

2020 Consumer Confidence Report

Period of Report: September to December 2020

Water System Information

Water System Name: Lawrence Livermore National Laboratory, Livermore Site, 0110701

Report Date: July 1, 2021

Type of Water Source(s) in Use: surface water and groundwater

Name and General Location of Source(s): Lawrence Livermore National Laboratory (LLNL) receives water from drinking water providers. The primary source is the San Francisco Public Utilities Commission (SFPUC). The backup source is the Zone 7 Water Agency (Zone 7).

SFPUC Source: San Francisco Regional Water System's major drinking water supply to LLNL systems consists of water stored in the Hetch Hetchy Reservoir, which is well protected and carefully managed by SFPUC. The Hetch Hetchy water is exempt from state and federal filtration requirements. To meet drinking water standards for consumption, this surface water source receives the following treatment: pH adjustment for optimum corrosion control, ultraviolet light and chlorine disinfection, and fluoridation for dental health protection.

Zone 7 Sources: ~75% San Francisco-San Joaquin River Delta and Lake Del Valle via the State Water Project, and ~25% local groundwater wells.

Drinking Water Source Assessment Information: SFPUC and Zone 7 perform their own source assessments.

For More Information, Contact:

Bill Howing, Mechanical Utility Division Deputy at (925) 423-9253

Craig Fish, Regulatory Permit Contact at (925) 424-4988

Temple (Joe) Steadman, Chief Water Operator at (925) 422-0019

About This Report

We test the drinking water quality for many constituents as required by state and federal regulations. This report shows the results of our monitoring for the period of September 1 to December 31, 2020. This is the period for which the LLNL Livermore Site held a drinking water permit in 2020.

Importance of This Report Statement in Five Non-English Languages (Spanish, Mandarin, Tagalog, Vietnamese, and Hmong)

Language in Spanish: Este informe contiene información muy importante sobre su agua para beber. Favor de comunicarse Lawrence Livermore National Lab – Livermore Site a Bill Howing, MUD Deputy at (925) 423-9253 para asistirlo en español.

Language in Mandarin: 这份报告含有关于您的饮用水的重要讯息。请用以下地址和电话联系 Bill Howing, MUD Deputy at (925) 423-9253 以获得中文的帮助: Lawrence Livermore National Lab – Livermore Site.

Language in Tagalog: Ang pag-uulat na ito ay naglalaman ng mahalagang impormasyon tungkol sa inyong inuming tubig. Mangyaring makipag-ugnayan sa Lawrence Livermore National Lab – Livermore Site o tumawag sa Bill Howing, MUD Deputy at (925) 423-9253 para matulungan sa wikang Tagalog.

Language in Vietnamese: Báo cáo này chứa thông tin quan trọng về nước uống của bạn. Xin vui lòng liên hệ Lawrence Livermore National Lab – Livermore Site tại Bill Howing, MUD Deputy at (925) 423-9253 để được hỗ trợ giúp bằng tiếng Việt.

Language in Hmong: Tsab ntawv no muaj cov ntsiab lus tseem ceeb txog koj cov dej haus. Thov hu rau Lawrence Livermore National Lab – Livermore Site ntawm Bill Howing, MUD Deputy at (925) 423-9253 rau kev pab hauv lus Askiv.

Terms Used in This Report

Term	Definition
Level 1 Assessment	A Level 1 assessment is a study of the water system to identify potential problems and determine (if possible) why total coliform bacteria have been found in our water system.
Level 2 Assessment	A Level 2 assessment is a very detailed study of the water system to identify potential problems and determine (if possible) why an <i>E. coli</i> MCL violation has occurred and/or why total coliform bacteria have been found in our water system on multiple occasions.
Maximum Contaminant Level (MCL)	The highest level of a contaminant that is allowed in drinking water. Primary MCLs are set as close to the PHGs (or MCLGs) as is economically and technologically feasible. Secondary MCLs are set to protect the odor, taste, and appearance of drinking water.
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 are set by the U.S. Environmental Protection Agency (U.S. EPA).
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.
Primary Drinking Water Standards (PDWS)	MCLs and MRDLs for contaminants that affect health along with their monitoring and reporting requirements, and water treatment requirements.
Public Health Goal (PHG)	The level of a contaminant in drinking water below which there is no known or expected risk to health. PHGs are set by the California Environmental Protection Agency.
Regulatory Action Level (AL)	The concentration of a contaminant which, if exceeded, triggers treatment or other requirements that a water system must follow.

Term	Definition
Secondary Drinking Water Standards (SDWS)	MCLs for contaminants that affect taste, odor, or appearance of the drinking water. Contaminants with SDWSs do not affect health at the MCL levels.
Treatment Technique (TT)	A required process intended to reduce the level of a contaminant in drinking water.
Variances and Exemptions	Permissions from the State Water Resources Control Board (State Board) to exceed an MCL or not comply with a treatment technique under certain conditions.
cyst/L	cysts per liter
N/A	Not applicable
ND	Not detectable at testing limit
NTU	Nephelometric Turbidity Units
pCi/L	picocuries per liter (a measure of radiation)
ppm	parts per million or milligrams per liter (mg/L)
ppb	parts per billion or micrograms per liter (µg/L)
µS/cm	microsiemens per centimeter

Sources of Drinking Water and Contaminants that May Be Present in Source Water

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 human activity.

