2012 Drinking Water Quality Report for Nellis Air Force Base

This report, although required by the Environmental Protection Agency (EPA), is distributed by NAFB as our communication to you, the consumer, that the drinking water on the installation has been tested and certified for "safe to drink". The information in this report is a snapshot of calendar year 2012 drinking water quality at Nellis AFB (NAFB). It is required by the EPA's Safe Drinking Water Act (SDWA) which was passed by Congress in 1974. The purpose of the SDWA is to protect public health by regulating the nation's public drinking water supply. It was amended in 1996 to require states to develop and implement source water assessment programs for existing and potential threats to the quality of public drinking water and to include a summary of the assessment in the water system's annual consumer confidence report (CCR). Specifically, states are required to delineate the sources of public drinking water, identify potential contamination sources within the delineated area, assess the water system's susceptibility to contamination and inform the public of the results. These results are summarized below:

Drinking Water Sources

Most of the NAFB drinking water comes from Lake Mead and is supplied by the Southern Nevada Water Authority (SNWA). The water in Lake Mead begins as snowmelt in the Rocky Mountains and arrives via the Colorado River. The Las Vegas Wash, also carries storm water and treated wastewater into Lake Mead, and accounts for less than 2 percent of all the water in the lake. Additionally, the Virgin River and Muddy River combine to provide approximately 1.5 percent of the water in Lake Mead. Furthermore, the water NAFB receives from SNWA is supplemented by a small percentage of groundwater from wells on and near the base. The well water comes from the Las Vegas Valley Aquifer.

Monitoring and Analysis

Every month, technicians from SNWA collect and analyze water samples from the NAFB drinking water system and its water treatment facilities. In fact, the water is tested more frequently and extensively than the SDWA and the Nevada Administrative Code requires. The test results are shown in the table below. If you would like more information, contact the Bioenvironmental Engineering Flight (BEF) at 702-653-3316 or 99AMDSBio@nellis.af.mil .

NAFB routinely monitors for disinfectant residual in the distribution system. This measurement tells us whether the installation is effectively disinfecting the water supply. Disinfectant residual is the amount of chlorine present in the pipes of the distribution system. If the amount of disinfectant is too low (inadequately treated), disease-causing organisms, including bacteria, viruses, and parasites could grow in the pipes. These organisms can cause symptoms such as nausea, cramps, diarrhea, and associated headaches. However, these symptoms are not caused solely by organisms in drinking water, but can be attributed to other factors (environmental, food based illnesses, or person to person interaction).

Why are there contaminants in my drinking 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 the water poses a health risk. In order to ensure tap water is safe to drink, the EPA prescribes regulations to limit the amount of certain contaminants in the water provided by the public water systems. 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 by visiting **water.epa.gov/drink/hotline/index.cfm .**

The common sources of drinking water (both tap water and bottled water) include rivers, lakes, streams, ponds, reservoirs, springs, and wells. Potential sources of contamination for lakes and reservoirs include wildlife and industrial activities (urban chemicals such as fertilizers and pesticides). As well, landfills, domestic septic systems, and leaking underground storage tanks are all potential sources of contamination for groundwater aquifers. Also, as water travels over the surface of the land or through the ground, it dissolves naturally occurring minerals, in some cases naturally occurring radioactive material, and can pick up substances resulting from the presence of animals or human activity.

Contaminants potentially present in source (untreated) water include:

- Microbial contaminants such as viruses and bacteria, which may come from sewage treatment plants, septic systems, and wildlife.
- Inorganic contaminants such as salts and metals, which can be naturally occurring or result from urban storm runoff and industrial or domestic wastewater discharges.
- Pesticides and herbicides which may come from a variety of sources such as agriculture, urban storm water runoff, and residential use.
- Organic chemical contaminants including synthetic or volatile organic chemicals, which are byproducts of industrial processes and can come from gas stations, urban storm water runoff, and septic systems.
- Radioactive contaminants which can be naturally occurring or the result of industrial activities.

Other Health Information

The following substances are monitored by SNWA but are not regulated under the SDWA. The BEF has included this information because consumers have a right to know about anything potentially affecting the water.

Cryptosporidium

Cryptosporidium is a naturally occurring microscopic organism which is frequently found in surface water in the United States. If ingested, it can cause gastrointestinal distress and fever. Filtration, sedimentation, and disinfection using ultraviolet light and ozone are generally effective at removing Cryptosporidium. SNWA carefully monitors the water for the presence of this organism.

Perchlorate

Perchlorate, a man-made salt consisting of chloride and oxygen, has been detected at low levels in untreated and treated water. Scientists have traced the origin of the salt to shallow groundwater entering the Las Vegas Wash. Although there are no federal limits for perchlorate in drinking water, SNWA is closely monitoring the efforts by Nevada Division of Environmental Protection (NDEP) to intercept and remove perchlorates at the source.

