



2017 Drinking Water Quality Annual Consumer Report

Eielson Air Force Base Alaska

Water Source Information

Introduction

Once again, Eielson AFB is pleased to present this year's annual drinking water quality report. **The data used for this report was collected in calendar year 2016.**

This report is designed to inform you about the high quality water Eielson AFB delivers to you every day.

Under the "Consumer Confidence Reporting Rule" of the federal Safe Drinking Water Act (SDWA), community water systems are required to report water quality information to the consuming public.

Presented in this report is information on the source of our water, the contaminant sampling frequency, and the results for each contaminant found above the laboratory detection limit.

We continually monitor the drinking water for contaminants in accordance with federal, state, and Air Force requirements.

We are proud to report that the water provided by Eielson Air Force Base meets or exceeds established water quality standards set by the Environmental Protection Agency (EPA) and the Alaska Department of Environmental Conservation.

Your Eielson AFB main distribution system utilizes ground water from the Tanana Valley Alluvial Aquifer. The public water system for Eielson AFB is a community water system consisting of six source intakes. The intakes for this Public Water System ID (PWSID) are groundwater wells. The groundwater is delivered to the Eielson AFB Water Treatment Plant via water production wells. At the Water Treatment Plant, the groundwater is treated, disinfected, and prepared for distribution. The treated water is then sent to water faucets on Eielson AFB via a network of water distribution lines. A few outlying areas not connected to the base distribution system receive delivered water stored in tanks.

The Alaska Department of Environmental Conservation (ADEC) Source Water Assessment program was implemented to make public water system operators, as well as the public it serves, aware of potential sources of contamination in the vicinity of wells that may impact our water. The initial assessment was conducted in 2004. In 2010, an additional assessment was conducted for a new well on Eielson AFB. The assessment report included a vulnerability ranking, based on a prioritized list of possible contaminating activities. These potential activities of contamination in the area resulted in Eielson AFB's medium to high vulnerability rating. While ADEC has classified our water supplies to have potential vulnerabilities, you can see by the detected contaminants table on page four, we do not show any contamination that exceeds regulatory limits for 2016.

The Source Water Assessment for Eielson AFB is available for review by contacting the 354th Medical Group, Bioenvironmental Engineering Flight at 907-377-6687.

Water Quality

Eielson AFB takes weekly routine water quality samples. In addition to the required testing, Eielson AFB takes extra samples from both the distribution and the source water to safeguard water we supply to our customers.

Be assured that Bioenvironmental Engineering, Water Treatment Plant, and the Utilities Maintenance personnel make every effort to ensure the water provided to Eielson is safe for consumption and that the installation is notified should water quality deteriorate.





WATER QUALITY INFORMATION FROM EPA

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 EPA's Safe Drinking Water Hotline at 1-800-426-4791 or online at 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 sewage treatment plants, septic systems, agricultural livestock operations, and wildlife.
- ◆ Inorganic contaminants, such as salts and metals, which 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, which 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, can also come from gas stations, urban stormwater runoff, and septic systems.
- ◆ Radioactive contaminants, which can be naturally occurring or be the result of oil and gas production and mining activities.
- ◆ Lead, which may come from corrosion of household plumbing systems or erosion of natural deposits. 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 material and components associated with service lines and home plumbing. Eielson AFB 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 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 Safe Drinking Water Hotline or at www.epa.gov/safewater/lead.
- ◆ Copper is an essential nutrient, but some people who drink water containing copper in excess of the action level over a relatively short amount of time could experience gastrointestinal distress. Some people who drink water containing copper in excess of the action level over many years could suffer liver or kidney damage. People with Wilson's disease should consult their personal doctor.

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

IMPORTANT HEALTH INFORMATION

Some individuals may be more vulnerable to contaminants in drinking water than the general population. Immuno-compromised persons such as those with cancer undergoing chemotherapy, those who have undergone organ transplants, people with HIV/AIDS or other immune system disorders, some elderly, and infants can be particularly at risk for infections. These people should seek advice about drinking water from their health care providers.

Guidelines from the U.S. Environmental Protection Agency and Centers for Disease Control about appropriate means to lessen the risk of infection by *Cryptosporidium* and other microbial contaminants are available from the Safe Drinking Water Hotline at 1-800-426-4791.

