allowed in drinking water. MCLs are set as close to the MCLGs as feasible using the best available treatment technology.

Maximum Contaminant Level Goal or MCLG
The level of a contaminant in drinking water below which there is no known or expected risk to health. MCLGs allow for a margin of safety.

Maximum Residual Disinfectant Level or MRDL
The highest level of a disinfectant allowed in drinking water. There is convincing evidence that addition of a disinfectant is necessary for control of microbial contaminants.

Maximum Residual Disinfectant Level Goal or MRDLG
The level of a drinking water disinfectant below which there is no known or expected risk to health. MRDLGs do not reflect the benefits of the use of disinfectants to control microbial contaminants.

Part Per Million
One part per million corresponds to one penny in $10,000 or approximately one minute in two years. One part per million is equal to 1,000 parts per billion.

Part Per Billion
One part per billion corresponds to one penny in $10,000,000 or approximately one minute in 2,000 years. One part per billion is equal to 1,000 parts per trillion.

Part Per Trillion
One part per trillion corresponds to one penny in $10,000,000,000 or approximately one second in 32,000 years.

Picocuries Per Liter
Picocurie is a measurement of radioactivity. One picocurie is a trillion times smaller than one curie.

Treatment Technique
A required process intended to reduce the level of a contaminant in drinking water.

Notes on Regulated Contaminants

Turbidity
Bull Run is an unfiltered surface water supply. The rules for public water systems have strict standards for unfiltered surface water supplies. Turbidity levels in unfiltered water must not exceed 5 NTU (nephelometric turbidity units) more than two times in a twelve-month period. The typical cause of turbidity is sediment suspended in the water that can interfere with disinfection and provide a medium for microbial growth. Large storm events can result in increased turbidity, causing the Portland Water Bureau to shut down the Bull Run system and serve water from the Columbia South Shore Well Field.

Giardia
Wildlife in the watershed may be hosts to *Giardia lamblia*, the organism that causes giardiasis. The Portland Water Bureau uses chlorine to kill these organisms.

Fecal Coliform Bacteria
The presence of fecal coliform bacteria in source water indicates that water may be contaminated with animal wastes. The Portland Water Bureau uses chlorine to kill these bacteria.

Nitrate - Nitrogen
Nitrate, measured as nitrogen, can support microbial growth (bacteria and algae). Nitrate levels exceeding the standards can contribute to health problems.

Arsenic, Barium, Fluoride and Lead
Metals and minerals are elements found in the earth's crust; they can dissolve into water that is in contact with soil or in groundwater aquifers. At the levels found in Portland's drinking water, they are unlikely to contribute to adverse health effects. There is no maximum contaminant level (MCL) for lead at the entry point to the distribution system. Lead is regulated at customers' taps. See ***Reducing Exposure to Lead*** for more information.

Cyanide
Cyanide is produced by certain bacteria, fungi and algae and is found in a number of plants. It is rarely detected in Portland's source waters. At the levels detected, cyanide is unlikely to contribute to adverse health effects.

Gross Beta
Certain minerals are radioactive and may emit forms of radiation known as photons and beta radiation. Gross Beta was detected in Portland's groundwater at the entry point to the distribution system. The screening level for Gross Beta is not a health-based level but is a level at which additional and increased monitoring would be necessary.

E. Coli Bacteria
E. coli are bacteria that indicate that the water may be contaminated with human or animal wastes. Microbes in these wastes can cause short-term effects, such as diarrhea, cramps, nausea, headaches or other symptoms. The microbes may pose a special health risk for infants, young children, some of the elderly and people with severely compromised immune systems. The Portland Water Bureau uses chlorine to kill these bacteria.

Total Coliform Bacteria
Coliforms are bacteria which are naturally present in the environment and are used as an indicator that other potentially-harmful bacteria may be present.

Disinfection Byproducts
During disinfection, certain byproducts form as a result of chemical reactions between chlorine and naturally occurring organic matter in the water. These byproducts can have negative health effects. Trihalomethanes and haloacetic acids are regulated disinfection byproducts which have been detected in Portland's water. The disinfection process is carefully controlled to keep byproduct levels low.

Total Chlorine Residual
Total chlorine residual is a measure of free chlorine and combined chlorine and ammonia in our distribution system. Chlorine residual is necessary to maintain disinfection throughout the distribution system. Adding ammonia to chlorine results in a more stable disinfectant and helps to minimize the formation of disinfection byproducts.

Notes on Unregulated Contaminants

Unregulated contaminant monitoring helps the EPA to determine where certain contaminants occur and whether it needs to regulate those contaminants in the future.

Radon
Radon is a naturally occurring radioactive gas that cannot be seen, tasted, or smelled. Radon has never been detected in the Bull Run supply. It is detected at varying levels in Portland's groundwater wells. For information about radon, call the EPA's Radon Hotline **800-SOS-RADON** or **www.epa.gov/radon/rnwater.html**.

Sodium
There is currently no drinking water standard for sodium. Sodium is an essential nutrient. At the levels found in drinking water, it is unlikely to contribute to adverse health effects.

Pharmaceuticals and Personal Care Products (PPCPs) in Portland's Drinking Water
In 2009, samples for PPCPs were collected from treated and untreated water from the Bull Run and groundwater sources. Ibuprofen was only detected at the inlet to the Groundwater treatment plant. However, ibuprofen was not detected in the water after it was treated. The Portland Water Bureau takes this issue very seriously. The Portland Water Bureau will continue to test for PPCPs in our source waters and report any detections to our customers. The Portland Water Bureau will also continue to take actions to protect our drinking water from these and other emerging contaminants.

Reducing Exposure to Lead

Portland has removed all known lead service connections from its distribution system. Exposure to lead through drinking water is possible if materials in a building's plumbing contain lead. The level of lead in water can increase when water stands in contact with lead-based solder and brass faucets containing lead.

If present, elevated levels of lead can cause serious health problems, especially for pregnant women and young children. Lead in drinking water is primarily from materials and components associated with service lines and home plumbing. The Portland Water Bureau is responsible for providing high-quality drinking water, but cannot control the variety of materials used in plumbing components. When your water has been sitting for several hours, you can minimize the potential for lead exposure by flushing your tap for 30 seconds to 2 minutes before using water for drinking or cooking. If you are concerned about lead in your drinking water, you may wish to request a free lead-in-water test from the LeadLine. Information on lead in drinking water, testing methods and steps you can take to minimize exposure is available from the **LeadLine, 503-988-4000**, **www.leadline.org** or the Safe Drinking Water Hotline **800-426-4791**, **www.epa.gov/safewater/lead**.

People are exposed to lead in many other ways. In the Portland area, dust from paint in homes built before 1978 is the most common source of exposure to lead. Other sources include soil, pottery, traditional folk medicines or cosmetics, some sports equipment such as fishing weights and ammunition, and some occupations and hobbies.

Corrosion Treatment

The Portland Water Bureau's corrosion control treatment reduces corrosion in plumbing by increasing the pH of the water. Comparison of monitoring results with and without pH adjustment shows more than 50 percent reduction in lead and 80 percent reduction in copper at the tap with pH adjustment.

Water Testing

Twice each year the Portland Water Bureau monitors for lead and copper in tap water from a sample group of more than 100 homes. These are homes in Portland's service area where the plumbing is known to contain lead solder which is more likely to contribute to elevated lead levels. These houses represent a worst-case scenario for lead in water. Samples are collected after the water has been standing in the household plumbing for more than 6 hours. A Lead and Copper Rule exceedance for lead occurs when more than 10 percent of these homes exceed the lead action level of 15 parts per billion. In the most recent round of testing, less than 10 percent of homes exceeded the lead action level.

