Ketchikan Public Utilities
2010 Annual Water Quality Report

Ketchikan Public Utilities
2930 Tongass Avenue
Ketchikan, AK 99901

Ketchikan Public Utilities (KPU) believes it is important to help our customers become better informed about where their drinking water comes from, what is involved in the delivery of safe drinking water, and the importance of source water protection at Ketchikan Lakes. We are pleased to present this, our eleventh report, for the period between January and December 2010.

This report contains important information about your drinking water. For the benefit of those non-English speaking Ketchikan residents, please have the report translated, or speak with someone who understands it. In Tagalog; Mahalaga ang impormasyong ito. Mangyaring ipasalin ito. In Spanish; Este informe contiene información muy importante sobre su agua potable. Tradúzcalo o hable con alguien que lo entienda bien.

Ketchikan enjoys one of the purest and most plentiful supplies of drinking water in the world. Nevertheless, many of us who once gave no thought to the water that comes from our faucets are now asking the same question; "Is my water safe to drink?" Despite the presence of a particular group of disinfectant byproducts (discussed in greater detail on page 3 of this report) that are higher than EPA standards, our answer remains: Yes, it is!

Why am I receiving this report?
Congress passed the Safe Drinking Water Act in 1974 in response to nationwide concern about the safety of public drinking water supplies. The Environmental Protection Agency (EPA) was authorized to establish minimum standards and requirements for all public water suppliers. Continuing legislation since that time has included the requirement that consumers of water (including those with special health needs) be provided with information, which will allow them to make informed decisions regarding their drinking water.

What if I have questions about my water?
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 (800-426-4791).

For more information about your drinking water, please call John Kleinegger, KPU's Water Division Manager, at 228-5499. Also, you are welcome and encouraged to attend public meetings of the Ketchikan City Council. They meet on the first and third Thursdays of every month at 7:00 pm in the City Hall's Council Chambers located at 334 Front Street. The KPU Advisory Board meets on the fourth Thursday of every month at 5:30 pm in the KPU Adminstration Building 2930 Tongass Avenue. The public is invited to attend.

Copies of the annual 2010 Onsite Watershed Inspection Report conducted by the Alaska Department of Environmental Conservation (ADEC), the 2010 sanitary survey of the entire municipal water system, as well as our source water assessment completed in September 2003 are all available upon request to KPU.

Where does our water come from?
The Ketchikan Lakes water supply includes over 11 square miles of watershed consisting of the drainage area surrounding Ketchikan Lakes and Granite Creek. These two drainage basins feed Fawn Lake through a series of tunnels and penstocks. Leaving Fawn Lake, another series of tunnels then conducts water down to the intake of the water system located on Fair Street across from the City Park. The raw surface water is then thoroughly mixed with chlorine and spends additional time at the Bear Valley Reservoir before entering the municipal water system. This extra disinfection time is necessary to ensure that any viruses, bacteria, or other pathogens that may have been present are completely destroyed before entering your drinking water.

What contaminants might be in our water?
As water travels over the surface of the land or through the ground, it dissolves naturally occurring minerals and can pick up substances resulting from the presence of animals or from human activity.

Contaminants that may be present in our source water include:

A) Microbial contaminants, such as viruses and bacteria, which may come from wildlife and human activity.
(B) Inorganic contaminants, such as salts and metals, which can be naturally occurring or result from storm water runoff.
(C) Organic chemical contaminants, including synthetic and volatile organics, which are by-products of industrial processes, and can also come from storm water runoff.

Are there contaminants in Ketchikan's water?
As required by ADEC, we send water samples every year to independent, certified laboratories for analysis using the latest, modern equipment. When last tested in 2001, all of the regulated inorganic contaminants were at or below the minimum detectable limits (MDL) of the analytical equipment. Since then, equipment accuracy has increased greatly and, when our water was tested again in 2010, only minute amounts of barium and chromium were found present. Note also that both the barium and chromium results are well below the EPA maximum standards for these contaminants and that all of the other inorganic contaminants remained below the MDL.

As an unfiltered water system, we are required to monitor our turbidity continuously. Turbidity is a measure of the cloudiness of the water and we test for it because it is an indicator of microbiological quality. During periods of heavy rainfall following a dry spell, we do experience turbidity swings and take additional microbiological tests. Volatile organic contaminants were also found. These are created when the naturally occurring organics are produced during the wood decay process and are carried by rainfall runoff into the Ketchikan Lakes. Both Total Trihalomethanes (TTHM's) and haloacetic acids (HAA5) are created as disinfection byproducts when naturally occurring organic matter combines with the chlorine disinfectant added to kill microorganisms.

