



University of Alaska Fairbanks Facilities Services Division of Utilities **2011 Annual Water Quality**

June 2012

Points of Interest:

- Lead and Copper info
- Annual Analysis
- Disinfection By-Products
- Nitrates
- Arsenic

INSIDE THIS ISSUE:

Arsenic	2
TTHM's	2
Water Analysis Table	2
Annual Results Table	3
Important Definitions	3
Lead and Copper	4
Utilities Contact Info	4

Korean

이 안내는 매우 중요합니다.
본인을 위해 번역인을 사용하십시오.

Japanese

この情報は重要です。
翻訳を依頼してください。

Your Water

This report is to inform the on-campus population about the safety and operation of the water facilities on the main campus of the University of Alaska Fairbanks. This is a snapshot of last year's water quality. Included are details about where your water comes from, what it contains, and how it compares to EPA and state standards.

UAF has two primary drinking water wells and a third emergency well. The wells are drilled to depths of 70 to 90 feet. The primary wells are located in heated, secure buildings with concrete floors. The buildings and pads are elevated to prevent runoff from entering the wells. The wells are located on University property.

Contaminant Sources

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 (EPA) Safe Drinking Water Hotline (800-426-4791).

The sources of drinking water (both tap water and bottled water) include rivers, lakes,

Source Water Assessment

The ADEC has compiled a Source Water Assessment of our source of public drinking water. This assessment has defined an area around our wells that is critical to the preservation of the quality of our drinking water. Within this area, they have identified potential and existing sources of contamination. Based on the information gathered, ADEC has determined the overall vulnerability of our wells to contamination. The results are available at the following locations: Rasmuson Library, UAF Power Plant, and the Fairbanks North Star Borough Library.

From the Water Dept.

2011 was another exciting year in water for UAF Utilities. Students, teachers and water professionals from all across the state toured the UAF Water Treatment Plant to better understand the challenges of operating a drinking water facility. If you are interested in touring our facility, please use the contact information on page 4.



Only Tap Water Delivers™

Spanish

Este informe contiene información muy importante sobre su agua potable. Tradúzcalo o hable con alguien que lo entienda bien.

or result from urban stormwater runoff, industrial or domestic wastewater discharges, oil and gas production, mining, or farming. Pesticides and herbicides 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, which are by-products of industrial processes and petroleum production, and can also, come from gas stations, urban stormwater runoff, and septic systems.

and wildlife. Inorganic contaminants, such as salts and metals, can be naturally-occurring

Mission Statement:

Our mission is to provide high quality uninterrupted service of water, power and heat and chilled water. This mission is accomplished through a commitment to preventative maintenance, planning and inspection.

cont. Contaminant Sources

Radioactive contaminants can be naturally-occurring or be the result of oil and gas production and mining activities. In order to ensure that tap water is safe to drink, EPA prescribes regulations that limit the amount of certain contaminants in water provided by public water systems. Food and Drug Administration (FDA) regulations establish limits for contaminants in bottled water which must provide the same protection for public health.

Arsenic

While your drinking water meets EPA's standard for arsenic, it does contain low levels of arsenic. EPA's standard balances the current understanding of arsenic's possible health effects against the costs of removing arsenic from drinking water. EPA continues to research the health effects of low levels of arsenic, which is a mineral known to cause cancer in humans at high concentrations and is linked to other health effects such as skin damage and circulatory problems.

granted reduced monitoring status by the ADEC.

An arsenic sample was collected in December 2010. Results were 2.58 ppb (parts per billion). For comparison, the untreated, raw water had an arsenic level of 49.5 ppb. That's nearly a 95% removal of all incoming Arsenic.

The next Arsenic test will be between 2012 and 2013. Results will be published in future versions of this report.

Arsenic has been a major concern of the University Water Plant for many years. Naturally occurring Arsenic is very plentiful in the Fairbanks area. In 2005, the UAF Water Plant was

Russian

Данный рапорт содержит важную информацию о вашей питьевой воде. Переведите его или проконсультируйтесь с тем, кто его понимает.

TTHM's

Some people who drink water containing trihalomethanes in excess of the MCL over many years may experience problems with their liver, kidneys, or central nervous systems, and may have an increased risk of getting cancer.