If you are concerned that your home tap water may have lead, call the LeadLine for a free lead-in-water test kit and to learn ways to reduce your exposure to all sources of lead. This program targets testing the water in households most at-risk from lead in water. These are homes built between 1970 and 1985 with pregnant women or children ages six or younger in the home.

Easy steps to avoid possible exposure to lead from plumbing

- **Run your water to flush out lead.** If the water has not been used for several hours, run each tap for 30 seconds to 2 minutes or until it becomes colder before drinking or cooking. This flushes water which may contain lead from the pipes.
- **Use cold, fresh water for cooking and preparing baby formula.** Do not cook with or drink water from the hot water tap; lead dissolves more easily into hot water. Do not use water from the hot water tap to make baby formula.
- **Do not boil water to remove lead.** Boiling water will not reduce lead.
- **Consider using a filter.** Check whether it reduces lead – not all filters do. Be sure to maintain and replace a filter device in accordance with the manufacturer's instructions to protect water quality. Contact NSF International at **800-NSF-8010** or **www.nsf.org** for information on performance standards for water filters.
- **Test your water for lead.** Call the **LeadLine** at **503-988-4000** to find out how to get a **FREE** lead-in-water test.
- **Test your child for lead.** Ask your physician or call the **LeadLine** to find out how to have your child tested for lead. A blood lead level test is the only way to know whether your child is being exposed to lead.
- **Regularly clean your faucet aerator.** Particles containing lead from solder or household plumbing can become trapped in your faucet aerator. Regular cleaning every few months will remove these particles and reduce your exposure to lead.
- **Consider buying low-lead fixtures.** New brass faucets, fittings, and valves, may contribute to lead in your drinking water. Federal law currently allows brass fixtures, such as faucets, to contain up to 8% lead. These fixtures are labeled as "lead-free." When buying new fixtures, consumers should seek out those with the lowest lead content. Visit **www.nsf.org** to learn more about lead content in plumbing fixtures.

Leadline - 503-988-4000

Call the **LeadLine** at **503-988-4000** or visit **www.leadline.org** for information about lead hazards, free lead-in-water testing, free childhood blood lead testing and referrals to other lead reduction services.

www.leadline.org

Cryptosporidium and LT2

Cryptosporidium is a microorganism (protozoan) naturally present in bodies of surface water throughout the world. Surface water supplies are particularly vulnerable to *Cryptosporidium* contamination if they receive runoff exposed to human or animal wastes. Since wildlife inhabit the Bull Run watershed, the Portland Water Bureau regularly monitors for *Cryptosporidium* and has done so for more than ten years. Occasionally, the Portland Water Bureau has found *Cryptosporidium* at low levels. No *Cryptosporidium* oocysts have been detected in Portland water samples since August 2002.

Symptoms of *Cryptosporidium* infection include nausea, diarrhea and abdominal cramps. Most healthy individuals are able to overcome the disease within a few weeks. However, immuno-compromised people have more difficulty and are at greater risk of developing severe, life-threatening illness. *Cryptosporidium* must be ingested for it to cause disease, and may be spread through means other than drinking water.

The LT2 Rule

In January 2006, the Environmental Protection Agency (EPA) issued a drinking water rule called the Long Term 2 Enhanced Surface Water Treatment Rule (LT2) establishing new national standards to further reduce the risks of illness from *Cryptosporidium*. The LT2 rule has two principal requirements which affect Portland:

1) The installation of additional treatment processes to address *Cryptosporidium* in Bull Run source water by 2014, and
2) Ending the use of open finished drinking water reservoirs in Mt. Tabor and Washington Parks.

Treatment Requirements: A Parallel Path

The Safe Drinking Water Act enables Portland to apply for a variance to the treatment requirements of the LT2 rule if it can demonstrate that such treatment isn't necessary to protect public health. In November 2009, the Water Bureau developed a comprehensive sampling plan and study to investigate whether *Cryptosporidium* is a public health risk in the Bull Run watershed. Over the course of 2010, the City will be testing and studying Bull Run water to determine whether or not there is evidence to support a variance request. If the sampling and study results support a variance request, the City will submit a variance application in early 2011.

The City is also in the process of designing an Ultraviolet light (UV) treatment facility to meet the treatment requirements of the LT2 rule should the treatment variance effort fail. The UV design phase is scheduled to be completed by mid-2011 when a final decision on the City's eligibility for a treatment variance is anticipated. This timing will enable the City to meet the 2014 deadline for constructing the UV treatment facility, if it proves to be necessary. The Portland City Council must approve the construction of the UV treatment facility before it can be built.

Open Reservoir Requirements: A Ten-Year Plan

In November 2009, the City requested direction from EPA regarding the possibility of a variance to the open reservoir requirements of the LT2 rule. In December 2009, the EPA replied back that no such option exists. As required by the LT2 Rule, the City is currently implementing a multi-year plan to end the use of its open finished drinking water reservoirs in Mt. Tabor and Washington Parks by December 31, 2020.

For updates on the Portland Water Bureau's response to the LT2 rule visit **www.portlandonline.com\water\LT2**.

Powell Butte II

In December 2009, the Portland Water Bureau broke ground on the construction of a second underground reservoir at Powell Butte Nature Park in southeast Portland. When completed, the reservoir will provide an additional 50 million gallons of drinking water storage. The reservoir is necessary as part of the Water Bureau's long range storage plan and supports compliance with the storage requirements of the Long Term 2 Enhanced Surface Water Treatment Rule (LT2). The rule requires drinking water systems to eliminate the use of open finished drinking water reservoirs, such as those at Mt. Tabor Park and Washington Park.

Construction of the Powell Butte reservoir is occurring in two phases. In phase one, completed in April 2010, approximately 323,000 cubic yards of material were excavated to an average depth of 30 feet. This excavation was one of the largest to occur in the history of Portland. During excavation, fully loaded dump trucks left Powell Butte every four minutes, making an average 400 trips daily to a nearby quarry.

Phase two, to begin in spring 2011, will involve the construction of the buried concrete reservoir, pipes, vaults and emergency overflow. In addition, a number of park improvements are included under terms of a conditional use master plan. The reservoir is scheduled to be completed and in service in time to discontinue use of the open reservoirs at Mt. Tabor by December 31, 2015.

Excavation for the Powell Butte storage reservoir

Developments in Water Quality

November Boil Water Notice

On November 26, 2009, the Portland Water Bureau received results showing the presence of *E. coli* in a sample from Reservoir 3, an open finished drinking water reservoir at Washington Park. As required by drinking water regulations, a second sample was collected from the reservoir. On November 28th, the results for the second sample were positive for *E. coli*. This constituted a violation of the Total Coliform Rule, which required that a boil water notice be issued to customers being served water from this reservoir.

On November 28th a boil water notice was issued to all Portland Water Bureau customers west of the Willamette River and customers of Burlington, Palatine Hill and Valley View water districts. As a result, the open reservoir was taken out of service, and additional water quality samples were collected throughout the affected area. On Sunday, November 29th, results from all samples were negative for *E. coli* and other indicator bacteria, and the boil water notice was lifted. Throughout the incident, the Portland Water Bureau coordinated with the Multnomah County Health Department to monitor for evidence of a widespread water-borne disease outbreak. No such evidence was detected, leading to the belief that the contamination was limited and had little to no effect on the health of the general public.

Following the incident, the Portland Water Bureau conducted a thorough investigation into the cause of the contamination. The reservoir was drained and inspected, sample lines were investigated and a DNA analysis was performed on the two positive samples. No source of contamination was found and results of the DNA analysis were inconclusive.

