



WATER QUALITY REPORT

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2005



Dear Customer:

Since 1997 Guam Waterworks Authority has been providing an annual Water Quality Report to their customers. This year's report covers calendar year 2005 water quality testing, and you'll be happy to know that your drinking water has met or exceeded all of the state and federal health standards for drinking water. GWA uses state-of-the-art treatment techniques to remove contaminants from the water and continuously monitors water quality throughout the system. Our primary commitment is, and always will be, to provide you with a safe and dependable water supply. Please read and share the report with other occupants of your residence.

In order to ensure that tap water is safe to drink, USEPA prescribes regulations which limit the amount of certain contaminants in water provided by public water systems. The tables included in this report show the substances detected in Guam's drinking water while performing the most up-to-date monitoring required by the EPA (see 2005 Water Quality Data). GWA tests for many more substances that consistently meet all state and federal health standards for drinking water. If you would like a complete listing of GWA test results, or if you have any questions regarding this report, please call Carmen Sian-Denton, at our Laboratory Support Services Division at (671) 632-9697 or 637-2895 during normal business hours.

What is the Source of Your Drinking Water?

The main source of Guam's drinking water is groundwater pumped from an underground aquifer, by over 100 wells, into the water distribution system. Surface sources used by GWA include an impoundment on the Ugum River plus water purchased from the US Navy Water System (FENA). Spring water from Santa Rita is used to supplement the water supply from FENA for the villages of Asan, Piti, Anigua, and Santa Rita.

Why are there Contaminants in the Water?

Drinking water, including bottled water, may reasonably be expected to contain at least small amounts of some contaminants of natural origin. The presence of contaminants in drinking water does not necessarily indicate that the drinking water poses a health risk. More information about contaminants and potential health effects can be obtained by calling the USEPA's Safe Drinking Water Hotline at 1-800-426-4791 or GEPA's Safe Drinking Water Program at (671) 475-1660/1.

Is our Water System Meeting other Rules that Govern our Operations?

Stipulated Order for Preliminary Relief

In December 2002, a civil suit was filed against GWA and the Government of Guam by the United States seeking to address compliance issues in GWA's wastewater and drinking water systems. In June 2003, Federal EPA, GWA and the Government of Guam negotiated the terms of a Stipulated Order (SO) by which GWA, under EPA oversight, is undertaking a broad initiative to restore its facilities and to provide safe, reliable service to the island while meeting all regulations. The compliance issues to be addressed under the SO include the management and organizational structure of GWA, independent operations and financial administration, construction and rehabilitation projects, and training at GWA. There are reporting requirements and notice provisions incorporated in the SO. For the most part, EPA has been satisfied with GWA's progress with the SO mandates. GWA is working closely with both USEPA and Guam EPA in order to achieve the goals of the SO. A water resources master plan, an interim disinfection program, an interim disinfection residual level monitoring program, a leak detection and response program, and a water meter improvement program are only some of the projects being implemented under the terms of the SO, with guidelines and schedules that carry penalty provisions for failure to meet deadlines

A copy of the Stipulated Order for preliminary Relief; Civil Case No. 02-0035 is posted on the GWA web site: <http://www.guamwaterworks.org/>. If you need more information on the SO, please call **Paul Kemp**, GWA Environmental and Safety Compliance Specialist at **(671) 647-2605**.

Frequently asked Questions

What do the results of the water quality tests really mean for my family?

The bottom line is that our water meets or exceeds every health standard developed by the USEPA to ensure safety of the drinking water. Customers may also visit the USEPA online at www.epa.gov/safewater for additional information on understanding your drinking water.

Sometimes, my water is reddish-brown. Is this safe?

The reddish-brown color can be caused by rust from corrosion in GWA's pipes, the pipes in your home, or from corrosion in your home's water heater. This is not a health concern; the water meets all health-based regulations. If you have rusty water, try running cold water slowly for several minutes.

Why does drinking water sometimes look cloudy?

Cloudy water that clears quickly from the bottom up is caused by tiny air bubbles in the water similar to gas bubbles in soda. After a while, the bubbles rise to the top and disappear. Air does not affect the safety of water.

Why is water treatment so important?

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 that may be present in source water 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 stormwater runoff, wastewater discharges, 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, and can, also come from gas stations, urban stormwater runoff and septic systems; and radioactive contaminants which can be naturally occurring or be the result of oil and gas production or improper disposal of radioactive waste.

