What’s In Your Water?
Lakehaven Water & Sewer District

Lakehaven Water & Sewer District (Water System ID No. 419979) is pleased to again report that your drinking water continues to exceed all federal and state standards and is safe to drink. Each year we provide an updated water quality report that summarizes where our drinking water comes from, and how it is tested, treated, monitored, and protected in accordance with the Federal Safe Drinking Water Act during the previous year (2019). Much of the information in this report is technical, but we have tried to make an effort to keep it clear, useful and readable for our valued customers.

Our goal is to provide our customers with high quality drinking water and maintain an excellent record of compliance with all state and federal drinking water regulations.

The staff at Lakehaven Water & Sewer District takes great pride in supplying our customers with safe, pure and reliable drinking water and encourage our customers to review this report and join us in appreciating the vital role water plays in all of our lives.

Tim Osborne, P.E., WDM IV
Water Operations Manager

The Purpose of this Report

In This Report

Purpose of Report 1
Source of Water 2-3
Water System Security 4
Wellhead Protection Program 4
Arsenic 5
Iron and Manganese 5
Chlorine Disinfection 6
Sodium Hydroxide Treatment 6
Flouride 7
Water Quality Monitoring Results 8-11
Cryptosporidium 12
Green River Filtration System 12
Lead in Water 13
WUE Performance Report 14-15
Water Main Flushing/Cleaning 16
Cross Connection 17
Board of Commissioners 18
During 2019, Lakehaven Water & Sewer District delivered 65% of your drinking water through the partnership of the Regional Water Supply System (RWSS).

The source of water from the RWSS is from the protected Green River watershed that originates in the foothills of the Cascade Mountains in South King County. The RWSS also at times may include water pumped from wells located on the North Fork of the Green River, also within the protected watershed.

Water from the Green River watershed is diverted below Howard Hanson Dam to the new Green River Filtration Facility (where it is treated and filtered) and then into a 34-mile long pipeline built by a partnership between Lakehaven Water & Sewer District, the City of Tacoma, City of Kent, and Covington Water District.

Tacoma Water manages the RWSS including water quality monitoring, treatment, and pipeline maintenance in cooperation with the project partners.

The drinking water from the RWSS is an interruptible source of water for Lakehaven and is intended to supplement our groundwater supply. RWSS water availability can be interrupted due to drought conditions, low river flow volumes in the Green River, or other water quality issues. Lakehaven will continue to utilize water from the RWSS as it is available to better manage our water resources and help reduce the demand on our existing groundwater system.
In 2019, 35% of your drinking water was pumped from wells located within our water district boundary. These wells pump from aquifers that are described as saturated underground sands and gravels that can store and produce an economically feasible quantity of high-quality drinking water. Groundwater pumped from Lakehaven wells is actually from three aquifer producing geologic layers, confined locally deep below the Federal Way area, and are dependent on local precipitation to recharge and store water. Lakehaven’s aquifers are identified as the Redondo-Milton Channel Aquifer; the Intermediate Aquifer System (Mirror Lake & Eastern Upland Aquifers); and the Federal Way Deep Aquifer. At various times of the year the District is able to operate as many as 25 wells in these local aquifer systems. The locations of these water production wells are nearly all within the central area of our water distribution system.

Lakehaven Water & Sewer District operates and maintains twelve above ground (standpipe) water storage tanks. Storage of drinking water is used as inventory of recently produced and treated water for our distribution system. Storage is important because tanks are always ready to deliver large volumes of water into the distribution system every day to meet peak customer demands. Our water storage tanks not only help meet the demand for water in the system for delivery of drinking water, but also help meet demands for other domestic and commercial water use such as sanitation, irrigation, food processing, and fire suppression.

The height (elevation) of the water stored in our tanks is important because it provides water pressure for the distribution system. Release of water from our storage tanks is by gravity flow. Because the height of the stored water creates water pressure, tanks are constructed on hilltops within established pressure zones of our distribution system. Our water storage tanks vary in size and capacities from small tanks that hold only ½ to 1 million gallons of water to our largest water storage tanks that hold 5 to 7 million gallons. The combined gross storage capacity of all of our water storage tanks in the distribution system is 31 million gallons of water.
Is Our Water Supply Safe and Secure?