In response to this incident, the Portland Water Bureau has instituted several operational changes. As part of these changes, routine sampling has been updated to include additional sampling sites. This will assist in determining the extent of potential contamination. In addition, all follow-up samples will now be collected on the same day of a positive result notification even though regulations allow for twenty-four hours between sampling. Also, should a single sample from an open reservoir be positive for *E. coli*, the reservoir will immediately be taken out of service, when feasible, to limit distribution of the potentially contaminated water while further sampling is performed. The Portland Water Bureau is conducting a condition assessment on reservoir sampling lines to ensure integrity and sanitary conditions. Finally, the Portland Water Bureau, in coordination with other agencies in the City of Portland, is implementing an auto-dial and text communication system that will allow the Portland Water Bureau to directly contact customers more quickly and accurately in the future. The Portland Water Bureau encourages customers to register to receive emergency notifications at **www.publicalerts.org**.

Unregulated Contaminant Monitoring Rule

In 2009, the Portland Water Bureau monitored for 25 chemicals as part of the Unregulated Contaminant Monitoring Rule, or UCMR. The Safe Drinking Water Act requires the U.S. Environmental Protection Agency (EPA) to establish criteria for a program for public water systems to monitor for unregulated contaminants every five years. On December 2, 2006, the UCMR was signed. The UCMR requires systems that serve more than 10,000 people to monitor for all 25 contaminants. The contaminants include flame retardants, explosives, pesticide constituents and disinfection by-products.

For four consecutive quarters in 2009, the Portland Water Bureau collected samples for all 25 contaminants at the entry point to the distribution system and at an additional location in the distribution system for nitrosamines, a group of carcinogens.

Through all four quarters, none of the contaminants was detected from any of the sample locations. This is good news for Portland Water Bureau customers, and is also useful information for the EPA to determine the occurrence of these contaminants in drinking water and the level at which they occur. This information will be used to determine which, if any, of these contaminants should be regulated nationwide.

In the remote Bull Run watershed, the Portland Water Bureau maintains four stations to monitor water quality and stream flow on the major tributaries of the Bull Run reservoirs.

PORTLAND WATER BUREAU
FROM FOREST TO FAUCET

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Portland Water Bureau
Commissioner Randy Leonard
Administrator David G. Shaff
1120 SW Fifth Avenue / Room 600
Portland, Oregon 97204

***************ECRWSS**
POSTAL CUSTOMER

If this information looks familiar, it should.

The city has mailed similar information to customers each year since 1997. Why every year? It's the law. Drinking water regulations require the city to produce and mail this information every year.

Most of the language is also required — Congress and the EPA want to be sure that people know what is in their drinking water. The Portland Water Bureau agrees.

The Portland Water Bureau makes significant efforts to produce this complex information readable at a low cost. ***The Portland Water Bureau produced and mailed this report for 30 cents each.***

Sunrise in the Bull Run watershed

ROMAN JOHNSTON

Printed on recycled paper
JUNE 2010

CONTACT INFORMATION

Portland Water Bureau
1120 SW Fifth Avenue/ Room 600
Portland, Oregon 97204
www.portlandoregon.gov/water
Public Water System #4100657

Portland Water Bureau
Customer Service: 503-823-7770

Portland Water Bureau
Water Line: 503-823-7525

FOR ADDITIONAL INFORMATION

Oregon Department of Human Services – Drinking Water Program: 971-673-0405
www.oregon.gov/DHS/ph/dwp/

The City of Portland will provide auxiliary aids/services to persons with disabilities. To request an ADA accommodation, please call 503-823-7404 or by TTY at 503-823-6868. Copies of this report are available in Braille, large format type and on the Portland Water Bureau's Web site — www.portlandoregon.gov/water.

Spanish
Para obtener una copia de este reporte en español, por favor llame al **503-823-7770** o visite www.portlandoregon.gov/water

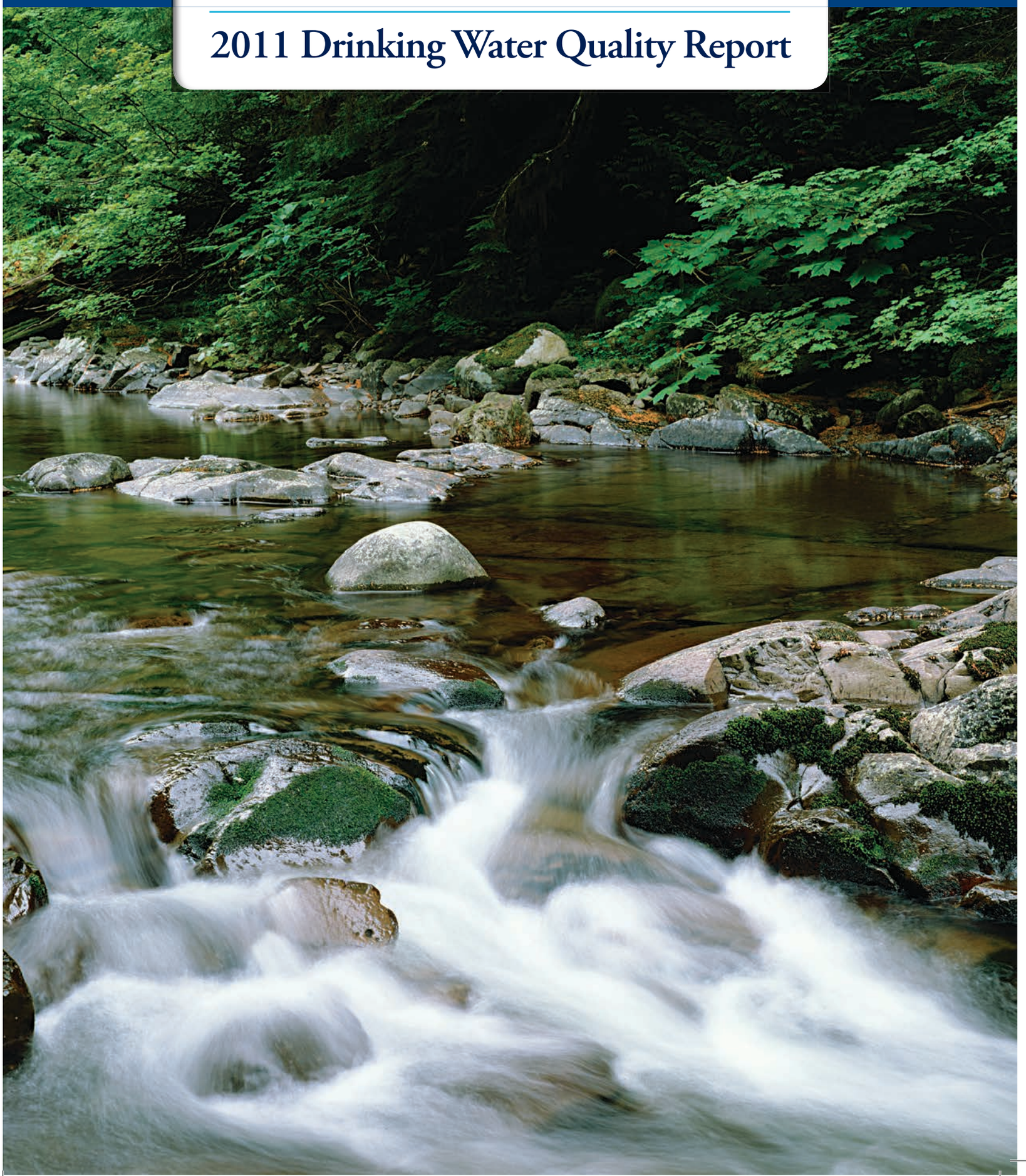
Russian
Чтобы получить копию этого отчета на русском языке, пожалуйста, позвоните **503-823-7770** или зайдите на сайт www.portlandoregon.gov/water

Vietnamese
Để được một bản báo cáo này bằng tieng Việt, xin gọi số **503-823-7770** hoặc đến mạng lưới www.portlandoregon.gov/water

Chinese
若想获得本报告的中文版本，请拨打**503-823-7770** 或访问：www.portlandoregon.gov/water

PORTLAND WATER BUREAU

2011 Drinking Water Quality Report



PORTLAND WATER BUREAU
FROM FOREST TO FAUCET

From Commissioner Randy Leonard

I am pleased to share the 2011 Drinking Water Quality Report with you. The Portland Water Bureau produces this report every year as mandated by the federal government. The report provides you with an easy-to-understand overview of your drinking water.