Tips For Reading Report Tables

Starting on the far left, read across:

- Collection Date is usually in 2016 or years prior.
- In Compliance means the amount of the substance did not exceed government requirements.
- Highest Level Detected represents the highest measured amount.
- Range Detected represents the lowest to highest measured amount.
- MCLG is the goal level for that substance. MCL shows the highest level of substance allowed. Units are the means of measurement.
- Major Sources in Drinking Water tells where the substance usually originates.

| Regulated Contaminant | In Compliance Y/N | Sample Date | Highest Level Detected | Range Detected/ RAA/ LRAA | Unit Measure | MCL | MCLG | Major Sources in Drinking Water |
|--------------------------------------|-------------------|-------------|------------------------|---------------------------|--------------|-----------|------------|---|
| Disinfectants | | | | | | | | |
| Chlorine Residual Distribution Lines | Y | 2016 | 1.68 | 0.0-1.68 | ppm | MRDL 4 | MRDLG 4 | Water additive used to control microbes |

Acronyms & Terms Used In This Report

Below is a listing of acronyms and terms (with explanations) used in this Drinking Water Quality Report.

| | | | |
|--------------|---|------------------------|---|
| EPA | Environmental Protection Agency | Level Found | Laboratory analytical result for a contaminant; this value is evaluated against an MCL or AL to determine compliance. |
| ADEC | Alaska Department of Environmental Conservation | 90th Percentile | 90% of all sample results fall below this level (23 sites throughout base housing are tested for lead and copper). This level is compared to the AL for compliance. |
| SDWA | Safe Drinking Water Act; the federal law which sets forth drinking water regulations. | ppm or mg/L | Parts per million or milligrams per liter. One part per million corresponds to one minute in two years. |
| MCL | Maximum Contaminant Level; the highest level of a contaminant allowed in drinking water. MCLs are set as close to the MCLGs as feasible using the best available treatment technology. | ppb or ug/L | Parts per billion or micrograms per liter. One part per billion corresponds to one minute in 2,000 years. |
| MCLG | Maximum Contaminant Level Goal; the level of a contaminant in drinking water below which there is no known or expected health risk. MCLGs allow for a margin of safety. | pCi/L | Picocuries Per Liter |
| AL | Action Level; the concentration of a contaminant that, if exceeded, triggers treatment or other requirements a water system must follow. | LRAA | Locational Running Annual Average |
| MRDL | Maximum Residual Disinfectant Level; 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. | RAA | Running Annual Average |
| MRDLG | Maximum Residual Disinfectant Level Goal; 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 contamination. | WTP | Water Treatment Plant |

Monitoring Your Drinking Water



Contaminants & Monitoring Frequency

At Eielson AFB, Bioenvironmental Engineering and the Water Treatment Plant monitor for more than 80 contaminants using EPA-approved methods.

These contaminants, grouped by chemical type and monitoring frequency, are listed in the table below.

| Contaminant Group | Monitoring Frequency |
|--------------------------------------|--|
| Disinfectant Residual | Daily at Water Plant |
| Turbidity | Daily at Water Plant |
| Fluoride | Daily at Water Plant; Weekly throughout water system; Every 9 years by Contract Laboratory |
| Coliform Bacteria | Weekly throughout water system |
| Volatile Organic Chemicals (VOC) | Quarterly for 4 contaminants Annually for all 62 contaminants |
| Inorganic Chemicals | Every 9 years (Next sample due 2018) |
| Trihalomethanes (TTHMs) | Annually |
| Haloacetic Acids (HAA) | Annually |
| Arsenic | Every 9 years (Next sample due 2021) |
| Nitrate | Annually |
| Pesticides & Other Organic Chemicals | Waiver period 2017-2019 |
| Radionuclides | Every 9 years (Next sample due 2021) |
| Lead and Copper | Every 3 years (Next sample due 2019) |

Detected Contaminants Results Table

The following table presents the results of our water monitoring for **2016 and earlier**.

The state allows us to monitor for some contaminants less than once per year because the concentrations of these contaminants do not change frequently. Therefore, some of our reported data is more than one year old.