Treatment Process

SNWA has advanced water treatment facilities designed to provide water meeting SDWA standards.

All the water drawn from Lake Mead is sent to the Alfred Merritt Smith or River Mountains water treatment facilities. As it arrives, the water is treated with chlorine and ozone to kill any potentially harmful microscopic organisms. A multistage filtration system is then used to remove particles from the water. As the water leaves the water treatment facility, additional chlorine is added to protect it on the way to the consumer. The water is also treated to prevent corrosion of the pipelines.

In addition to the SNWA supplied surface water, the NAFB public water system consists of eight active wells. Three of the eight wells are located off base and are currently in compliance with EPA's revised arsenic maximum contaminant level (MCL) of 10 parts per billion (ppb). The remaining five active wells are located on NAFB. Four of these wells have arsenic concentrations exceeding the MCL, but are only used for irrigation. The remaining well is blended with off-base water; the resultant arsenic concentration is below the EPA standard for arsenic.

The EPA standard balances the current understandings of the possible health effects against the costs of removing arsenic from drinking water. The 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.

Furthermore, the water from base wells are chlorinated by Civil Engineering (CE) Utilities and then mixed with the SNWA water. The CE Utilities department maintains a staff of well-trained professionals who operate and maintain the system daily.

2012 Maximum Contaminant Limit (MCL) Violations

The water system servicing the south side of NAFB, known as the Golf Course exceeded the MCL level for total trihalomethanes (TTHM) according to results from a routine test performed in June 2012 at Nellis AFB. The result was 0.085 milligrams per liter (mg/L) and the MCL is 0.080 milligrams per liter (mg/L). The violation lasted approximately three months. In August 2012, NAFB installed a new aeration system which has greatly decreased the buildup of TTHM. By September 2012, third quarter results were reduced to 0.078 mg/L, bringing NAFB into compliance. The EPA now requires a MCL based on a running annual average for TTHM of 0.080 mg/L. The average level for the NAFB drinking water system after the installation of the new aeration system was 0.057 mg/L for CY2012.

As a consumer, please be assured the drinking water on NAFB is constantly being monitored (24 hours a day/7 days a week) by the water utilities department and tested regularly by SNWA.

Trihalomethanes (THM) form naturally in a water system when chlorine reacts with organic compounds in the water. The base continually balances the disinfectant level in order to keep the system in equilibrium, much like chlorinating a swimming pool.

People who drink water containing THM in excess of the MCL over many years may experience liver, kidneys, or central nervous system problems, and have an increased risk of cancer.

Do I need to take special precautions?

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 (CDC) guidelines on appropriate means to lessen the risk of infection by Cryptosporidium and other microbial contaminants are available from the EPA Safe Drinking Water Hotline at 1-800-426-4791 or by visiting water.epa.gov/drink/hotline/index.cfm .

Frequently Asked Questions

Is my tap water safe to drink?

Your tap water meets and surpasses all SDWA standards. Additionally, the Alfred Merritt Smith Water Treatment Facility has been recognized by the National Partnership for Safe Water for its efforts to ensure the Southern Nevada's municipal water meets these water quality standards. Water samples are taken from the NAFB water distribution system monthly and analyzed to ensure compliance with standards.

If tap water is really of good quality, why does it taste the way it does?

The taste of the water is caused by naturally occurring minerals and chlorine. The chlorine is added to keep the water safe from bacteria. Water quality is best measured by the amount or concentration of contaminants. We have very few contaminants in our drinking water and those that are present are within SDWA limits.

Do I need to use a water treatment system or drink bottled water?

Not unless you want to improve the taste of your water or remove the minerals causing it to be considered "hard". While many people prefer the taste of bottled water, tap water is subject to more stringent quality standards and is monitored/tested more frequently. Additionally, the cost of the average liter of bottled water is more than 1,000 times the same amount of tap water. Food and Drug Administration (FDA) regulations establish limits for contaminants in bottled water and may adhere to EPA standards as well. For more information on bottled water quality, call the International Bottled Water Association at 1-800-WATER11 (1-800-92837-11) or by visiting www.bottledwater.org.

Pregnant women and people with medical conditions affecting their immune system should consult a physician to determine whether a supplemental treatment system is appropriate. For additional information on home water treatment systems, contact the SNWA at 702-862-3400 or by visiting www.snwa.com.

How will I be notified if a significant health risk associated with my water quality develops?

This report is considered the appropriate mechanism for notifying the consumer of routine/non-emergency compliance violations. Certain emergency situations may warrant more active notification efforts, including but not limited to: additional publications, postings in public places, mass-mailings, or working through other well-established mass-notification systems.