One thing you might note is that the Water Bureau monitors Portland's drinking water for more than 200 regulated and unregulated contaminants. That makes me feel incredibly confident in the water we serve and the water you drink. Portland's water is some of the highest-quality drinking water in the world. High quality is the Water Bureau way. It's the Portland way.

I urge you to take a minute to look through this report; learn about your water system and some of what goes into delivering water to your tap. Learn why we believe, "From forest to faucet, the Portland Water Bureau delivers the best drinking water in the world!"

Randy Leonard
Commissioner-In-Charge

From the Administrator

Since 1997, the federal government has required municipal water providers to send customers a yearly report detailing their water system. This report, the 2011 Drinking Water Quality Report, is essentially the nutritional label for the substance you probably consume more than any other – water.

If you have questions or comments about this, please call Portland Water Bureau Customer Service at 503-823-7770.
We welcome your interest in Portland's water system.

David G. Shaff
Administrator

Frequently Asked Questions About Water Quality

Is my water treated by filtration?
No. Bull Run water is not filtered. The Bull Run source meets the filtration avoidance criteria of the Surface Water Treatment Rule. The State approved Portland's compliance with these criteria in 1992. Portland continues to meet these criteria on an ongoing basis.

Does the Portland Water Bureau add fluoride to drinking water?
No. The Portland Water Bureau does not add fluoride to the water. Fluoride is a naturally occurring trace element in surface and groundwater. The U.S. Public Health Service and the Centers for Disease Control and Prevention consider the fluoride levels in Portland's water sources to be lower than optimal for the prevention of tooth decay. You may want to consult with your dentist about fluoride treatment to help prevent tooth decay, especially for young children.

Is Portland's water soft or hard?
Portland's water is very soft. The hardness of Bull Run water is typically 4-13 parts per million (ppm) – approximately ½ a grain of hardness per gallon. Portland's groundwater hardness is approximately 86 ppm (about 5 grains per gallon), which is considered moderately hard.

What is the pH of Portland's water?
The pH of Portland's drinking water typically ranges from 7.2 to 8.2.

Are sodium levels in Portland's drinking water affecting my health?
There is currently no drinking water standard for sodium. Sodium is an essential nutrient. Sodium in Portland's water typically ranges between 2 and 8 ppm, a level unlikely to contribute to adverse health effects.

Who can I call about water quality or pressure concerns?
The Water Line, **503-823-7525**, can answer your questions and concerns about water quality or pressure. The Water Line is available Monday–Friday from 8:30 a.m.– 4:30 p.m. If you have an emergency after these hours, please contact the after-hours number at **503-823-4874**.

How can I get my water tested?
Contact the LeadLine at **503-988-4000** or **www.leadline.org** for information about free lead-in-water testing. For more extensive testing, private laboratories can test your tap water for a fee. Not all labs are accredited to test for all contaminants. For information about accredited labs, call the Oregon Health Authority, Oregon Environmental Laboratory Accreditation Program at **503-693-4122**.

Public Involvement Opportunities

The Portland Water Bureau provides a variety of public information, public involvement and community outreach opportunities. If you have questions about Portland Water Bureau meetings, projects, or programs, please contact Jimmy Brown, Community Involvement and Information Manager, at **503-823-3028**, or visit the Water Blog to learn more about the bureau or leave a comment: **www.portlandoregon.gov/water/blog**.

Drinking Water Treatment

The first step in the treatment process for Portland's drinking water is disinfection using chlorine. Next, ammonia is added to form chloramines which ensure that disinfection remains adequate throughout the distribution system.

The Portland Water Bureau also adds sodium hydroxide to increase the pH of the water to reduce corrosion of plumbing systems. This treatment helps control lead and copper levels at customers' taps, should these metals be present in home plumbing.

Water Testing

The Portland Water Bureau monitors for over 200 regulated and unregulated contaminants in drinking water, including pesticides and radioactive contaminants. All monitoring data in this report are from 2010 unless otherwise noted.
If a known health-related contaminant is not listed in this report, the Portland Water Bureau did not detect it in drinking water.

Collecting groundwater samples for water quality analysis.

Special Notice for Immuno-Compromised Persons

Some people may be more vulnerable to contaminants in drinking water than the general population.

Immuno-compromised persons such as persons with cancer undergoing chemotherapy, persons who have undergone organ transplants, people with HIV/AIDS or other immune system disorders, some elderly, and infants can be particularly at-risk from infections. These people should seek advice about drinking water from their health-care providers. Environmental Protection Agency and Centers for Disease Control and Prevention guidelines on appropriate means to lessen the risk of infection by *Cryptosporidium* and other microbial contaminants are available from the Safe Drinking Water Hotline at **800-426-4791**.

What the EPA Says About Drinking Water Contaminants

Drinking water, including bottled water, may reasonably be expected to contain at least small amounts of some contaminants. The presence of contaminants does not necessarily indicate that water poses a health risk. More information about contaminants and potential health effects can be obtained by calling the Environmental Protection Agency's Safe Drinking Water Hotline at **800-426-4791** or at **www.epa.gov/safewater**.

The sources of drinking water (both tap water and bottled water) include rivers, lakes, streams, ponds, reservoirs, springs, and wells. As water travels over the surface of the land or through the ground, it dissolves naturally occurring minerals and, in some cases, radioactive material, and can pick up substances resulting from the presence of animals or from human activity.

Contaminants in drinking water sources may include:

Microbial contaminants, such as viruses and bacteria, which may come from wildlife or septic systems

Inorganic contaminants, such as salts and metals, which can occur naturally or result from urban stormwater runoff, industrial or domestic wastewater discharges or farming