Total Trihalomethanes (TTHM) are a byproduct of chlorinating water that contains natural organics. The ground water used by the University Water Plant has always had these organics, de-

rived, most likely, from decaying plant materials and thus, TTHM's have always been in the chlorinated water. An EPA survey discovered that trihalomethanes are present in virtually all chlorinated water supplies. In an effort to lower TTHM levels, EPA required large towns and cities to reduce TTHM levels in potable water. However, recent changes in national drinking water quality standards now require that all water treatment systems, regardless of size, reduce TTHM's.

For 2011, the University Water system was in compliance for TTHM's all four quarters of the year. Our final average was below the MCL established by ADEC. Compliance with TTHM's is determined by a running annual average based on quarterly averages of all the samples collected within that quarter.

The University Water Plant will continue to look for ways to reduce spikes of TTHM levels in the distribution system to stay

within all EPA and ADEC regulations regarding disinfection by-products.

A proposed test with nanofiltration membrane separation is in its early stages at the water plant. Membrane technology allows for removal of the DBP precursors before they interact with the chlorine compounds that lead to TTHM's and HAA's.

2011 Monthly Analysis Performed at the UAF Water Plant

Analyte	MCL	Units	Annual Avg	Frequency
Iron	0.03	ppm	0.015	Daily
Manganese	0.05	ppm	0.07	Daily
Chlorine	4.0	ppm	0.68	Daily
Hardness	NA	ppm	343	Monthly
pH	6.5-8.5	pH	7.42	Monthly

UAF In-House Analysis

The table to the left indicates average results for monthly testing performed at the UAF Water Plant. These tests and others provide water plant personnel with vital performance data on chemical treatment and efficiency of the overall treatment process.

Most of the parameters within the table are considered Secondary Contaminants. Secondary's are usually non-enforceable guidelines that may cause cosmetic or aesthetic effects to the finished treated water. Alaska DEC may enforce Secondary standards if public health is at risk.

The 2011 averages for UAF drinking water indicated a higher than normal Manganese level. This does not pose a health risk, but may cause discolored water. Manganese is naturally occurring in the ground-water and varies in concentration throughout the year.

Disinfection By-Product and Inorganic Analysis Results

Contaminant	TTHM	HAA	Nitrate	Barium	Fluoride
Date	Monthly	Monthly	Annually	9yr Cycle	9yr Cycle
Units	ppb	ppb	ppm	ppm	ppm
MCL	80	60	10	2	4
MCLG	None	None	10	2	4
Results	70.6	16.7	1.42	0.169	0.152
Range	18.7-122.0	ND-69.9	NA	NA	NA
Source	By-product of chlorination	By-product of chlorination	Runoff from fertilizer use; Leaching from septic tanks, sewage; Leaching from natural deposits	Discharge of drilling wastes; discharge from metal refineries; erosion of natural deposits	Water additive which promotes strong teeth; erosion of natural deposits; discharge from fertilizer and aluminum factories
Violation	No	No	No	No	No

What are Nitrates?

Short-term: Excessive levels of nitrate in drinking water have caused serious illness and sometimes death. The serious illness in infants is due to the conversion of nitrate to nitrite by the body, which can interfere with the oxygen-carrying capacity of the child's blood. This can be an acute condition in which health deteriorates

rapidly over a period of days. Symptoms include shortness of breath and blueness of the skin.

Long-term: Nitrates and nitrites have the potential to cause the following effects from a lifetime exposure at levels above the MCL: diuresis, increased starchy deposits and hemorrhaging of the spleen.

Disinfection By-Products

Disinfection byproducts form when disinfectants added to drinking water to kill germs react with naturally occurring organic matter in water.

Total Trihalomethanes. Some people who drink water containing trihalomethanes in excess of EPA's standard over many years may experience problems with their liver, kidneys, or central nervous systems, and may have an increased risk of getting cancer.

Haloacetic Acids. Some people who drink water containing haloacetic acids in excess of EPA's standard over many years may have an increased risk of getting cancer.

Radioactive Contaminants

Certain minerals are radioactive and may emit a form of radiation known as alpha radiation. Some people who drink water containing alpha emitters in excess of the MCL over many years may have an increased risk of getting cancer.

The UAF Water Plant complied with the Radionuclide Rule during the '05 monitoring event. The next set of samples are due before 2016.

Important Drinking Water Definitions

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

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

ppb: parts per billion, one part in one billion parts

ppm: parts per million, one part in one million parts, equivalent to milligrams per liter

ND: Non-detect: sample result was below the lowest method detection limit.