Water System Security

To assure that your drinking water supply remains safe and secure, Lakehaven Water & Sewer District facilities are electronically equipped with intrusion security systems to protect them from unauthorized entry, terrorism, sabotage and vandalism. District staff monitors our facility security systems 24/7 to help keep our drinking water supply safe and secure.

Under the 2018 America’s Water Infrastructure Act (AWIA), water systems are required to prepare or revise their emergency response plans (ERP) through a Risk and Resiliency Assessment (RRA). The purpose of the RRA and ERP is to review the District’s current water system security procedures and equipment, and identify areas for improvements to help the District in responding to emergencies and natural hazards. We are pleased to announce that the District has completed and certified it’s RRA in March, 2020. The District hopes to complete their ERP before the end of September, 2020.

Wellhead Protection Program

Preventing pollution is the first priority in protecting public health and our groundwater supply. The District has developed a Wellhead Protection Program intended to identify potential areas where surface water can more readily contribute to the storage of water in our underground aquifer systems and affect the quality of water pumped from our wells. Through this program, the District continues to develop appropriate management plans to protect our water quality should a surface contaminant spill occur.

In 2018, staff at Lakehaven Water & Sewer District completed a biennial land use inventory update of our Wellhead Protection Areas and a review of potential contaminate sources in accordance with the Washington Administrative Code (WAC-290-135). Staff also updated the District’s Hazardous Material Incident Response Plan. The next update of the District’s Wellhead Protection Area Land Use Inventory is scheduled to be completed in December 2020.
Water Quality Treatments

Arsenic

Arsenic is a regulated primary inorganic contaminant found in waters of Western Washington and is typically present due to natural weathering and dissolution of arsenic bearing rocks and minerals.

Only two of the District’s 25 wells produce groundwater with a concentration of arsenic that slightly exceeds the Environmental Protection Agency (EPA) Maximum Contaminant Level (MCL) of 10 parts per billion. When these wells operate, both have special water treatment systems that reduce the arsenic concentration to very low levels that meet safe drinking water standards. During 2019, the water produced from these wells represented less than .01% of all our drinking water in 2019. Nevertheless, when operating these wells, the treated water could still contain some very, very low “harmless” levels of naturally present arsenic. EPA’s standard balances the current understanding of arsenic’s possible health effects against the cost of removing arsenic from drinking water.

EPA continues to research the health effects of low levels of arsenic. High concentrations of arsenic are known to cause cancer in humans and is linked to other health effects such as skin damage and circulatory problems.

Iron and Manganese

The EPA classifies high concentrations of naturally occurring iron and manganese in drinking water as secondary inorganic contaminants. Iron and manganese can cause esthetic issues such as taste, odor, or staining of plumbing fixtures when concentrations exceed the MCL. Because of this, groundwater pumped from fourteen District wells receives treatment for the removal of iron and manganese by oxidation/filtration before the water is introduced into our distribution system.

This is one of the District’s water filtration plants that removes natural occurring minerals (arsenic, iron and manganese) and adjusts the pH of the groundwater pumped from nearby wells.
Chlorine Disinfection

As an important component of our water treatment program, the Washington State Department of Health requires the addition of chlorine to our drinking water as a disinfectant to make sure that our water remains biologically safe for our customers to use.

During 2019, the average chlorine concentration in our drinking water was 0.88 parts per million. Just as water is essential to life, chlorine is considered essential to maintaining a safe water supply.

Since the beginning of its use, chlorinated water has played a key role in the virtual elimination of cholera, typhoid fever, dysentery and gastroenteritis, as well as many other epidemic waterborne diseases that once killed tens of thousands of Americans. Although Lakehaven Water & Sewer District maintained good, high quality untreated drinking water in the past, the risk of waterborne disease decreases significantly when chlorine is used as a disinfectant in our public water supply.

pH Adjustment with Sodium Hydroxide

During 2019, sodium hydroxide was used in a treatment process at several targeted well sites to raise the pH of water pumped from an underground aquifer. Raising the water’s pH level with sodium hydroxide makes the water less acidic and reduces corrosion of metal plumbing. This process of adjusting the pH level helps meet health requirements by minimizing the amount of lead and copper ions that can leach from customers’ plumbing systems caused by lower pH water. The District’s Corrosion Control Treatment Program is regulated by the State of Washington Department of Health to meet the U.S. Environmental Protection Agency (EPA) Lead & Copper Rule.