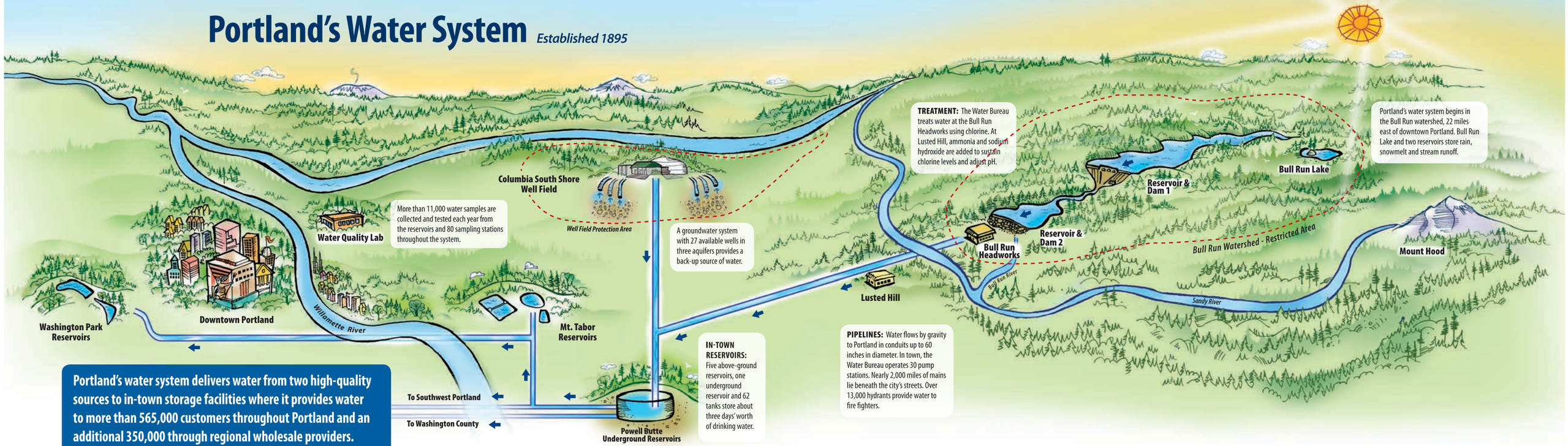
Pesticides and herbicides, which may come from a variety of sources such as farming, urban stormwater runoff and home or business use

Organic chemical contaminants, including synthetic and volatile organic chemicals, which are byproducts of industrial processes, and can also come from gas stations, urban stormwater runoff and septic systems

Radioactive contaminants, which can occur naturally

In order to ensure that tap water is safe to drink, the EPA has regulations that limit the amount of certain contaminants in water provided by public water systems and require monitoring for these contaminants. Food and Drug Administration regulations establish limits for contaminants in bottled water, which must provide the same protection for public health.

Portland's Water System *Established 1895*



Benson Bubblers are Portland's iconic drinking fountains. The City currently maintains 52 of the four-bowl fountains and 74 one-bowl variations. The installation of the four-bowl fountains is limited to certain downtown boundaries so as not to diminish the uniqueness of them.

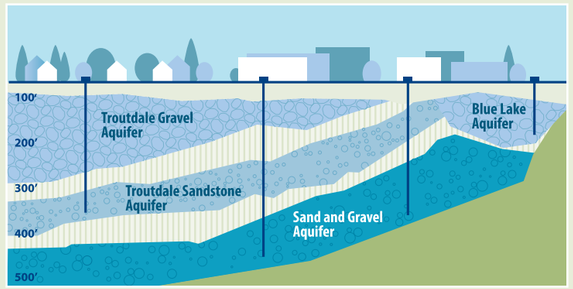
The Bull Run Watershed is a surface water supply within the Bull Run Watershed Management Unit located in the Mt. Hood National Forest. A geological ridge separates the watershed from Mount Hood. Current regulations, and the availability of the Columbia South Shore Well Field, allow Portland to meet federal drinking water standards without filtering this high-quality Bull Run water supply. The watershed has an area of 102 square miles, and typically receives 80-170 inches of rainfall a year. The heaviest rains occur from late fall through spring. Two reservoirs store water for use year-round, particularly during the dry summer months.

The watershed is only used for producing drinking water. Federal laws restrict public entry. No recreational, residential or industrial uses occur within its boundaries. The Portland Water Bureau carefully monitors water quality and quantity. The Oregon Health Authority Drinking Water Program regularly inspects the watershed and related treatment and distribution facilities.

The Portland Water Bureau has completed a Source Water Assessment for the Bull Run water supply to comply with the 1996 Safe Drinking Water Act amendments. The only contaminants of concern for the Bull Run water supply are naturally occurring microbial contaminants such as *Giardia lamblia, Cryptosporidium,* fecal coliform bacteria, and total coliform bacteria. These organisms are found in virtually all freshwater ecosystems and may be present in the Bull Run supply at very low levels. The Bull Run supply complies with all applicable state and federal regulations for source water, including the 1989 Surface Water Treatment Rule filtration-avoidance criteria. The Source Water Assessment report is available at **www.portlandoregon.gov/water** and by calling **503-823-7404**.

The Columbia South Shore Well Field provides high-quality drinking water from groundwater production wells located in three different aquifers. In 2010, the City of Portland supplemented the Bull Run drinking water supply with approximately 28 million gallons of groundwater over a 6-day period beginning on August 9th. This was done as part of a groundwater maintenance exercise.

Portland has a long history of groundwater protection. The groundwater protection area encompasses portions of Portland, Gresham and Fairview. Together, these cities regulate businesses in the groundwater protection area to prevent hazardous material spills that could seep into the ground. The cities also educate local residents on what can be done to help protect groundwater with events such as Aquifer Adventure, Cycle the Well Field and Groundwater 101. To learn more about Portland's groundwater protection program, upcoming events and how to protect groundwater, visit **www.portlandoregon.gov/water/groundwater** or call **503-823-7404**.



There are 27 usable wells capable of pumping water from three aquifers on the south shore of the Columbia River. The well field serves as a backup water supply during turbidity events and emergencies and when the bureau needs additional summer supply. The well field can produce up to 102 million gallons of water per day.

The Clackamas River Water District, City of Gresham, City of Lake Oswego, Rockwood Water People's Utility District, the Sunrise Water Authority and the Tualatin Valley Water District provide drinking water to some Portland customers who live near service area boundaries. Customers who receive water from these providers will also receive detailed water quality reports about these sources in addition to this report.

Regulated Contaminants Detected in 2010

Regulated Contaminant	Minimum Detected	Maximum Detected	Maximum Contaminant Level (MCL), Treatment Technique or Maximum Residual Disinfectant Level (MRDL)	Maximum Contaminant Level Goal (MCLG) or Maximum Residual Disinfectant Level Goal (MRDLG)	Sources of Contaminant
SOURCE WATER FROM THE BULL RUN WATERSHED					
Turbidity	0.23 NTU	2.0 NTU	Cannot exceed 5 NTU more than two times in twelve months	Not Applicable	Erosion of natural deposits
Giardia	Not Detected	8 samples of 10 liters each had 1 *Giardia* cyst	Treatment technique required: Disinfection to kill 99.9% of cysts	Not Applicable	Animal wastes
Fecal Coliform Bacteria	Not Detected	3 samples each had 4 bacterial colonies (100% of samples had 20 or fewer bacterial colonies per 100 milliliters of water)	At least 90% of samples measured during the previous six months must have 20 or fewer bacterial colonies per 100 milliliters of water	Not Applicable	Animal wastes
ENTRY POINTS TO THE DISTRIBUTION SYSTEM — from the Bull Run Watershed and Columbia South Shore Well Field					
NUTRIENTS					
Nitrate Nitrogen	0.01 parts per million	0.09 parts per million	10 parts per million	10 parts per million	Erosion of natural aquifer deposits; animal wastes
METALS AND MINERALS					
Antimony	<0.05 parts per billion	0.12 parts per billion	6 parts per billion	6 parts per billion	Found in natural deposits
Arsenic	<0.5 parts per billion	1.4 parts per billion	10 parts per billion	0 parts per billion	
Barium	0.00079 parts per million	0.00959 parts per million	2 parts per million	2 parts per million	
Chromium (total)	<0.2 parts per billion	0.3 parts per billion	100 parts per billion	100 parts per billion	
Copper[1]	<0.03 parts per million	0.0036 parts per million	Not Applicable	1.3 parts per million	
Fluoride	<0.050 parts per million	0.13 parts per million	4 parts per million	4 parts per million	
Lead	<0.02 parts per billion	0.15 parts per billion	Not Applicable	0 parts per billion	
RADIONUCLIDES					
Gross Beta[2]	3.4 picocuries per liter	3.4 picocuries per liter	50 picocuries per liter [3]	0 picocuries per liter	From man-made sources and natural deposits
DISTRIBUTION SYSTEM OF RESERVOIRS, TANKS AND MAINS					
MICROBIOLOGICAL CONTAMINANTS					
***E. Coli* Bacteria**	Not Detected	Routine samples in April and June had detectable *E. coli* bacteria	A routine sample and a repeat sample are total coliform positive, and one is also *E. coli* positive	0% of samples with detectable *E. coli* bacteria	Human and animal waste
Total Coliform Bacteria	Not Detected	6 samples out of 248 in October (2.42 %) had detectable coliform bacteria	Must not detect coliform bacteria in more than 5.0% of samples in any month	0% of samples with detectable coliform bacteria	Found throughout the environment
DISINFECTION BYPRODUCTS					
TOTAL TRIHALOMETHANES					
Running Annual Average of All Sites	21 parts per billion		80 parts per billion	Not Applicable	Byproduct of drinking water disinfection
Single Result at Any One Site	15 parts per billion	30 parts per billion	Not Applicable		
HALOACETIC ACIDS					
Running Annual Average of All Sites	25 parts per billion		60 parts per billion	Not Applicable	Byproduct of drinking water disinfection
Single Result at Any One Site	13 parts per billion	36 parts per billion	Not Applicable		
DISINFECTANT RESIDUAL					
Total Chlorine Residual	0.1 parts per million	2.2 parts per million	4 parts per million	4 parts per million	Chlorine and ammonia are used to disinfect water