Contaminants that may be present in source water include:

- Microbial contaminants, such as viruses and bacteria, that may come from sewage treatment plants, septic systems, agricultural livestock operations, and wildlife.
- Inorganic contaminants, such as salts and metals, that can be naturally-occurring or result from urban stormwater runoff, industrial or domestic wastewater discharges, oil and gas production, mining, or farming.
- Pesticides and herbicides, that may come from a variety of sources such as agriculture, urban stormwater runoff, and residential uses.
- Organic chemical contaminants, including synthetic and volatile organic chemicals, that are byproducts of industrial processes and petroleum production, and can also come from gas stations, urban stormwater runoff, agricultural application, and septic systems.
- Radioactive contaminants, that can be naturally-occurring or the result of oil and gas production and mining activities.

Regulation of Drinking Water and Bottled Water Quality

In order to ensure that tap water is safe to drink, the U.S. EPA and the State Board prescribe regulations that limit the amount of certain contaminants in water provided by public water systems. The U.S. Food and Drug Administration regulations and California law also establish limits for contaminants in bottled water that provide the same protection for public health.

About Your Drinking Water Quality

Drinking Water Contaminants Detected

Tables 1, 2, 3, and 4 list all of the drinking water contaminants that were detected during the most recent sampling for the constituent. The presence of these contaminants in the water does not necessarily indicate that the water poses a health risk. In accordance with State guidance, tables that contain no detectable results or do not apply to our system have not been included such as Coliform Bacteria, Unregulated Contaminants, Violations, Fecal Indicator-Positive Groundwater Sources, and Violation of Groundwater Treatable Technique (TT).

Table 1. Sampling Results Showing the Detection of Lead and Copper (LLNL Data, 2020)

Lead and Copper	Sample Date	No. of Samples Collected	90 th Percentile Level Detected	No. Sites Exceeding AL	AL	PHG	No. of Schools Requesting Lead Sampling	Typical Source of Contaminant
Lead (ppb)	12/8/2020	40	0.0072 mg/L	2*	15	0.2	0	Internal corrosion of household water plumbing systems; discharges from industrial manufacturers; erosion of natural deposits
Copper (ppm)	12/8/2020	40	0.36 mg/L	0	1.3	0.3	N/A	Internal corrosion of household plumbing systems; erosion of natural deposits; leaching from wood preservatives

(*) These two exceedances were for Buildings 162 and 611. Both are older, low occupancy (during the Shelter-In-Place) buildings. A notice was posted in both buildings.

Table 2. Sampling Results for Sodium and Hardness (SFPUC and Zone 7 Data, Jan to Dec 2020; Surface and Groundwater Data)

Chemical or Constituent (and reporting units)	Sample Date	Level Detected (Average)	Range of Detections	MCL	PHG (MCLG)	Typical Source of Contaminant
Sodium (ppm)	2020	74	31 - 129	None	None	Salt present in the water and is generally naturally occurring
Hardness (ppm)	2020	101 ^(a) – 345 ^(b)	70 - 521	None	None	Sum of polyvalent cations present in the water, generally magnesium and calcium, and are usually naturally occurring

(a) Average of surface water results

(b) Average of groundwater results

Table 3. Detection of Contaminants with a Primary Drinking Water Standard

Chemical or Constituent (and reporting units)	Sample Date	Level Detected	Range of Detections	MCL [MRDL]	PHG (MCLG) [MRDLG]	Typical Source of Contaminant
Total Trihalomethanes ^(a) (THMs) (ppb)	9/8/2020	34	34	80	N/A	Byproduct of drinking water disinfection
	12/8/2020	38	37 - 38			
Haloacetic Acids ^(a) (Five) (HAA5) (ppb)	9/8/2020	34	34	60	N/A	Byproduct of drinking water disinfection
	1/12/2021	36	33 - 36			
Chlorine Residual ^(a) (Cl) (ppm)	Monthly (Sept to Dec)	Average 2.25	1.00 – 3.16	4(as Cl ₂)	4(as Cl ₂)	Drinking water disinfectant added for treatment
Uranium ^(b) (pCi/L)	2020	1	ND – 4	20	0.43	Erosion of natural deposits
Gross Alpha particle activity ^(b) (pCi/L)	2007	3	ND – 6	15	(0)	Erosion of natural deposits
Aluminum ^(b) (µg/L)	2020	ND	ND - 65	1000	600	Erosion of natural deposits.
Barium ^(b) (µg/L)	2020	149	ND - 374	1000	2000	Erosion of natural deposits; discharge of drilling wastes; and discharge from metal refineries
Bromate ^(b) (µg/L)	2020	N/A	N/A	10	0.1	Byproduct of drinking water disinfection
Chromium total ^(b) (µg/L)	2020	ND	ND- 14	50	(100)	Erosion of natural deposits; discharge from steel and pulp mills and chrome plating
Selenium ^(b) (µg/L)	2020	ND	ND - 7.9	50	30	Erosion of natural deposits; discharge from mines and industrial wastes

Table 3. Continued.