Water Quality Treatment Plant Operators (left to right) Adam Dom, John Vindivich, Mark Barnett, Tom Zawacki
Fluoride

Fluoride is a natural element found in the earth’s crust and is commonly found in various concentrations in raw water supplies (both surface and groundwater). Other than drinking water, toothpaste and food are also major sources of fluoride exposure (especially tea and fish) and at low levels, fluoride has been known to prevent dental cavities.

The natural fluoride levels in Lakehaven Water & Sewer District’s groundwater is considered lower than optimal for helping to prevent dental decay and 35% of our drinking water during 2019 was groundwater. The other 65% of the system’s drinking water came from the Regional Water Supply System (RWSS) that was treated with fluoride by the City of Tacoma. RWSS water contains fluoride concentrations equal to the US Public Health Service (USPHS) suggested range in drinking water of about 0.70 part per million. However, because RWSS water blends in our distribution system with groundwater pumped from Lakehaven wells, fluoride concentrations often become diluted (in some locations) and are below the desirable therapeutic range. Lakehaven staff who monitor fluoride levels in our distribution system report the average concentration during 2019 was 0.44 parts per million.

If you have children on fluoride supplemental treatment, you may want to consult with your dentist or pediatrician about the variable fluoride concentrations that may be present in your drinking water.

As stated on page 2, the RWSS water may not be a constant source of water available for Lakehaven and is not intended to fully replace our groundwater supply.
There is no such thing as naturally pure water. In nature, all water contains some impurities. As water flows in streams, sits in lakes, and filters through layers of soil and rock in the ground, it dissolves or absorbs the substances that it touches.

Some of these substances are harmless. In fact, some people prefer mineral water precisely because minerals (which are chemical substances) give water an appealing taste. However, at certain levels minerals, just like man-made chemicals, are considered contaminants that can make water unpalatable or even unsafe. 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.

Lakehaven Water & Sewer District tests our drinking water for 35 regulated and unregulated inorganic contaminants (IOCs) and 16 synthetic organic contaminants (SOCs). The chemicals shown in the summary table of this report were the only regulated IOCs detected in samples collected during tests performed in the past five years. There have been no SOC’s detected in our drinking water.

Lakehaven Water & Sewer District tests for other substances and microscopic organisms in our drinking water for which no mandatory testing standards have been set. Many substances and microscopic organisms found in water may be a concern if they occur at high concentrations. Because of this, the District has been monitoring heterotrophic bacteria in our drinking water for many years.
The heterotrophic plate count (HPC test) measures a broad group of microorganisms that are commonly found in drinking water as a tool to track the concentration of these “background” microorganisms in our distribution system. The EPA has determined that a well operated water system with a well-maintained distribution system should have HPC populations of less than 500 colonies per milliliter (ml). A sample with a count higher than 500 Colony-Forming Units (CFU) per milliliter is considered undesirable and should be investigated to determine the cause. During 2019, the District sampled and tested our drinking water throughout the distribution system for HPCs (using a state certified laboratory and government approved techniques) and found the annual average concentration of these heterotrophic micorganisms in our water system was 0 CFUs per milliliter. To make sure these organisms remain in low concentrations, we’ll keep testing and keep you informed.

The following tables (pp. 10-11) show the results of water quality analyses on “treated” source water during 2019. Every regulated contaminant that was “detected” in our drinking water, even in the most minute traces, is listed in the table along with unregulated, secondary, and physical and chemical parameters. A host of additional substances were tested in 2019, but because they were not detected they are not shown on the table.