We listed only those contaminants that the laboratory actually detected; all of the contaminants are below the established Maximum Contaminant Level (MCL) and the Maximum Contaminant Level Goal (MCLG).

| Regulated Contaminant | In Compliance Y/N | Sample Date | Highest Level Detected | Range Detected/ RAA/ LRAA | Unit Measure | MCL | MCLG | Major Sources in Drinking Water |
|--|-------------------|---|------------------------------|---------------------------|--------------|--------|---------|---|
| Disinfectants | | | | | | | | |
| Chlorine Residual Distribution Lines | Y | 2016 | 1.68 | 0.0-1.68 | ppm | MRDL 4 | MRDLG 4 | Water additive used to control microbes |
| Organic Contaminants | | | | | | | | |
| Total Trihalomethanes | | Compliance based on the Locational Running Annual Average (LRAA) for last 4 quarters sampled | | | | | | |
| Bldg 1346 | Y | 2016 Samples taken Quarterly | 78 | 13-78 LRAA 51 | ppb | 80 | N/A | By-product of drinking water disinfection |
| Bldg 3349 | Y | | 45 | 11-45 LRAA 29 | ppb | 60 | N/A | |
| Haloacetic Acids | | Compliance based on the Locational Running Annual Average (LRAA) for last 4 quarters sampled | | | | | | |
| Bldg 1346 | Y | 2016 Samples taken Quarterly | 16 | 6-16 LRAA 11 | ppb | 80 | N/A | By-product of drinking water disinfection |
| Bldg 3349 | Y | | 32 | 9-32 LRAA 23 | ppb | 60 | N/A | |
| Inorganic Contaminants | | | | | | | | |
| Nitrate WTP | Y | 3/01/16 | 0.05 | N/A | ppm | 10 | 10 | Runoff from fertilizer use; Leaching from septic tanks, sewage; Erosion of natural deposits |
| Barium | Y | 7/21/09 | 0.05 | N/A | ppm | 2 | 2 | Discharge of drilling wastes; Discharge from metal refineries; Erosion of natural deposits |
| Fluoride (WTP) | Y | 7/21/09 | 0.7 | N/A | | | | Erosion of natural deposits; Water additive which promotes strong teeth; Discharge from fertilizer and aluminum factories |
| Fluoride From Distribution Lines | Y | 2016 | 0.91 | 0.11-0.91 RAA 0.60 | ppm | 4 | 4 | |
| Lead and Copper—Tested at customer's taps | | | | | | | | |
| Copper (90 th percentile of 23 samples taken) | Y | 6/14/16 | 1.13 (90%) (0 of 23 over AL) | N/A | ppm | AL 1.3 | 1.3 | Corrosion of household plumbing systems; erosion of natural deposits |
| Lead (90 th percentile of 24 samples taken) | Y | 6/14/16 | 1.36 (90%) (0 of 23 over AL) | N/A | ppb | AL 15 | 0 | Corrosion of household plumbing systems; erosion of natural deposits |
| Volatile Organic Contaminants | | | | | | | | |
| Cis-1,2 Dichloroethene WTP, Wells A,B,F | Y | 3/01/16 | 0.93 | 0.18-0.93 | ppb | 70 | 70 | Discharge from industrial chemical factories |
| Total Trihalo-methanes WTP | Y | 3/01/16 | 1.93 | N/A | ppb | 80 | N/A | By-product of drinking water chlorination |
| Trichloroethene Well B | Y | 3/01/16 | 0.3 | N/A | ppb | 5 | 0 | Discharge from metal degreasing sites and other factories |
| Radiological Contaminants | | | | | | | | |
| Gross Alpha | Y | 2012 | 0.7 | N/A | pCi/L | 15 | 0 | Erosion of Natural Deposits |
| Beta Particle & Photon Emitters | Y | 2012 | 2.2 | N/A | pCi/L | 50* | 0 | Decay of natural and manmade deposits |
| Combined Radium 226/228 | Y | 2012 | -0.06 | N/A | pCi/L | 5 | 0 | Erosion of natural deposits |
| * The MCL for beta particles is 4 mrem/year. EPA considers 50 pCi/L to be the level of concern for beta particles. | | | | | | | | |

* The MCL for beta particles is 4 mrem/year. EPA considers 50 pCi/L to be the level of concern for beta particles.