Chemical or Constituent (and reporting units)	Sample Date	Level Detected	Range of Detections	MCL [MRDL]	PHG (MCLG) [MRDLG]	Typical Source of Contaminant
Fluoride (mg/L)	2020	ND	ND - 0.7	2	1	Erosion of natural deposits and discharge from fertilizer and aluminum factories
Nitrate as Nitrogen ^(b) (mg/L)	2020	2.5	0.9 - 4.4	10	10	Erosion of natural deposits; runoff from fertilizer use; and leaching from septic tanks and sewage
Turbidity ^(c) (NTU)	2020	0.2	0.2	5	N/A	Soil runoff
<i>Giardia lamblia</i> ^(c) (cyst/L)	2020	0.01	0 – 0.05	TT	(0)	Naturally present in the environment
Total Organic Carbon ^(c) (TOC) (ppm)	2020	1.2	0.9 – 2.9	Information Only	N/A	Various natural and manmade sources

(a) LLNL Data, Sept to Dec 2020

(b) Zone 7 Data, Jan to Dec 2020

(c) SFPUC Data, Jan to Dec 2020

Table 4. Detection of Contaminants with a Secondary Drinking Water Standard (SFPUC and Zone 7 Data, Jan to Dec 2020; Surface and Groundwater Data)

Chemical or Constituent (and reporting units)	Sample Date	Level Detected	Range of Detections	SMCL	PHG (MCLG)	Typical Source of Contaminant
Conductivity (µS/cm)	2020	522	30 - 657	1600	N/A	Substances that form ions when in water; seawater influence
Chloride, (mg/L)	2020	83	43 - 137	500	N/A	Runoff/leaching from natural deposits; seawater influence
Sulfate (mg/L)	2020	46	1.1 - 80	500	N/A	Runoff/leaching from natural deposits; industrial wastes
Total Dissolved Solids (mg/L)	2020	293	196 - 355	1000	N/A	Runoff/leaching from natural deposits
Turbidity (NTU)	2020	ND	ND - 0.12	5	N/A	Soil runoff

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 the water poses a health risk. More information about contaminants and potential health effects can be obtained by calling the U.S. EPA's Safe Drinking Water Hotline (1-800-426-4791).

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. U.S. EPA/Centers for Disease Control and Prevention (CDC) guidelines on appropriate means to lessen the risk of infection by *Cryptosporidium* and other microbial contaminants are available from the Safe Drinking Water Hotline (1-800-426-4791).

Lawrence Livermore National Security, LLC (LLNS) Lead Educational Statement

Key points:

- LLNL does not have any lead-pipe service lines.
- LLNL routinely monitors lead content in drinking water in accordance with state and federal drinking water laws to ensure it is safe to drink.
- Practices are in-place to periodically flush systems if action level concentration is identified.

With the Shelter-In-Place Order and lack of regular use during this time, lead can leach into drinking water from fixtures. Recently LLNL's Mechanical Utilities Department identified two locations in which levels exceed the established action level which requires notification:

Results	Location	Lead Test Results/Units	Action Level/Units	MCLG
1/8/2021	B611	0.188 mg/L	0.015 mg/L	0 mg/L
1/8/2021	B162	4.4 mg/L	0.015 mg/L	0 mg/L

The EPA's Lead and Copper Rule sets the action level for lead in drinking water at 0.015 micrograms per liter (mg/L). The Maximum Contaminant Level Goal (MCLG) is 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.

What are we doing to manage and minimize the lead content in tap water?

Infrastructure and Operations is actively flushing the lines in these facilities to ensure the lead levels are below the established action level.

What are the health effects of lead?

Drinking this water over many years can cause long-term harm in adults, including increased risk of high blood pressure and kidney damage.

What can I do to reduce my exposure to lead in drinking water?

1. Run your water for 30 seconds to 2 minutes to flush lead from interior plumbing or until it becomes cold, before using it for drinking.
2. Use cold water for cooking.

3. Look for alternative sources or treatment of water. If you have a choice, consider using bottled or filtered water.

For Water Systems Providing Groundwater as a Source of Drinking Water

N/A. LLNL does not operate any groundwater source

For Systems Providing Surface Water as a Source of Drinking Water

Table 5. Sampling Results Showing Treatment of Surface Water Sources

Treatment Technique ^(a) (Type of approved filtration technology used)	Chloramine (chlorine and aqueous ammonia)
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(a) A required process intended to reduce the level of a contaminant in drinking water.

Summary Information for Federal Revised Total Coliform Rule Level 1 and Level 2 Assessment Requirements

No exceedances of coliform thresholds.