Lakehaven Water & Sewer District is pleased to report that there were no EPA or State drinking water violations for the District in the year 2019. Additional information on all data can be obtained by contacting Lakehaven Water & Sewer District at (253) 946-5410.

Washington State Department of Health Monitoring Waivers

Lakehaven Water & Sewer District applied for and received special monitoring waivers for certain targeted wells for 2019 from the Washington State Department of Health. These special monitoring waivers were granted for the purpose of reducing unnecessary sampling and testing of raw groundwater for analysis of organic and inorganic chemicals and the more common insecticides, herbicides, and pesticides. The District received these waivers because previous laboratory tests show no detection of these contaminants and groundwater from these wells has a very low susceptibility to contamination.
### 2019 Water Quality Monitoring Results

**Lakehaven Water & Sewer District - 2019 Water Quality Tables**

<table>
<thead>
<tr>
<th>Regulated Substance</th>
<th>MCL (3)</th>
<th>MCLG</th>
<th>Range of Level Detected</th>
<th>Highest Detection</th>
<th>Year Tested</th>
<th>Major Sources</th>
<th>Violation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Arsenic</td>
<td>0.010 ppm</td>
<td>0.00 ppm</td>
<td>N/A - 0.0058 ppm</td>
<td>0.0058 ppm</td>
<td>2019</td>
<td>ND</td>
<td>ND</td>
</tr>
<tr>
<td>Beryllium</td>
<td>0.004 ppm</td>
<td>0.004 ppm</td>
<td>ND - 0.0003 ppm</td>
<td>0.0003 ppm</td>
<td>2019</td>
<td>ND</td>
<td>ND</td>
</tr>
<tr>
<td>Cadmium</td>
<td>0.1 ppm</td>
<td>0.005 ppm</td>
<td>ND - 0.001 ppm</td>
<td>0.001 ppm</td>
<td>2019</td>
<td>ND</td>
<td>ND</td>
</tr>
<tr>
<td>Fluoride (2)</td>
<td>4.0 ppm</td>
<td>4.0 ppm</td>
<td>ND - 0.2ppm</td>
<td>0.2 ppm</td>
<td>2019</td>
<td>0.12 - 0.97 ppm</td>
<td>0.97 ppm</td>
</tr>
<tr>
<td>Nitrate</td>
<td>10 ppm</td>
<td>10 ppm</td>
<td>ND - 2.47 ppm</td>
<td>2.47 ppm</td>
<td>2019</td>
<td>ND</td>
<td>ND</td>
</tr>
<tr>
<td>Selenium</td>
<td>0.05 ppm</td>
<td>0.05 ppm</td>
<td>ND - 0.002 ppm</td>
<td>0.002 ppm</td>
<td>2019</td>
<td>ND</td>
<td>ND</td>
</tr>
<tr>
<td>Gros Alpha</td>
<td>15 pCi/L</td>
<td>0 pCi/L</td>
<td>ND - &lt;3.0 pCi/L</td>
<td>&lt;3 pCi/L</td>
<td>2019</td>
<td>NA</td>
<td>NA</td>
</tr>
<tr>
<td>Radium 228</td>
<td>5 pCi/L</td>
<td>0 pCi/L</td>
<td>ND - 0.319 pCi/L</td>
<td>0.319 pCi/L</td>
<td>2019</td>
<td>NA</td>
<td>NA</td>
</tr>
<tr>
<td>Asbestos</td>
<td>7 MFL</td>
<td>N/A</td>
<td>0 - 0.117 MFL</td>
<td>0.117 MFL</td>
<td>2019</td>
<td>NA</td>
<td>NA</td>
</tr>
</tbody>
</table>

**Other State Regulated Inorganic Contaminants at the Source**

<table>
<thead>
<tr>
<th>Regulated Substance</th>
<th>Highest Running Annual Average Allowed</th>
<th>MCLG</th>
<th>Range of</th>
<th>Running Annual Average</th>
<th>Year Tested</th>
<th>Major Sources</th>
<th>Violation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Manganese</td>
<td>0.05 ppm</td>
<td>NA</td>
<td>ND - 0.066 ppm</td>
<td>0.066 ppm</td>
<td>2019</td>
<td>NA</td>
<td>NA</td>
</tr>
<tr>
<td>Turbidity (2)</td>
<td>0.1 NTU = Goal; &lt;1.0 NTU = Standard; &gt;5.0 NTU= Filtration</td>
<td>NA</td>
<td>0.77 - 8.79 NTU</td>
<td>8.79 NTU</td>
<td>2019</td>
<td>0.020 - 0.047 NTU</td>
<td>0.047 NTU</td>
</tr>
</tbody>
</table>