Testing for the 60 volatile organic compounds, which collectively include portions of the TTHM group, found that they continue to be at a level well below the EPA's maximum contaminant level (MCL) standards. Samples are also collected quarterly by KPU for haloacetic acids' analysis at selected sampling points throughout the municipal water system ranging from the point of entry to the furthest reaches of our system. The greatest amount of these haloacetic

acids occurs during the warmer and dryer summer months when Ketchikan Lakes warm up and the amount of dissolved organics in the water increases. For all of 2010's analytical tests, the overall average was 101.3 parts per billion (ppb). When expressed on a quarterly basis, the system's haloacetic results averaged between 74.2 ppb and 143.2 ppb. Any exceedence of the EPA's haloacetic acid MCL of 60 ppb requires informational notices to the public. For each occurrence, these were mailed to each ratepayer and published in the newspaper. Other than this single group of regulated compounds, Ketchikan has continued to meet or exceed all Federal drinking water standards every year since 1995.

This is not an immediate risk. If it had been, you would have been notified immediately. You do not need to use an alternative (e.g., bottled) water supply.

The risk of disease for drinking water that is not disinfected is much more immediate than that of getting cancer for drinking water over many years containing disinfection byproducts. People who drink water containing haloacetic acids in excess of the MCL over many years may have an increased risk of getting cancer. The U. S Environmental Protection Agency (EPA) defines this additional increased risk as statistically greater than 1 extra chance in 10,000 and less than 1 chance in 1,000,000. This information is published by the EPA, Risk Assessment Forum, Guidelines for Carcinogen Risk Assessment, Washington DC, p.1-17.

Is our water safe for everyone?
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. EPA/Centers for Disease Control guidelines on appropriate means to lessen the risk of infection by *Cryptosporidium* and other microbiological contaminants are available from the Safe Drinking Water Hotline (800-426-4791).

In the Table below, you will find many terms and abbreviations you might not be familiar with. To help you better understand these terms we've provided the following definitions:

Non-Detects (ND) - laboratory analysis indicates that the contaminant is not present.
Parts per million (ppm) or Milligrams per liter (mg/l) – corresponds to one part per million parts. For ease of comparison, illustrations of just how small a part per million (ppm) is are the following examples; a ppm is equal to one minute in 2 years or 1 penny in $10-thousand dollars
Parts per billion (ppb) or Micrograms per liter – corresponds to one part per billion parts. Similarly, illustrations of just how small a part per billion (ppb) is are the following examples; a ppb is equal to one minute in 2000 years or 1 penny in $10-million dollars.
Nephelometric Turbidity Unit (NTU) - nephelometric turbidity unit is a measure of the clarity of water. Turbidity in excess of 5 NTU is just noticeable to the average person.
Action Level - the concentration of a contaminant, which, if exceeded, triggers treatment or other requirements, which a water system must follow.
Treatment Technique (TT) - A treatment technique is a required process intended to reduce the level of a contaminant in drinking water.
Maximum Contaminant Level - The "Maximum Allowed" (MCL) is the highest level of a contaminant that is allowed in drinking water. MCLs are set as close to the MCLGs as feasible using the best available treatment technology.

Maximum Contaminant Level Goal - The "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.

TEST RESULTS						
Contaminant	MCL Violation	Level Detected	Unit Measurement	MCLG	MCL	Likely source of contamination to the best of our present knowledge
Microbiological Contaminants						
Turbidity (2010) Note (1)	No	2.47	NTU	n/a	5	Soil runoff
Note (1) turbidity is a measure of the cloudiness of the water. We test it because it is an indicator of microbiological quality.						
Inorganic Contaminants						
Copper (2009) Note (2)	No	0.495	ppm	1.3	AL=1.3	Corrosion of household plumbing
Lead (2009) Note (3)	No	6.77	ppb	0	AL=15	Corrosion of household plumbing
Note (2) None of the twenty samples exceeded the current action level of 1.3 ppm. Next test cycle is due in 2012.						
Note (3) One of the twenty samples slightly exceeded the current action level of 15 ppb at 15.2 ppb. Next test cycle is due in 2012.						
Volatile Organic Contaminants						
TTHM (Total Trihalomethanes) (2010) Note (4)	No		60.9 ppb	n/a	80	By-product of water chlorination
HAA5 Haloacetic Acids (2010) Note (5)	Yes		101.3 ppb	n/a	60	By-product of water chlorination
Note (4) In 2010, a total of 16 samples were taken throughout the distribution system. The TTHM individual analytical results ranged between 28.7 and 90.6 ppb.						
Note (5) In 2009, a total of 16 samples were taken throughout the distribution system. The HAA5 individual analytical results ranged between 48.5 and 178.7 ppb.						

Disinfection Byproducts (DBP) Contaminants:

Beginning in 2004, both the Long Term 1 Enhanced Surface Water Treatment Rule and the Stage 1 Disinfectants/ Disinfection Byproducts Rule (Stage 1 DBPR) placed additional responsibility upon Ketchikan to meet increased water quality requirements. Our drinking water must be analyzed for each of these identified contaminants and the results must be less than the MCL for Ketchikan to remain as an unfiltered system. With the exception of a group of disinfection byproducts collectively identified as five different haloacetic acids (HAA5) and

discussed above, Ketchikan has remained in compliance with all aspects of the pertinent EPA regulations.

During the cooler and wetter months of the year, there are less naturally occurring dissolved organic materials available to react with the chlorine disinfectant and thus creates less HAA5's. However, the opposite occurs during the warmer, drier summer months and the amount of HAA5's generally increases.

