

2005 Drinking Water Quality Report for Nellis Air Force Base

This report is a snapshot of calendar year 2005 drinking water quality at Nellis AFB as required by the Safe Drinking Water Act. The Safe Drinking Water Act 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. 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:

Where does my water come from?

Most of the Nellis AFB drinking water is from Lake Mead and is supplied by the Southern Nevada Water System (SNWS). Virtually all of the water in Lake Mead begins as snowmelt in the Rocky Mountains and arrives via the Colorado River. The Las Vegas Wash, which carries storm water and treated wastewater into Lake Mead, accounts for only 1.5 percent of all the water in the lake. The Virgin River and Muddy River combined also provide approximately 1.5 percent of Lake Mead's water.

The SNWS water is supplemented by a small percentage of groundwater from wells on and near the base. The Nellis AFB public water system utilizes five wells; three wells are located off base and two wells are located on base. The well water comes from the Las Vegas Valley Aquifer.

Potential sources of contamination for lakes and reservoirs include urban chemicals such as fertilizers and pesticides, industrial activities and wildlife. Landfills, domestic septic systems, and leaking underground storage tanks are all potential sources of contamination for groundwater aquifers.

Treatment Process

SNWS has advanced water treatment facilities that are designed to provide water that meets Safe Drinking Water Act 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 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 customers'

taps. It is also treated to prevent corrosion of the pipelines. The water from base wells is chlorinated and then mixed with the SNWS water.

The three base wells located off base are currently in compliance with revised arsenic maximum contaminant level (MCL) of 10 parts per billion. The two on base wells have arsenic concentrations that exceed the MCL, but when blended with SNWS and off base well water, the resultant arsenic concentration is below the arsenic MCL of 10 parts per billion. The revised arsenic MCL regulation became effective in January 2006. Rest assured, the water system maintains a staff of well-trained professionals who operate and maintain the system.

Analysis and Compliance

Every month, technicians from SNWS collect and analyze water samples from Nellis AFB's drinking water and its water treatment facilities. In fact, the water is tested even more frequently and extensively than the Safe Drinking Water Act and the Nevada Administrative Code requires. The test results are shown in the table below. Contact Bioenvironmental Engineering at 702-653-3316 if you need more information.

Nellis AFB had two regulatory compliance violations in 2005 (June and September). In June 2005, two samples tested positive for total coliform and one tested positive for *E.coli* bacteria. In September 2005, two samples tested positive for total coliform. Public notifications were issued after both instances and all subsequent test results were negative for total coliform and *E.coli* bacteria.

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. More information about contaminants and potential health effects can be obtained by calling the Environmental Protection Agency's Safe Drinking Water Hotline at 800-426-4791.

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, 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 (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 be the result of industrial activities.

In order to ensure the tap water is safe to drink, the EPA prescribes regulations to 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 and must provide the same protection for public health. For more information on bottled water quality, call the International Bottled Water Association at 800-WATER11.

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 guidelines on appropriate means to lessen the risk of infection by *Cryptosporidium* and other microbial contaminants are available from the EPA's Safe Drinking Water Hotline at 800-426-4791.

Other Health Information

The following substances are monitored by SNWS but are not regulated under the Safe Drinking Water Act. We have included this information because consumers have a right to know about issues affecting their water.

Cryptosporidium

This naturally occurring microscopic organism is found in 95 percent of all surface water in the United States. If ingested, it can cause gastrointestinal distress and fever. Laboratory staff test for *Cryptosporidium* in both untreated and treated water. Although it is occasionally found in the untreated water, technicians employ all available measures to remove it during the treatment process. Filtration is generally effective at removing *Cryptosporidium*. Both the Alfred Merritt and River Mountains water treatment facilities are currently being equipped with ozonation treatment, which offer an even more effective disinfection process. Ozonation provides excellent protection against microorganisms such as *Cryptosporidium*.

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 salt's origin to shallow groundwater entering the Las Vegas Wash. Although there are no federal limits for perchlorate in drinking water, Southern Nevada's water agencies are closely monitoring

efforts by the Nevada Division of Environmental Protection to intercept and remove perchlorate at its source.

Frequently Asked Questions

Is my tap water safe to drink?

Your tap water meets or surpasses all Safe Drinking Water Act standards. 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 our 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?

Our water's taste 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 and concentration of contaminants. We have very few contaminants in our drinking water and those that are present are within Safe Drinking Water Act limits.

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

Not unless you want to improve your tap water's taste or remove the minerals that cause it to be "hard" (water is considered hard if the mineral concentration is 100 ppm or more; the average hardness in the Las Vegas Valley is 300 ppm). While many people prefer the taste of bottled water, tap water is subject to more stringent quality standards and is 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. 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 Southern Nevada Water Authority at 702-258-7117 or visit them on the World Wide Web at www.snwa.com.

Additional Information and Input

If you would like a copy of this report or have questions, please contact the Public Affairs Office, Mr. Michael Estrada at 702-652-2750 or 800-859-3804, or Bioenvironmental Engineering at 702-653-3316. Questions and comments can also be mailed to the Public Affairs Office at: AWFC/PA, 4370 N. Washington Blvd., Suite 223, Nellis AFB, NV 89191-7078.

For additional information on the quality of your water, call SNWS at 702-564-7697 or go to SNWA's website at www.snwa.com. Information on Nevada's Safe Drinking Water Program is available from the Nevada Bureau of Health Protection Services at 702-486-5068. General information for drinking water can be found in the EPA's website at www.epa.gov/safewater.