**EPA Regulated in Lakehaven’s Distribution System (1)**

<table>
<thead>
<tr>
<th>Regulated Substance</th>
<th>Highest Running Annual Average Allowed</th>
<th>MCLG</th>
<th>Range of</th>
<th>Running Annual Average</th>
<th>Year Tested</th>
<th>Major Sources</th>
<th>Violation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Haloacetic Acid</td>
<td>60 ppb</td>
<td>NA</td>
<td>4.3 - 15 ppb</td>
<td></td>
<td>2019</td>
<td>Chlorine Disinfection By-product</td>
<td>NO</td>
</tr>
<tr>
<td>Total Trihalomethane</td>
<td>80 ppb</td>
<td>NA</td>
<td>6.5 - 29 ppb</td>
<td></td>
<td>2019</td>
<td>Chlorine Disinfection By-product</td>
<td>NO</td>
</tr>
</tbody>
</table>

**Key**

AL = Action Level (The concentration which if exceeded triggers treatment or other requirements)

CFU/ml = colony-forming units per milliliter

MCL = Maximum Contaminant Level (The highest level of a contaminant that is allowed in drinking water)

MCLG = Maximum Contaminant Level Goal (The level of a contaminant in drinking water which there is no known or expected risk to health)

MFL = Millions of Fibers per Liter

MRL = Minimum Reporting Level (The smallest measured concentration of a substance that can be reliably measured)

NA = Not applicable (Or not analyzed)

ND = Not detected at a level greater than or equal to the minimum reporting level

NR = Non-Regulatory

NTU = Nephelometric Turbidity Units (A measure of water clarity)

pCi/L = picocuries per liter (A measure of radioactivity)

ppb = parts per billion, or micrograms per liter (μg/1)

ppm = parts per million, or milligrams per liter (mg/1)

RWSS = Regional Water Supply System (Administered by Tacoma Water)
(1) Unregulated Contaminant Monitoring Rule - The third Unregulated Contaminant Monitoring Rule (UCMR 3) was published on May 2, 2012. UCMR 3 requires monitoring for 30 contaminants (28 chemicals and viruses) between 2013 and 2015 using methods developed by EPA, consensus organizations or both. This monitoring provides a basis for future regulatory actions to protect public health. The fourth Unregulated Contaminant Monitoring Rule (UCMR4) was published on December 20, 2016. UCMR4 requires monitoring for 30 chemical contaminants (cyanotoxins, metals, pesticides, disinfection byproducts, alcohols, and semivolatile organic chemicals) between 2018 and 2020 using analytical methods developed by EPA and consensus organizations. Like UCMR3, UCMR4 also provides a basis for future regulatory actions to protect public health.

(2) Fluoride from source water samples measures the level of fluoride as a natural mineral deposit (Lakehaven Groundwater). Fluoride for distribution system is a measurement of added fluoride as a treatment of the drinking water (Regional Water Supply System).

(3) The distribution system is a blend of both groundwater (from wells) and/or surface water (Regional Water Supply System).

(4) The Lead and Copper Rule (LCR) is a treatment technique rule. Instead of setting a maximum contaminant level (MCL) for lead or copper, the rule requires public water systems to take certain actions to minimize lead and copper in drinking water. These actions reduce water corrosivity and prevent the leaching of these metals from the premise plumbing and drinking water distribution system components. If those actions are not sufficient, the rule prescribes water quality parameter monitoring, corrosion control treatment, source water monitoring and treatment, of service lines and public education. Utilities must ensure that water from the customer’s tap does not exceed the “action level” for lead (15 ppb) in at least 90 percent of the homes sampled.