As reported in prior Consumer Confidence Reports, KPU has continued to make operational changes to reduce the formation potential of HAA5's. KPU is continuing to actively flush hydrants throughout the community on a regular basis to minimize the amount of time that water remains within the system. Within operational constraints, we have also reduced the amount of unreacted chlorine residual entering the distribution system.

Since 2003, KPU has been working with CH2M Hill, a nationally known engineering firm, to develop an optimum solution that will reduce the amount of haloacetic acids present and bring Ketchikan into compliance with the Stage 1 DBPR. Our planned approach is to use both chlorine and ultraviolet light (UV) as dual disinfectants followed by ammonia injection to reduce the formation of disinfection byproducts. This combination is expected to reduce the amount of haloacetic acids formed and still provide adequate disinfection at all times. In July 2008, the Ketchikan City Council awarded a construction contract for $4.2-million dollars and work at the Schoenbar Road construction site continues. Construction has entered its final phases and the new equipment should become fully operational during the summer of 2011.

Before we switch to the new disinfectants, a thorough public education program occurred in 2010 and will be repeated in 2011. It provided a good understanding of chloramination and its potential impacts to a limited number of KPU ratepayers. Fortunately, these impacts can be addressed with relatively simple mitigation measures. After chloramination disinfection begins, water samples will also continue to be collected quarterly throughout the system to confirm that Ketchikan is again in full compliance with existing EPA regulations including the Stage 2 Disinfectants/ Disinfection Byproducts and Long Term 2 Enhanced Surface Water Treatment Rules.

Concerning radioactivity in our water:
Samples of Ketchikan's water were collected for four consecutive quarters and then analyzed in an independent laboratory in 2005 to determine if our water contains any radioactive isotopes. The results are negative as they were in 2001 when our water was tested for radon. Any emitted alpha and beta particles from these regulated element isotopes are either at or below the minimum detectable threshold of the laboratory's analytical equipment.

Concerning lead in our 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. KPU 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 the 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 (800-426-4791) or at

http://www.epa.gov/safewater/lead. As reported in the Table above, in 2009 only one water sample collected from twenty residences constructed with lead soldered plumbing exceeded the EPA's lead MCL of 15 ppb. Extensive testing has also demonstrated that the water delivered by KPU's water mains is always much less than the EPA's lead MCL. Three samples that were collected in 2008 from KPU's water mains ranged between 0.50 and 0.71 ppb lead.

Concerning arsenic in our water:
Nationwide, there was significant discussion during 2002 concerning the amount of arsenic permissible in drinking water. As a result, the Maximum Contaminant Level (MCL) was lowered by the EPA from 50 ppb to 10 ppb. Ketchikan's arsenic level has been tested every year by an independent laboratory and has always been below the minimum equipment detection limit of 2.5 ppb. The latest analytical equipment has even greater sensitivity and 2009's result was even lower at 1 ppb. With Ketchikan's consistently low arsenic results, the next sample is not due to be analyzed until sometime between 2011 and 2019.

2010 Operational Highlights
The most important item that KPU's Water Division has been involved in all year is ensuring continuing compliance with the EPA's present Administrative Order (AO). For the past seventeen years, this Order has allowed Ketchikan's municipal water system to remain unfiltered and has saved the community much of the cost of constructing a water filtration plant with an estimated cost of well over $20-million as well as the additional annual operating costs for chemicals, electricity, and labor. Issued in July 1993, the AO required KPU to make several major system modifications, install additional instrumentation, and begin additional continuous water quality testing before we met EPA standards. Since 1995, Ketchikan has remained in compliance with all the governing criteria of the EPA's Surface Water Treatment Rules with the exception of the aforementioned haloacetic acids. This has resulted in the Alaska Department of Environmental Conservation (ADEC) sending Ketchikan a formal notice of violation of the Long-Term 1 Disinfection By-Products Rule and requiring that the amount of haloacetic acids present in the municipal water system must be corrected in a timely manner.

In July 2008, construction began on the new ultraviolet light (UV) Disinfection and Chloramination Facility Building. It is a two-story building with 24 and 30-inch ductile iron piping and UV components located in the concrete basement. The pre-engineered metal building houses office/lab space, electrical equipment, storage, and the soda ash system on the upper floor. The existing pH Adjustment building has been retrofitted for ammonium hydroxide storage and pumping equipment to inject small quantities of ammonia into the water system. The reaction of ammonia with our present drinking water disinfectant, sodium hypochlorite (bleach) will form monochloramines, a disinfectant used widely since the 1930's.

This approach to reduce haloacetic acid formation by switching to chloramines for water disinfection has been successfully used by many major cities throughout the United States including Denver, Boston, Dallas, Portland, St. Louis, Indianapolis, Minneapolis, and San Francisco. Although there are many UV disinfection facilities operating worldwide, this will be the first, relatively large, potable water UV facility built in Alaska and is of great interest to many other communities in Southeast as they wrestle with their own water quality issues.