Regulated Contaminant	90th Percentile Values	Number of Sites Exceeding Action Levels	Lead and Copper Rule Exceedance	Maximum Contaminant Level Goal (MCLG)	Sources of Contaminant
LEAD AND COPPER SAMPLINGS AT HIGH-RISK RESIDENTIAL WATER TAPS					
Copper	0.34 parts per million	0 of 112 samples exceeded the copper action level of 1.3 parts per million	More than 10% of the homes tested have copper levels greater than 1.3 parts per million	1.3 parts per million	Corrosion of household and commercial building plumbing systems
Lead	12 parts per billion	10 of 112 samples (8.9%) exceeded the lead action level of 15 parts per billion	More than 10% of the homes tested have lead levels greater than 15 parts per billion	0 parts per billion	Corrosion of household and commercial building plumbing systems

1 *During the year, two different methods with different method reporting limits (MRLs) were used to analyze copper. The sample with results of <0.03 was analyzed by the method with the less sensitive MRL.*

2 *These results are from 2009. The Oregon Health Authority – Drinking Water Program allows water utilities to monitor for some contaminants less than once per year because the concentrations of these contaminants do not change frequently.*

3 *The MCL for gross beta is 4 mrem/yr. EPA considers 50 picocurries per liter to be the level of concern for gross beta.*

Unregulated Contaminants Detected in 2010

Contaminant	Minimum Detected	Average Detected	Maximum Detected	Sources of Contaminant
ENTRY POINTS TO THE DISTRIBUTION SYSTEM — from the Bull Run Watershed and Columbia South Shore Well Field				
Nickel	<0.2 parts per billion	<0.2 parts per billion	0.7 parts per billion	Found in natural aquifer deposits
Radon	310 picocuries per liter	310 picocuries per liter	310 picocuries per liter	Found in natural aquifer deposits
Sodium	2.5 parts per million	8.5 parts per million	24.4 parts per million	Added to water during treatment Erosion of natural deposits
Vanadium	4.9 parts per billion	4.9 parts per billion	4.9 parts per billion	Found in natural aquifer deposits

*See **Notes on Regulated and Unregulated Contaminants** for more information.*

Definitions

Action Level
The concentration of a contaminant which, if exceeded, triggers treatment or other requirements which a water system must follow.

Maximum Contaminant Level or MCL
The highest level of a contaminant that is allowed in drinking water. MCLs are set as close to the MCLGs as feasible using the best available treatment technology.

Maximum Contaminant Level Goal or MCLG
The level of a contaminant in drinking water below which there is no known or expected risk to health. MCLGs allow for a margin of safety.

Maximum Residual Disinfectant Level or MRDL
The highest level of a disinfectant allowed in drinking water. There is convincing evidence that addition of a disinfectant is necessary for control of microbial contaminants.

Maximum Residual Disinfectant Level Goal or MRDLG
The level of a drinking water disinfectant below which there is no known or expected risk to health. MRDLGs do not reflect the benefits of the use of disinfectants to control microbial contaminants.

Part Per Billion
One part per billion corresponds to one penny in $10,000,000 or approximately one minute in 2,000 years.

Part Per Million
One part per million corresponds to one penny in $10,000 or approximately one minute in two years. One part per million is equal to 1,000 parts per billion.

Picocuries Per Liter
Picocurie is a measurement of radioactivity. One picocurie is a trillion times smaller than one curie.

Treatment Technique
A required process intended to reduce the level of a contaminant in drinking water.

Notes on Regulated Contaminants

Turbidity
The Bull Run is an unfiltered surface water supply. The rules for public water systems have strict standards for unfiltered surface water supplies. Turbidity levels in unfiltered water must not exceed 5 NTU (nephelometric turbidity units) more than two times in a twelve-month period. The typical cause of turbidity is sediment suspended in the water that can interfere with disinfection and provide a medium for microbial growth. Large storm events can result in increased turbidity, causing the Portland Water Bureau to shut down the Bull Run system and serve water from the Columbia South Shore Well Field.

Giardia
Wildlife in the watershed may be hosts to *Giardia lamblia*, the organism that causes giardiasis. The Portland Water Bureau uses chlorine to control these organisms.

Fecal Coliform Bacteria
The presence of fecal coliform bacteria in source water indicates that water may be contaminated with animal wastes. The Portland Water Bureau uses chlorine to kill these bacteria.

Nitrate - Nitrogen
Nitrate, measured as nitrogen, can support microbial growth (bacteria and algae). Nitrate levels exceeding the standards can contribute to health problems.

Antimony, Arsenic, Barium, Chromium (total), Copper, Fluoride and Lead
These metals are elements found in the earth's crust which can dissolve into water that is in contact with natural deposits. At the levels found in Portland's drinking water, they are unlikely to contribute to adverse health effects. There is no maximum contaminant level (MCL) for copper or lead at the entry point to the distribution system. Copper and lead are regulated at customers' taps. For more information see ***Chromium-6*** on page 10 and ***Reducing Exposure to Lead*** on page 8.

Gross Beta
Certain elements are radioactive and may emit forms of radiation known as photons and beta radiation. Gross beta was detected in Portland's groundwater at the entry point to the distribution system in 2009. At levels detected in Portland's drinking water, gross beta is unlikely to contribute to adverse health effects.

***E. Coli* Bacteria**
E. coli are bacteria that indicate that the water may be contaminated with human or animal wastes. Microbes in these wastes can cause short-term effects, such as diarrhea, cramps, nausea, headaches or other symptoms. The microbes may pose a special health risk for infants, young children, some of the elderly and people with severely compromised immune systems. The Portland Water Bureau uses chlorine to kill these bacteria.

Total Coliform Bacteria
Coliforms are bacteria which are naturally present in the environment and are used as an indicator that other potentially-harmful bacteria may be present.