(5) Turbidity and Nickel are EPA regulated secondary analytes. They do not pose a health risk but may impair taste, odor and/or clarity of drinking water.

(6) Concentrations of EPA regulated analytes may not exceed the maximum contaminant level (MCL).

(7) The heterotrophic plate count (HPC test) measures a broad group of microorganisms that are commonly found in drinking water as a tool to track the concentration of these “background” microorganisms in our distribution system. The EPA has determined that a well operated water system with a well maintained distribution system should have HPC populations of less than 500 colonies per milliliter (ml). A sample with a count higher than 500 Colony-Forming Units (CFU) per milliliter is considered undesirable and should be investigated to determine the cause.

(8) During 2019, 2,443 water samples were collected and tested for bacteriological contamination at sample stations in the distribution system, water storage tanks, source wells, and the Second Supply Pipeline. Of the 2,443 water samples collected, none tested positive for coliform bacteria and the average number of heterotrophic bacteria in these samples was zero (0).
Cryptosporidium

Cryptosporidium is a microscopic organism (protozoan) related to surface water supplies that, when ingested, can result in diarrhea, fever and other gastrointestinal symptoms. Water quality monitoring by Tacoma Water show levels of cryptosporidium remains low in the Green River watershed (the District’s “RWSS” water source) and Tacoma has not experienced any health issues with this organism. The EPA Long Term 2 Enhanced Surface Water Treatment Rule requires additional treatment to reduce the risk of Cryptosporidium in drinking water.

Some people may be more vulnerable to contaminants in unfiltered surface water supplies than is the general population. People undergoing chemotherapy, people 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. EPA/CDC (Center for Disease Control) guidelines on appropriate means to lessen the risk of infection by Cryptosporidium are available from the Safe Drinking Water Hotline at (800) 426-4791.

Green River Treatment System

In 2006, the federal government issued a regulation requiring Tacoma to treat the Green River source water for cryptosporidium. Tacoma and RWSS partners started a thorough process to determine the best course of action. After careful consideration, it was decided that filtering water from the Green River was the best way to serve our customers.

The process took nine years, and filtered water from this treatment plant is now shared by Tacoma, Lakehaven Water & Sewer District, City of Kent, and Covington Water District.

Lakehaven is pleased to report that the Green River Filtration Facility (GRFF) has been online in continuous operation since December 16, 2014 and May 4, 2015 marked the official completion date and special Project Completion Ceremony at the Green River Filtration Facility.

If you have questions about RWSS water, the Green River Filtration Facility, or would like more information, please contact Tim Osborne, Water Operations Manager at (253) 946-5410.

Covid-19 Concerns

The Office of Drinking Water Safety at the Washington State Department of Health has put together a Fact Sheet highlighting your drinking water and the virus that causes Covid-19.
Lead in Drinking Water

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. Lakehaven Water & Sewer District is responsible for providing high quality drinking water, but cannot control the variety of materials used in private plumbing components. Most concerns in Western Washington about lead in household tap water are related to old galvanized service lines that are plumbed with lead goosenecks that connect the water service line to the water main. However, Lakehaven Water & Sewer District has never installed lead goosenecks on any water service lines or used lead piping in our distribution system. Lakehaven Water & Sewer District is consistent with regulatory guidelines (EPA Lead & Copper Rule) and controls the corrosiveness of our water supply (corrosion control occurs primarily by controlling the pH of the water supply).

Even though our source water has not been found to have detectable levels of lead, private plumbing installed in residences built from 1983 to 1986 with copper pipe and lead solder are considered by the EPA to have a higher risk for lead and copper leaching and these targeted homes are used by the District to test tap water samples for regulatory testing and reporting. The District’s local corrosion control treatment methods show that lead and copper contamination is abated in these identified high risk residences that were constructed during this time period. The reliability of these corrosion control methods has been confirmed by many years of water quality monitoring.

Anyone with lead solder and copper plumbing who still have concerns about lead, or other metals in their drinking water, can further reduce their chance of exposure by flushing standing (stagnant) water in their pipes before using it. Typically, the best way to tell if the water from outside the house has reached your tap is to flush long enough to feel a colder, stable temperature difference during this short flushing period (usually 45 seconds to one minute).