Additional Information About Your Water

Perfluorinated Chemicals (PFCs) were coined emerging contaminants in 2012 after being included in the EPA list of unregulated contaminants that public water systems should monitor for data. PFCs have become extremely common substances used in the manufacturing of many man-made products, several of which we use on a day-to-day basis. You may routinely find them in the Teflon coating of your household cookware, stain treatment products for upholstery and carpets, waterproof coatings on clothing and footwear, plastic non-stick food packaging, fire-suppression foam, and countless other products. PFCs are widely used due to their water-repellant anti-stick characteristics and they retain these characteristics long after being introduced into the environment. As the result, PFCs pass through the natural filtration system that soil typically offers and then travel rapidly through the ground to our streams, lakes, aquifers, and subsequently our drinking water. Unfortunately, the very properties that have made these compounds so useful in our daily lives are now the same reasons that it has found its way into many municipal water sources. The concern for potential health effects and on-going medical research prompted the Eielson AFB leadership to take action when the PFCs levels in the base drinking water reached the EPA's health advisory level. Eielson AFB suspects the presence of PFCs is the result of using fire-suppression foam during firefighting operations.

The aggregate PFCs of concern for Eielson AFB are Perfluorooctanesulfonic acid (PFOS) and Perfluorooctanoic acid (PFOA). The EPA released their first Public Health Advisory on PFOS and PFOA in January 2009 setting a recommended limit at 0.2 micrograms per liter (ug/L) for PFOS and 0.4 ug/L for PFOA. The EPA defines health advisories as a release of information "on contaminants that can cause human health effects." They are neither regulated, nor enforceable; however the EPA shares that health advisories "provide technical information to state agencies and other public health officials on health effects, analytical methodologies, and treatment technologies associated with drinking water contamination."

For this reason, the AF under a directive from the DoD has mandated water sampling across multiple installations to gather an initial understanding of how widespread PFCs are and the levels at which they are occurring.

In 2016, Eielson AFB made tremendous updates to our water system. In March, Eielson AFB drinking water team reviewed all viable options and determined upgrading the water treatment plant with granular activated carbon (GAC) was the best option for long-term water system sustainment and providing exceptional water quality to our consumers. In April, the 354th Civil Engineer Squadron (CES) installed two GAC units in the water treatment plant which are capable of reducing PFCs from drinking water. The table below denotes the detected levels of PFCs. The EPA released a more stringent health advisory value for PFCs in May 2016. The new value set individual measurement of both PFOS and PFOA at 0.07 ppb individually as well as a combined, cumulative value of 0.07 ppb.



Eielson AFB conducted quarterly PFC sampling in July to find the new filtration system failed to maintain PFC levels below the new EPA health advisory value. CES immediately ordered replacement GAC media. In addition, Eielson AFB immediately switched wells. The new well had an individual and combined PFC concentration below the laboratory level of detection. In August, the GAC media was replenished and our water system returned to normal operations reverting back to our primary well.

Efforts to continually improve our water system came to fruition with the awarding of a contract which upgraded the water treatment plant to contain six GAC filtration vessels. Installation of two vessels was completed in December 2016. The remaining four vessels will be installed by December 2017. Eielson AFB water team is devoted and will continue providing our customers with the highest water quality.

2016 Eielson AFB Water Treatment Plant Quarterly PFOA and PFOS Results

| Parameter | Provisional Health Advisory (ppb) 2009 | WTP Level 4/4/16 (ppb) | New Health Advisory 5/18/16 (ppb) | WTP Level 7/11/16 (ppb) | Well 7 Level 7/11/16 (ppb) | WTP Level 7/21/16 (ppb) | WTP Level 8/15/16 (ppb) | WTP Level 10/17/16 (ppb) |
|---------------------------------|--|------------------------|-----------------------------------|-------------------------|----------------------------|-------------------------|-------------------------|--------------------------|
| Perfluorooctanoic acid (PFOA) | 0.4 | 0.008 | 0.07 | 0.053 | <0.0053 | 0.035 | 0.005 | 0.015 |
| Perfluorooctanesulfonate (PFOS) | 0.2 | 0.028 | 0.07 | 0.130 | <0.0033 | 0.076 | 0.004 | 0.056 |
| Cumulative [PFOA + PFOS] | N/A | N/A | 0.07 | 0.183 | <0.0086 | 0.111 | 0.009 | 0.071 |