Disinfection Byproducts
During disinfection, certain byproducts form as a result of chemical reactions between chlorine and naturally occurring organic matter in the water. These byproducts can have negative health effects. Trihalomethanes and haloacetic acids are regulated disinfection byproducts which have been detected in Portland's water. The disinfection process is carefully controlled to keep byproduct levels low.

Total Chlorine Residual
Total chlorine residual is a measure of free chlorine and combined chlorine and ammonia in our distribution system. Chlorine residual is necessary to maintain disinfection throughout the distribution system. Adding ammonia to chlorine results in a more stable disinfectant and helps to minimize the formation of disinfection byproducts.

Notes on Unregulated Contaminants

Unregulated contaminant monitoring helps the EPA to determine where certain contaminants occur and whether it needs to regulate those contaminants in the future.

Nickel
Nickel is a metal found in the earth's crust; it can dissolve into water that is in contact with natural deposits. There is currently no maximum contaminant level for nickel. At the levels found in Portland's drinking water, it is unlikely to contribute to adverse health effects.

Radon
Radon is a naturally occurring radioactive gas that cannot be seen, tasted or smelled. Radon has not been detected in the Bull Run supply. It has been detected at varying levels in Portland's groundwater supply. For information about radon, call the EPA's Radon Hotline **(800-SOS-RADON)** or **www.epa.gov/radon/rnwater.html**.

Sodium
Sodium is a metal found in the Earth's crust; it can dissolve into water that is in contact with natural deposits or added to water during treatment. There is currently no drinking water standard for sodium. Sodium is an essential nutrient. At the levels found in drinking water, it is unlikely to contribute to adverse health effects.

Vanadium
Vanadium is a metal found in the earth's crust, which can dissolve into water that is in contact with natural deposits. Based on concerns regarding vanadium as a potential emerging contaminant, the Portland Water Bureau tested water from the Columbia South Shore Well Field for vanadium in 2010. All of the results for vanadium were below the 50 parts per billion Notification Level set by the State of California. At these levels it is unlikely to contribute to adverse health effects.

Reducing Exposure to Lead

Portland has removed all known lead service connections from its distribution system. Exposure to lead through drinking water is possible if materials in a building's plumbing contain lead. The level of lead in water can increase when water stands in contact with lead-based solder and brass faucets containing lead.

If present, elevated levels of lead can cause serious health problems, especially for pregnant women and young children. Lead in drinking water is primarily from materials and components associated with service lines and home plumbing. The Portland Water Bureau is responsible for providing high-quality drinking water, but cannot control the variety of materials used in plumbing components. When your water has been sitting for several hours, you can minimize the potential for lead exposure by flushing your tap for 30 seconds to 2 minutes before using water for drinking or cooking. If you are concerned about lead in your drinking water, you may wish to request a free lead-in-water test from the LeadLine. Information on lead in drinking water, testing methods and steps you can take to minimize exposure is available from the **LeadLine, 503-988-4000**, **www.leadline.org** or the Safe Drinking Water Hotline **800-426-4791**, **www.epa.gov/safewater/lead**.

People are exposed to lead in many other ways. In the Portland area, dust from paint in homes built before 1978 is the most common source of exposure to lead. Other sources include soil, pottery, traditional folk medicines or cosmetics, some sports equipment such as fishing weights and ammunition, and some occupations and hobbies.

Corrosion Treatment

The Portland Water Bureau's corrosion control treatment reduces corrosion in plumbing by increasing the pH of the water. Comparison of monitoring results with and without pH adjustment shows more than 50 percent reduction in lead and 80 percent reduction in copper at the tap with pH adjustment.

Water Testing

Twice each year the Portland Water Bureau monitors for lead and copper in tap water from a sample group of more than 100 homes. These are homes in Portland's service area where the plumbing is known to contain lead solder which is more likely to contribute to elevated lead levels. These houses represent a worst-case scenario for lead in water. Samples are collected after the water has been standing in the household plumbing for more than 6 hours. A Lead and Copper Rule exceedance for lead occurs when more than 10 percent of these homes exceed the lead action level of 15 parts per billion. In the most recent round of testing, less than 10 percent of homes exceeded the lead action level.

If you are concerned that your home tap water may have lead, call the LeadLine for a free lead-in-water test kit and to learn ways to reduce your exposure to all sources of lead. This program targets testing the water in households most at-risk from lead in water. These are homes built between 1970 and 1985 with pregnant women or children ages six or younger in the home.

Easy steps to avoid possible exposure to lead in drinking water

- **Run your water to flush out lead.** If the water has not been used for several hours, run each tap for 30 seconds to 2 minutes or until it becomes colder before drinking or cooking. This flushes water which may contain lead from the pipes.
- **Use cold, fresh water for cooking and preparing baby formula.** Do not cook with or drink water from the hot water tap; lead dissolves more easily into hot water. Do not use water from the hot water tap to make baby formula.
- **Do not boil water to remove lead.** Boiling water will not reduce lead.
- **Consider using a filter.** Check whether it reduces lead – not all filters do. Be sure to maintain and replace a filter device in accordance with the manufacturer's instructions to protect water quality. Contact NSF International at **800-NSF-8010** or **www.nsf.org** for information on performance standards for water filters.
- **Test your water for lead.** Call the **LeadLine** at **503-988-4000** to find out how to get a **FREE** lead-in-water test.
- **Test your child for lead.** Ask your physician or call the **LeadLine** to find out how to have your child tested for lead. A blood lead level test is the only way to know whether your child is being exposed to lead.
- **Regularly clean your faucet aerator.** Particles containing lead from solder or household plumbing can become trapped in your faucet aerator. Regular cleaning every few months will remove these particles and reduce your exposure to lead.
- **Consider buying low-lead fixtures.** New brass faucets, fittings and valves, may contribute to lead in your drinking water. Federal law currently allows brass fixtures, such as faucets, to contain up to 8% lead. These fixtures are labeled as "lead-free." When buying new fixtures, consumers should seek out those with the lowest lead content. Visit **www.nsf.org** to learn more about lead content in plumbing fixtures. See ***Reduction of Lead in Drinking Water Act*** on page 10 for more information.

Leadline - 503-988-4000
Call the **LeadLine** or visit **www.leadline.org** for information about lead hazards, free lead-in-water testing, free childhood blood lead testing and referrals to other lead reduction services.

www.leadline.org

The LT2 Rule

In January 2006, the federal Environmental Protection Agency (EPA) issued a drinking water rule called the Long Term 2 Enhanced Surface Water Treatment Rule (LT2) principally to reduce the risks of illness from *Cryptosporidium*, a protozoan parasite found in the intestines and fecal material of mammals. If ingested, infectious forms of *Cryptosporidium* can cause cryptosporidiosis which results in gastrointestinal illness in humans and more serious illness in immunocompromised populations (see ***Special Notice for Immuno-Compromised Persons*** on page 2 in this report). The LT2 rule has two principal requirements which affect Portland's water system: 1) the installation of additional treatment processes to address *Cryptosporidium* in Bull Run source water by 2014, and 2) ending the use of uncovered finished drinking water reservoirs in Mt. Tabor and Washington Parks.

Compliance with Additional Treatment Requirements

Portland's Request for a Treatment Variance

The Safe Drinking Water Act enables Portland to apply for a variance to the surface water treatment requirements of the LT2 rule if it can demonstrate that such treatment is not necessary to protect public health. In December 2009, the Water Bureau began a comprehensive water sampling program to investigate whether *Cryptosporidium* is a public health risk in the Bull Run watershed. For a one year period the City conducted intensive testing of water samples from its untreated source water. After collecting 449 water samples at the water supply intake and an additional 315 samples from several upstream watershed locations, zero instances of *Cryptosporidium* were detected. These results build on those from previous testing for *Cryptosporidium* in the Bull Run watershed. Although *Cryptosporidium* has been detected in the past, monthly tests from the watershed have not detected the pathogen since August 2002.