If you wish to have the tap water tested in your home, you can pay to have a state-certified lab (such as Water Management Laboratories, 1515 80th St. E., Tacoma, (253) 531-3121...or Spectra Analytical Inc., 2221 Ross Way, Tacoma, (253) 272-4850) test your water. Additional information on lead in drinking water, testing methods, and steps you can take to minimize exposure is available from the Safe Drinking Water Hotline at (800) 426-4791 or at safewater@epa.gov.
In 2003, the Washington State Legislature passed ESSHB 1338, better known as the Municipal Water Law (MWL), to address the increasing demand on our state’s water resources. This law establishes that all municipal water suppliers (MWS) must use water more efficiently in exchange for water right certainty and flexibility to help them meet future demand. The MWL directed the Department of Health (DOH) to adopt a water use efficiency rule which now replaces the 1994 Conservation Planning Requirements guidance document. The WUE rule requires water systems to engage their customers and interested public in a public forum setting when establishing their water efficiency goals. It ensures customers and the public can provide input on the decisions made by the governing body. It also helps the public understand the need to use water more efficiently and to educate them on how they can help the water system achieve conservation goals.

2019 Distribution System Leakage Summary

<table>
<thead>
<tr>
<th>Description</th>
<th>Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Water Produced and Purchased</td>
<td>3,468,096,000 gallons</td>
</tr>
<tr>
<td>Authorized Consumption</td>
<td>3,258,743,989 gallons</td>
</tr>
<tr>
<td>Distribution System Leakage</td>
<td>209,352,011 gallons</td>
</tr>
<tr>
<td>Distribution System Leakage Percent</td>
<td>6.0%</td>
</tr>
<tr>
<td>Percent 3-Year Rolling Average</td>
<td>5.9%</td>
</tr>
</tbody>
</table>

Conservation Links

- Water Conservation: It all starts with you
- Northwest Natural Yard and Garden
Lakehaven Water & Sewer District WUE Goal

The 2014-2020 Water Use Efficiency (WUE) Goal to maintain annual average water demands at or below the estimated low demand projections given in the District’s Comprehensive Water System Plan (excluding potential water sales to customers/purveyors outside the current District boundaries) will expire this year.

December 31, 2019 marked the end of the final year of the District’s 2014-2020 Water Use Efficiency Goal. The District is pleased to report the local 2019 average day demand (ADD) for water was 1.36 million gallons per day less than our 2014 Comprehensive Water System Plan (WSP) estimated for its “low demand projection” for 2019. This amount was 12.5% below the estimated WSP projection and is equivalent to each person using 11.8 gallons/day less water than previously projected. We believe that a normal season of spring and summer precipitation along with our inclined block water rate structures, water use efficiency fixtures, and other socioeconomic factors contributed to the reductions from our earlier projections.

Probable reasons for the decrease in actual water demand during 2019 include:

- Customer household upgrades to low flow fixtures.
- The occurrence of normal precipitation during 2019.
- An inverted block water rate structure that encourages inside and outside water conservation by increasing the unit cost of water with increasing levels of use for residential and irrigation customers.
- A sewer rate structure that encourages indoor conservation by basing sewer rates on the customer’s average winter water use, which typically represents their in-door water use.
- A water and sewer capacity rate that encourages high volume users to conserve. The District monitors water use for a rolling 12-month average for each billing cycle after a new customers water service is provided to ensure their water use is in-line with the estimated water consumption used to calculate their cost of service. If actual use is significantly higher than the initial projection, the customer must pay a capacity rental charge until such time the customer either purchases additional system capacity, or implements additional conservation measures to reduce their consumption near their acquired share of system capacity.

The District Board approved a new 2020-2025 Water Use Efficiency (WUE) Goal in February 2020. The new goal is to maintain annual average water demands (excluding potential sales to customers/purveyors outside the current District boundaries) at a minimum of 5% below the estimated low demand projections given in the current District’s Water System Plan, dated April 2015.
Distribution system flushing is one of the most powerful tools Lakehaven Water & Sewer District uses to maintain good water quality in the distribution system. Annual flushing of District water mains scours and removes mineral scale, silt and trapped stagnant water that can contribute to customer complaints of poor water quality.