You can have the utmost confidence in the team of professionals from the 354 CES Water Treatment Plant, 354 CES Utilities Maintenance, and 354 MDOS Bioenvironmental Engineering who are dedicated and committed to providing Eielson AFB with clean safe water.



Public Involvement

Consumers who have questions about this report or concerns over their drinking water may contact **Public Affairs at 907-377-2116**. Based on public interest, this report may be the topic of a future 354 FW Town Hall Meeting to provide an opportunity for public participation in decisions that affect drinking water quality.

An electronic copy of this report is available on the Eielson Web Site at: <http://www.eielson.af.mil/Info/Environmental/>

Water Conservation Tips for Consumers

Did you know that the average U.S. household uses approximately 400 gallons of water per day or 100 gallons per person per day? Luckily, there are many low-cost and no-cost ways to conserve water. Small changes can make a big difference - try one today and soon it will become second nature.

- ◆ Take short showers. A 5 minute shower uses 4 to 5 gallons of water compared to up to 50 gallons for a bath.
- ◆ Shut off water while brushing your teeth, washing your hair and shaving, and save up to 500 gallons a month.
- ◆ Use a water-efficient showerhead. They are inexpensive, easy to install, and can save you up to 750 gallons a month.
- ◆ Run your clothes washer and dishwasher only when they are full. You can save up to 1,000 gallons a month.
- ◆ Water plants only when necessary.
- ◆ Adjust sprinklers so only your lawn is watered. Apply water only as fast as the soil can absorb it and during the cooler parts of the day to reduce evaporation.
- ◆ Teach your kids about water conservation to ensure future generations use water wisely. **Make it a family effort!**
- ◆ Visit www.epa.gov/watersense for more information.

Did You Know?

Water is also used to cool the power plants that generate the electricity we use every day. So every time your television, computer, or lights use energy, water is being used up too. In fact, it takes 3,000 to 6,000 gallons of water to power one light bulb left on 12 hours a day for a year. Turn out the lights and save both water and energy!

KIDS!



There are 16 hidden vertical, horizontal, and backwards words related to water.

How many words can you find?



| | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Q | A | Z | G | N | I | M | M | I | W | S | E | R | T | Y | U | C | I |
| D | R | I | N | K | D | X | I | O | M | P | F | N | A | E | C | O | N |
| X | C | A | M | N | B | P | R | Z | Y | R | A | C | N | E | F | N | P |
| S | J | X | R | V | E | K | L | U | C | I | B | I | P | A | Y | S | K |
| P | A | W | Z | R | Y | V | H | G | B | N | Y | Z | C | I | P | E | H |
| L | E | A | K | S | I | C | A | Y | X | K | N | M | Q | E | T | R | S |
| A | D | T | G | Y | L | V | B | P | A | L | U | Y | R | S | W | V | D |
| S | J | E | M | A | T | T | E | I | O | E | Z | T | E | I | Y | E | T |
| H | I | R | Y | I | A | C | T | R | D | R | W | K | P | J | V | S | A |
| W | Z | C | C | L | O | U | D | B | U | S | A | J | S | A | O | L | F |
| M | J | U | Y | T | O | S | A | P | Q | L | Z | T | M | B | S | O | U |
| L | K | G | F | D | A | S | O | U | I | T | R | W | E | P | I | R | D |
| R | S | H | O | W | E | R | W | C | E | R | A | I | N | T | X | I | B |

| | | | |
|----------|-----------|--------|-----------|
| CLOUD | EVAPORATE | OCEAN | SPLASH |
| CONSERVE | ICE | RAIN | SPRINKLER |
| DRINK | LAKE | RIVER | SWIMMING |
| DRIP | LEAK | SHOWER | WATER |