The absence of *Cryptosporidium* in the City's water quality sampling results is consistent with the natural conditions and legal protections in place for the Bull Run watershed which serve to reduce the risk of *Cryptosporidium* exposure for Portland's drinking water.

No Cryptosporidium *were found in the year-long water quality monitoring in support of a variance request to the treatment requirements of the LT2 rule.*

Because public entry and any associated recreational, agricultural or development activities are prohibited in the Bull Run watershed, wildlife is the only significant potential *Cryptosporidium* source in the watershed. Analysis of wildlife in the predominant old growth forest conditions in the watershed indicates that total population density of animals is relatively low and that incidence of animals shedding *Cryptosporidium* in the watershed is extremely low. From August 2009 through December 2010, the Water Bureau collected and analyzed 251 wildlife scat samples in and around the watershed for the presence of *Cryptosporidium*. Only a single sample tested positive containing just two individual *Cryptosporidium* oocysts.

Vegetation and hydrologic conditions in the watershed may further reduce the limited risk of *Cryptosporidium* contamination by restricting the movement of potential pathogens through the watershed. The dense forest canopy, low to moderate rainfall intensities, and porous soil that have a high capacity for infiltration result in most water flow occurring below the ground surface. This flow through vegetation and soil can trap pathogens, preventing them from reaching streams and the drinking water supply reservoirs.

An analysis of available health related data appears to show that the majority of the reported cases of cryptosporidiosis in the Portland region are sporadic in nature and that there was no evidence which would suggest that drinking water has been a significant source of cryptosporidiosis. This health data shows that under current conditions in the Bull Run, adding additional water treatment is not likely to result in a measurable decrease in the occurrence of reported cases of cryptosporidiosis in the Bull Run service area.

Based on these sampling results and analysis, the City intends to submit a treatment variance request to the Oregon Drinking Water Program in June 2011 and anticipates hearing back regarding its request by the end of 2011.

UV Treatment as a Last Resort

In the event the Oregon Drinking Water Program rejects the City's request for a treatment variance, the City is also in the process of designing an ultraviolet light (UV) treatment facility to meet the treatment requirements of the LT2 rule. The UV design phase is scheduled to be completed by the end of 2011 when a final decision on the City's eligibility for a treatment variance is anticipated. This timing will enable the City to meet the April 1, 2014 deadline for constructing the UV treatment facility if it proves to be necessary.

Uncovered Finished Drinking Reservoirs: Storage Replacement Underway

In November 2009, the City requested direction from EPA regarding the possibility of a variance to the uncovered finished drinking reservoir requirements of the LT2 rule. In December 2009, the EPA replied that no such option exists. As required by the LT2 Rule, the City is currently implementing a multi-year plan to develop alternative enclosed storage and end the use of its open finished drinking water reservoirs in Mt. Tabor and Washington Parks by December 31, 2020. For updates on the Portland Water Bureau's response to the LT2 rule visit **www.portlandonline.com/water/LT2**.

Developments in Water Quality

Chromium-6

The progress on research into chromium-6 made news in December 2010 when the Environmental Working Group, an environmental advocacy group, said it had found chromium-6 in the water of 31 cities and urged the EPA to adopt new rules regarding the regulation of this compound.

Currently, there are no federal regulations or requirements to test for chromium-6 in drinking water. In January 2011, the EPA issued recommendations for enhanced chromium-6 monitoring of surface water supplies quarterly and groundwater supplies semi-annually. Portland is voluntarily following these recommendations and has contracted with an accredited laboratory to conduct chromium-6 analysis of the Bull Run water supply quarterly and groundwater in summer 2011.

Chromium is a naturally occurring element found in rocks, animals, plants, soil, and in volcanic dust and gases. Chromium can exist in a variety of forms, but is typically found in the environment and drinking water in two main forms: trivalent chromium (chromium-3) and hexavalent chromium (chromium-6). Chromium-3 occurs naturally in the environment and is an essential human dietary nutrient. Chromium-6 is the more toxic form and is generally associated with industrial processes. Recent studies have shown that ingestion of drinking water or food containing chromium-6 may cause cancer in laboratory mice and rats. Chromium can transform from one form to another in water and soil, depending on the conditions present.

EPA's final toxicological review of chromium-6 is expected in 2011. This risk assessment will form the basis of any regulations that may be developed. PWB will continue to work closely with the EPA and with organizations such as the American Water Works Association to monitor this issue as developments emerge.

Reduction of Lead in Drinking Water Act

In December 2010, US Congress passed the Reduction of Lead in Drinking Water Act. The new law will reduce the amount of lead in new household plumbing fixtures. Currently, "lead-free" plumbing fixtures can contain up to 8% lead. Under the new law the maximum lead content allowed will be 0.25%. The new regulations only apply to new faucets and fixtures and will take effect in three years. The new law will not have any effect on existing home plumbing. The Portland Water Bureau supports the passage of this law and submitted a letter of support for passage of the bill. Household plumbing is the largest source of lead in water in the Portland area.

The Portland Water Bureau encourages customers to carefully choose new faucets and fixtures for their home. Many manufacturers are already producing components that meet the new standards. These components can most easily be purchased through retailers in California, Vermont and Maryland where the new standards have already been implemented. By 2014, all components sold in Portland will meet the higher standards.

The Portland Water Bureau has 184 water quality sampling stations throughout the distribution system to monitor water quality on a regular basis.

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Portland Water Bureau
Commissioner Randy Leonard
Administrator David G. Shaff
1120 SW Fifth Avenue / Room 600
Portland, Oregon 97204

**************ECRWSS**
POSTAL CUSTOMER

Drinking water regulations require the city to mail this information to customers each year — It's the law.

Most of the language is also required – Congress and the EPA want to be sure that people know what is in their drinking water. The Portland Water Bureau agrees.

The Portland Water Bureau makes significant efforts to produce this complex information readable and at a low cost. ***The Portland Water Bureau produced and mailed this report for 29 cents each.***

ROMAN JOHNSTON

Dam 1 in the Bull Run watershed

Printed on recycled paper
JUNE 2011

CONTACT INFORMATION

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Portland, Oregon 97204
www.portlandoregon.gov/water
Public Water System #4100657

Portland Water Bureau
Customer Service: 503-823-7770

Portland Water Bureau
Water Line: 503-823-7525

FOR ADDITIONAL INFORMATION

Oregon Health Authority – Drinking Water Program:
971-673-0405
www.public.health.oregon.gov/HealthyEnvironments/DrinkingWater

The City of Portland will provide auxiliary aids/services to persons with disabilities. To request an ADA accommodation, please call 503-823-7404 or by TTY at 503-823-6868. Copies of this report are available in Braille, large format type and on the Portland Water Bureau's website — www.portlandoregon.gov/water.

Spanish
Para obtener una copia de este reporte en español, por favor llame al **503-823-7770** o visite www.portlandoregon.gov/water

Russian
Чтобы получить копию этого отчета на русском языке, пожалуйста, позвоните **503-823-7770** или зайдите на сайт www.portlandoregon.gov/water

Vietnamese
Để được một bản báo cáo này bằng tieng Việt, xin gọi số **503-823-7770** hoặc đến mạng lưới www.portlandoregon.gov/water

Chinese
若想获得本报告的中文版本，请拨打**503-823-7770** 或访问：www.portlandoregon.gov/water