Water Quality Data Table

The table below lists the drinking water contaminants that were 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 this table is from testing done in the 2005 calendar year. The EPA or the state requires us to monitor for certain contaminants less than once per year because the concentrations of these contaminants do not change frequently.

NAFB Test Results (These results represent levels in the treated water supply, based on 2005 data.)

Regulated Contaminants						
SUBSTANCE	Minimum	Maximum	Average	MCL (EPA Limit)	MCLG (EPA Goal)	Possible Sources
Arsenic	N/D	2 ppb	1 ppb	50 ppb ⁽¹⁾	0	Erosion of natural deposits
Barium	0.14 ppm	0.17 ppm	0.16 ppm	2 ppm	2 ppm	Erosion of natural deposits; discharge from metal refineries; discharge of drilling wastes
Bromate ⁽⁷⁾						
Alfred Merritt Smith WTF	N/D	10 ppb	2.1 ppb ⁽²⁾	10 ppb	0	By-product of drinking-water disinfection
River Mountains WTF	N/D	10 ppb	2.7 ppb ⁽²⁾	10 ppb	0	
Fluoride	0.76 ppm	0.86 ppm	0.82 ppm	4.0 ppm	4.0 ppm	Erosion of natural deposits; water additive ⁽⁸⁾
Nitrate (as N)	0.48 ppm	0.62 ppm	0.55 ppm	10 ppm	10 ppm	Runoff from fertilizer use; leaching from septic tanks, sewage; erosion of natural deposits
Free Chlorine Residual	N/D	2.2 ppm	0.81 ppm ⁽²⁾	4.0 ppm ⁽³⁾	4.0 ppm ⁽³⁾	Water additive used to control microbes
Lead ⁽⁶⁾	N/D	4 ppb	2 ppb (90th% Value)	15 ppb ⁽⁴⁾	0	Corrosion of household plumbing systems; erosion of natural deposits
Copper ⁽⁶⁾	N/D	0.824 ppm	0.752 ppm (90th% Value)	1.3 ppm ⁽⁴⁾	1.3 ppm	Corrosion of household plumbing systems; erosion of natural deposits
Total Trihalomethanes	31 ppb	77 ppb	58 ppb ⁽²⁾	80 ppb	N/A ⁽⁹⁾	By-product of drinking-water disinfection
Haloacetic Acids	4.5 ppb	33 ppb	22 ppb ⁽²⁾	60 ppb	N/A ⁽⁹⁾	By-product of drinking-water disinfection
Alpha Particles ⁽⁷⁾						
Alfred Merritt Smith WTF	N/D	N/D	N/D	15 pCi/L	0	Erosion of natural deposits of certain minerals that are radioactive
River Mountains WTF	4.4 pCi/L	4.4 pCi/L	4.4 pCi/L	15 pCi/L	0	
Beta Particles and Photon Emitters ⁽⁷⁾						
Alfred Merritt Smith WTF	6.1 pCi/L	6.1 pCi/L	6.1 pCi/L	50 pCi/L ⁽⁵⁾	0	Decay of natural and man-made deposits of certain minerals that are radioactive
River Mountains WTF	N/D	N/D	N/D	50 pCi/L ⁽⁵⁾	0	

Radium 226 and Radium 228 (combined) ⁽⁷⁾							
Alfred Merritt Smith WTF		2.59 pCi/L	2.59 pCi/L	2.59 pCi/L	5 pCi/L	0	Erosion of natural deposits
River Mountains WTF		0.89 pCi/L	0.89 pCi/L	0.89 pCi/L	5 pCi/L	0	
Uranium ⁽⁷⁾							
Alfred Merritt Smith WTF		4.6 ppb	4.6 ppb	4.6 ppb	30 ppb	0	Erosion of natural deposits
River Mountains WTF		4.5 ppb	4.5 ppb	4.5 ppb	30 ppb	0	
Total Coliforms		0 positive samples per month	3 positive samples per month ⁽¹⁰⁾	0.5 positive samples per month	≤ 1 positive sample per month	0	Naturally present in the environment

⁽¹⁾ 10 ppb as of January 13, 2006.

⁽²⁾ This value is the highest quarterly running annual average reported in 2005.

⁽³⁾ Chlorine is regulated by maximum residual disinfectant level (MRDL), with the goal stated as an MRDLG.

⁽⁴⁾ Action Level: 90 percent of samples must be below this level.

⁽⁵⁾ The actual MCL for beta particles is 4 mrem/year. The EPA considers 50 pCi/L to be the level of concern for beta particles.

⁽⁶⁾ Samples collected from Nellis Air Force Base's customer homes. Annual testing not required, data from 2003.

⁽⁷⁾ This data is from entry points to the NAFB distribution system (AMSWTF & RMWTF)

⁽⁸⁾ By state law, the Southern Nevada Water Authority is required to fluoridate the municipal water supply.

⁽⁹⁾ 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)

⁽¹⁰⁾ Total coliform monthly MCL violation in June (3 positive samples) and September (2 positive samples).

TURBIDITY *			
	% Samples less than 0.3 NTU	Maximum Turbidity and Date Found	Possible Sources
AMSWTF	100%	0.065 NTU on Jan 13, 2005	Soil Runoff
RMWTF	100%	0.076 NTU on Jan. 31, 2005	

* Turbidity has 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.

Unregulated Contaminants			
SUBSTANCE	Minimum	Maximum	Average
Perchlorate			
Alfred Merritt Smith WTF	ND	7.7 ppb	3.2 ppb
River Mountains WTF	ND	6.7 ppb	3.0 ppb
Sulfate	260 ppm	260 ppm	260 ppm