Additional Information and Input

If you would like a copy of this report or have questions, please contact the 99 ABW Public Affairs office at 702-652-2750, 99ABW.PACurrent@nellis.af.mil. Questions and

comments can also be mailed to the 99 ABW Public Affairs office at: 99 ABW/PA, 4430 Grissom Ave, Bldg 11, Ste 107 Nellis AFB, NV 89191. The most current source water assessments are available at the BEF office for the Nellis AFB wells, and through SNWA for water provided by SNWA. If there are any future concerns about the quality of water at Nellis AFB, town hall meetings will be held at the base theater or the community center.

For additional information on the quality of your water, call SNWA at 702-862-3400 or go to the SNWA website at www.snwa.com. Information on Nevada's Safe Drinking Water Program is available from the NDEP at 775-687-4670. General information for drinking water can be found in the EPA's website at www.epa.gov/safewater.

Water Quality Data Tables

The tables below list the drinking water contaminants detected. The presence of contaminants in the water does not necessarily indicate the water poses a health risk. Unless otherwise noted, the data presented in the tables are from testing completed in the 2012 calendar year. The EPA or the State requires Nellis AFB to monitor for certain contaminants less than yearly because the concentrations of these contaminants do not change frequently.

NAFB 2013 CCR TABLE				NELLIS AIR FORCE BASE DISTRIBUTION SYSTEM [1]			RESERVOIR #491 [1]			RESERVOIR #562 [1]			ALFRED MERRITT SMITH WATER TREATMENT FACILITY [1]			RIVER MOUNTAINS WATER TREATMENT FACILITY [1]			
REGULATED CONTAMINANTS	UNIT	MCL (EPA Limit)	MCLG (EPA Goal)	MINIMUM	MAXIMUM	AVERAGE	MINIMUM	MAXIMUM	AVERAGE	MINIMUM	MAXIMUM	AVERAGE	MINIMUM	MAXIMUM	AVERAGE	MINIMUM	MAXIMUM	AVERAGE	POSSIBLE SOURCES OF CONTAMINATION
Alpha Particles	pCi/L	15	0	Entry Point Monitoring Only			3.5 [2]	3.5 [2]	3.5 [2]	3.7 [2]	3.7 [2]	3.7 [2]	2.9	2.9	2.9	3.1	3.1	3.1	Erosion of natural deposits of certain minerals that are radioactive and may emit a form of radiation known as alpha radiation
Arsenic	ppb	10	0				2	3	2 [3]	2	3	3 [3]	2	2	2	2	2	2	Erosion of natural deposits
Barium	ppm	2	2				0.1 [2]	0.1 [2]	0.1 [2]	0.1 [2]	0.1 [2]	0.1 [2]	0.1	0.1	0.1	0.1	0.1	0.1	Erosion of natural deposits; discharge from metal refineries: discharge of drilling wastes
Beta Particles and Photon Emitters	pCi/L	50 [4]	0				N/D [2]	N/D [2]	N/D [2]	N/D [2]	N/D [2]	N/D [2]	3.5 [2]	3.5 [2]	3.5 [2]	3.2 [2]	3.2 [2]	3.2 [2]	Decay of natural and man-made deposits of certain minerals that are radioactive and may emit a form of radiation known as photons and beta radiation
Bromate	ppb	10	0				N/A						3	11 [5]	6 [3]	3	15 [5]	8 [3]	By-product of drinking-water disinfection with ozone
Chromium	ppb	100	100				N/D [2]	N/D [2]	N/D [2]	4 [2]	4 [2]	4 [2]	N/D	N/D	N/D	N/D	N/D	N/D	Erosion of natural deposits; discharge from steel and pulp mills
Copper [6]	ppm	1.3 [7] (Action Level)	1.3	0.14	0.99	0.86 (90th% value)	DISTRIBUTION SYSTEM MONITORING ONLY												Corrosion of household plumbing systems; erosion of natural deposits
Fluoride	ppm	4.0	4.0	0.3	0.7	0.6	0.7 [2]	0.7 [2]	0.7 [2]	0.5 [2]	0.5 [2]	0.5 [2]	0.6	0.7	0.7	0.6	0.8	0.7	Erosion of natural deposits; water additive [8]
Free Chlorine Residual	ppm	4.0 [9] (MRDL)	4.0 [9] (MRDLG)	0.05	3.4	1.2 [3]	DISTRIBUTION SYSTEM MONITORING ONLY												Water additive used to control microbes
Haloacetic Acids	ppb	60	N/A [10]	N/D	40	RAA [3] 38 LRAA [11] 25													By-product of drinking-water disinfection
Lead [6]	ppb	15 [7] (Action Level)	0	N/D	3.1	2.9 (90th% value)													Corrosion of household plumbing systems; erosion of natural deposits
Nitrate (as Nitrogen)	ppm	10	10	Entry Point Monitoring Only			0.8	0.8	0.8	0.5	0.5	0.5	0.4	0.7	0.5	0.5	0.7	0.5	Runoff from fertilizer use; leaching from septic tanks, sewage; erosion of natural deposits
Selenium	ppb	50	50				2 [2]	2 [2]	2 [2]	2 [2]	2 [2]	2 [2]	2	3	2	2	3	2	Erosion of natural deposits; discharge from mines; component of petroleum
Total Trihalomethanes	ppb	80	N/A [10]	10	85 [12]	RAA [3] 78 LRAA [11] 57	DISTRIBUTION SYSTEM MONITORING ONLY												By-product of drinking-water disinfection
Turbidity	NTU	95% of the samples <0.3 NTU [13]	N/A	Treatment Facility Monitoring Only									100% of the samples were below 0.3 NTU. The maximum NTU was 0.074 on December 30, 2012.			100% of the samples were below 0.3 NTU. The maximum NTU was 0.080 on February 14, 2012.			Soil runoff
Uranium	ppb	30	0	Entry Point Monitoring Only			3 [2]	3 [2]	3 [2]	1 [2]	1 [2]	1 [2]	4	4	4	4	4	4	Erosion of natural deposits