The simple operation of “Unidirectional Flushing” involves flushing isolated sections of water mains in one direction beginning at a source like a well site or a storage tank and continuing the operation downstream of each water main section until all of the system has been completely flushed.

Distribution system main cleaning (pigging or swabbing) is another process of cleaning water mains. This is done by inserting a small device known as a pig into the water main and hydraulically forcing it through the pipe. The pig can be made of different materials (foam, steel, plastic, polyurethane), but the District generally uses food grade silicon, which is tough yet flexible, and safe to be in contact with drinking water.

Unlike main flushing, main cleaning requires individual water meters along the subject area to be turned off for the duration of the pigging process. Customers will be notified with door hangers the day before main cleaning. Some customers may be affected additional days due to the complexity of valve configuration and the pipeline infrastructure needing to be cleaned.

Main cleaning is considered the best method for pipeline cleaning; however, the process is far more labor intensive and slower than water main flushing. Please note the before and after pictures right. As pigs work their way through water main pipeline, mineral scale and sediment is pushed out of the pipeline (picture middle right). New, clean pigs are pushed through by the force of water until water is flowing sediment free from the hydrant (picture bottom right).

Other Water Quality Programs

Water Main Flushing and Cleaning

Dechlorinating diffusers are attached to the fire hydrant during main flushing.

The District flushed nearly 150 linear miles of pipeline in 2019. When flushing or cleaning water mains, mineral scales are flushed or cleaned from the inside of the water main until water runs clear as noted in pictures above.

Please visit the Water Quality page of our website www.lakehaven.org/168/Water-Quality for a complete list of our water quality programs and other valuable information.
Cross Connection Control & Backflow Prevention

To protect public water systems, state drinking water regulations require the District to develop and implement a Cross-Connection Control (CCC) program. A cross-connection is any actual or potential physical connection between a drinking water system and any other non-potable substance (liquid, solid, or gas). Backflow (siphonage) occurs when water or other substances flow in the opposite direction than intended allowing contaminants to enter the public water system or consumer’s plumbing. Backflow incidents may cause injury, illness, or death.

Lakehaven Water & Sewer District administers what is called a “Premises Isolation Cross Connection Control Program” developed in accordance with Department of Health regulations (WAC 246-290-490). The purpose of the program is to provide for the permanent abatement or control of all cross-connections within the customer’s plumbing system.

Premises isolation is the protection of the public potable water supply by the installation of a backflow prevention assembly immediately downstream of a water meter connection. Backflow prevention assemblies are mechanical devices that prevent backflow (siphonage) and isolate and protect the public water distribution system from the customer’s private water system.

The law also requires field-testing backflow assemblies yearly to make sure the device continues to work properly. Efforts are being made to bring existing commercial services (prior to the program’s inception) into compliance with WAC 246-290-490 and District Policy 400-05, with a systematic survey/inspection process.

If you have questions concerning the District’s Cross Connection Control Program, please feel free to call our Cross-Connection Control Coordinator at (253) 946-5427.
Lakehaven Water & Sewer District is operated by a five-member, elected Board of Commissioners and a staff of approximately 110 employees. The General Manager, who oversees all water, sewer, engineering and field operations, administers day-to-day operation of the utility. The District’s General Counsel oversees all legal, administrative and financial functions of the District. Both managerial positions report directly to the Board of Commissioners.

2020 Board of Commissioners

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Other Links

Washington State Department of Health
www.doh.wa.gov/ehp/dw

United States Environmental Protection Agency (USEPA)
(800) 426-4791 or www.epa.gov/safewater

Regular Board Meetings are held the second and fourth Thursday of the month at 6:00 p.m. at:
Lakehaven Center, 31531—1st Avenue South, Federal Way, WA 98003
For up-to-date meeting information, check out the “Upcoming Events” calendar or Board of Commissioners page on our website.