RAA: Running Annual Average: computed quarterly, is the average of the quarterly averages for all samples taken during the previous four calendar quarters.

DBP: Disinfection By Products

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The University of Alaska Fairbanks, the nation's northernmost Land, Sea and Space Grant university and international research center, advances and disseminates knowledge through teaching, research and public service with an emphasis on Alaska, the circumpolar North and their diverse peoples. UAF-- America's arctic university--promotes academic excellence, student success and lifelong learning.

Lead and Copper

Infants and young children are typically more vulnerable to lead in drinking water than the general population. It is possible that lead levels at your home may be higher than at other homes in the community as a result of materials used in your home's plumbing. If you are concerned about elevated lead levels in your home's water, you may wish to have your water tested and flush your tap for 30 seconds to 2 minutes before using tap water. Additional information is available from Safe Drinking Water Hotline (800-426-4791).

In 2011, the Water Plant increased the number of samples collected for Lead and Copper from 20 to 40 as requested by the ADEC.

We will continued collecting lead and copper samples at increased volumes and frequencies until the ADEC are satisfied with the Water Plant's Corrosion Control Program.

Lead and copper compliance is determined by the 90th percentile sample of all samples collected when arranged from lowest concentration to highest concentration. The Action Level for Lead is 15 ppb and Copper is 1.3ppm.

The table below shows all 40 samples collected in May 2011.

Some building names may have changed. SAC, Student Apartment Complex, is now Cutler Apartments.

May 2011 Pb & Cu

Sample	Location	LEAD (ppb)	Location	COPPER (ppm)	Action Level
40	SAC 402	20.7	SAC 309	1.290	
39	DEG Bldg	13.5	SAC 213	1.280	
38	Bartlett Hall	3.66	Patty Ice	1.190	
37	SAC 217	3.04	SAC 606	1.100	
36	RO Bldg	2.79	SAC 609	1.040	90th percentile
35	Eielson Bldg	2.51	SAC 407	0.968	
34	Rasm. Library	2.48	SAC 302	0.964	
33	Butrovich Bldg	2.07	SAC 217	0.963	
32	Gruening Bldg	2.06	SAC 205	0.955	
31	Chapman Bldg	2.05	SAC 202	0.952	
30	IARC	1.96	Skarland Hall	0.906	
29	Wood Center	1.78	SAC 602	0.880	
28	SAC 302	1.71	Moore Hall	0.861	
27	SAC 411	1.45	SAC 502	0.841	
26	Bunnell Bldg	1.33	SAC 402	0.713	
25	Harwood Hall	1.28	Natural Sciences	0.675	
24	Skarland Hall	1.17	Lola Tilly	0.666	
23	O'Neill Bldg	1.12	Bartlett Hall	0.657	
22	SAC 407	1.08	Physical Plant	0.595	
21	SAC 309	1.07	Rasm. Library	0.527	

Sample	Location	LEAD (ppb)	Location	COPPER (ppm)	Action Level
20	Patty Ice	1.04	IARC	0.520	
19	SAC 213	<1.0	Harwood Hall	0.499	
18	SAC 205	<1.0	O'Neill Bldg	0.436	
17	SAC 202	<1.0	DEG Bldg	0.350	
16	SAC 105	<1.0	Elvey Bldg	0.346	
15	Power Plant	<1.0	Eielson Bldg	0.336	
14	Lola Tilly	<1.0	Signer's Hall	0.316	
13	SAC 609	<1.0	Butrovich Bldg	0.315	
12	SAC 606	<1.0	Chapman Bldg	0.277	
11	SAC 602	<1.0	SAC 105	0.266	
10	SAC 502	<1.0	Brooks Bldg	0.252	
9	Elvey Bldg	<1.0	Water Plant	0.242	
8	Duckering Bldg	<1.0	Duckering Bldg	0.204	
7	Brooks Bldg	<1.0	Gruening Bldg	0.178	
6	Moore Hall	<1.0	SAC 411	0.173	
5	Natural Sciences	<1.0	Wood Center	0.153	
4	Physical Plant	<1.0	RO Bldg	0.146	
3	Signer's Hall	<1.0	Power Plant	0.0681	
2	Great Hall	<1.0	Bunnell Bldg	0.0428	
1	Water Plant	<1.0	Great Hall	0.0300	