"Footnotes:
(1) Some Safe Drinking Water Act (SDWA) regulations require monitoring from the distribution system, while other SDWA regulations require monitoring at the entry points to the distribution system. (Alfred Merritt Smith WTF, River Mountains WTF, and NAFB Reservoirs)
(2) Annual monitoring note required, data from 2011.
(3) This value is the highest running annual average (RAA) reported in 2012. Reports are filed quarterly.
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"(4) The actual MCL for beta particles is 4 mrem/year. The U. S. Environmental Protection Agency (USEPA) considers 50 pCi/L to be the level of concern for beta particles.
(5) Maximum levels greater than the MCL are allowable as long as the running annual average does not exceed the MCL.
(6) Samples are from the NAFB customers' taps.
(7) Lead and copper are regulated by a Treatment Technique (TT) that requires systems to control the corrosiveness of their water. If more than 10% of tap-water samples exceed the action level, water systems must take additional steps. For copper the action level is 1.3 ppm, and for lead it is 15 ppb."
"(8) By state law, the Southern Nevada Water Authority (SNWA) is required to fluoridate the municipal water supply. This law is not applicable to groundwater.
(9) Chlorine is regulated by MRDL, with the goal stated as a MRDLG.
(10) No collective MCLG but there are MCLGs for some of the individual contaminants. Haloacetic Acids: dichloroacetic acid (0), trichloroacetic acid (300 ppb); Trihalomethanes: bromodichloromethane (0), bromoform (0), dibromochloromethane (60 ppb).
(11) This value is the highest locational running annual average (LRAA) reported in 2012. Reports are filed quarterly."

"(12) Maximum levels greater than the MCL are allowable as long as the running annual average of all locations does not exceed the MCL. Some people who drink water containing trihalomethanes in excess of the MCL over many years may experience problems of the liver, kidneys, central nervous system, and may have an increased risk of cancer.
(13) Turbidity is regulated by a Treatment Technique (TT) requirement - 95% of all samples taken after filtration each month must be less than 0.3 NTU. Maximum turbidity cannot exceed 1.0 NTU. "

Definitions:
Action Level: The concentration of a contaminant which, if exceeded, triggers treatment or other requirements which a water system must follow.
Disinfection by-product (DBP): A substance created by the chemicals or processes used to destroy potentially harmful microorganisms.
Maximum Contaminant Level (MCL): 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 (MCLG): 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.
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 contamination.
Treatment Technique (TT): A required process intended to reduce the level of a contaminant in drinking water.
Millirem (mrem): one-thousandth of a rem (roentgen-equivalent-man), which is a unit of absorbed radiation dose that is adjusted for the biological effects equal to one rad of 250 kilovolt roentgen rays (dental roentgen rays require less than 100 kilovolts).
N/A: Not applicable
N/D: Not detected. Does not equate to zero, but refers to an amount below analytical reporting limits.
Nephelometric Turbidity Unit (NTU): A measurement of water's clarity.
Part per billion (ppb): A unit used to describe the levels of detected contaminants. Equivalent to 1 cent in $10 million.
Part per million (ppm): A unit used to describe the levels of detected contaminants. Equivalent to 1 cent in $10,000.
Picocuries per liter (pCi/L): A measure of the radioactivity in water. Low levels of radiation occur naturally in many water systems, including the Colorado River.
Running annual average: Based on the monitoring requirements, the average of 12 consecutive monthly averages or the average of four consecutive quarters.
Turbidity: A measure of water clarity, which serves as an indicator of the treatment facility's performance.