For all these reasons, we treat the water using state-of-the-art technology and test the water frequently to ensure the best water quality for our customers.

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 people, and infants can be particularly at risk from infections. These people should seek advice about drinking water, from their health care providers. EPA/Center for Disease Control guidelines on 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.

2005 WATER QUALITY DATA

PRIMARY STANDARDS: Mandatory Health-Related Standards

CONTAMINANT (units)	MCLG	MCL	GROUND WATER		UGUM WATER		FENA WATER		Major Sources of Contaminant
			Range	RV	Range	RV	Range	RV	
Regulated VOCs									
Tetrachloroethylene (PCE) (ppb)	0	5	0.5 - 6.8	4.41	nd	nd	nd	nd	Leaching from PVC pipes, discharge from dry cleaners
Trichloroethylene (TCE) (ppb)	0	5	0.5 - 0.8	0.8	nd	nd	nd	nd	Discharge from metal degreasing sites
HAA5 (Five Haloacetic Acids) (ppb) ²	n/a	60	1.0 - 20	5	25 - 100	50.5	1.1 - 117.5	47.5	By-product of drinking water chlorination
Total Trihalomethanes (ppb) ²	n/a	80	0.5 - 70	34	29 - 78	49.8	5.2 - 93.4	59.3	By-product of drinking water chlorination
Regulated SOCs									
2,4 - D (ppb)	70	70	nd	nd	nd	nd	nd - 0.22	0.22	Runoff from herbicide use
Alachlor (ppb)	0	2	nd	nd	nd	nd	nd - 1.14	1.14	Runoff from herbicide use
Chlordane (ppb)	0	2	0.1 - 2.23	0.61	nd	nd	nd	nd	Banned termiticide residue
Dalapon (ppb)	200	200	6.5 - 9.5	9.5	nd	nd	nd	nd	Runoff from herbicide use
Di(2-ethylhexyl)phthalate (ppb)	0	6	nd	nd	nd	nd	nd - 3.88	3.88	Discharge from rubber and chemical factories
Endrin (ppb)	2	2	0.01-0.08	0.08	nd	nd	nd - 0.03	0.03	Banned insecticide residue
Heptachlor epoxide (ppt)	0	200	0.01-0.02	0.02	nd	nd	nd - 67	67	Banned termiticide residue
Hexachlorocyclopentadiene (ppb)	50	50	nd	nd	nd	nd	nd - 0.07	0.07	Discharge from chemical factories
Picloram	500	500	0.12-0.22	0.22	nd	nd	nd	nd	Runoff from herbicide use
Simazine (ppb)	4	4	nd	nd	nd	nd	nd - 0.08	0.08	Runoff from herbicide use
Regulated IOCs									
Antimony (ppb)	6	6	1.5 - 3.8	3.8	nd	nd	nd	nd	Erosion of natural deposits
Arsenic (ppb)	0	50	nd	nd	nd	nd	nd - 2.4	2.40	Erosion of natural deposits
Barium (ppb) ¹	2000	2000	2.0 - 11	11	2.1 - 3.1	3.1	nd - 2.1	2.1	Occurs naturally
Chromium (ppb) ¹	100	100	1.1 - 14	14	nd	nd	nd - 2.5	2.5	Erosion of natural deposits
Fluoride (ppm) ¹	4	4	0.05-0.19	0.19	0.06-0.08	0.8	0.12-0.53	0.53	Water additive; naturally occurring which promotes strong teeth
Nitrate-N (ppm)	10	10	0.26-4.96	4.96	nd	nd	0.12 - 3.06	3.06	Runoff from fertilizer use; leaching from sewage
Radionuclides¹									
Gross Alpha Activity (pCi/l)	0	15	nd - 7.3	n/a	nd	nd	nd - 8.4	n/a	Erosion of natural deposits
Gross Beta Activity (pCi/l)	0	50*	nd - 2.6	n/a	nd	nd	nd - 3.6	n/a	Decay of natural and man-made deposits

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

Microbial Contaminants²

CONTAMINANT (units)	MCLG	MCL	NORTHERN		CENTRAL		SOUTHERN		Major Sources of Contaminant
			Violation	RV	Violation	RV	Violation	RV	
Total Coliform (TC) (% positive/month)	0	5 %	No	2.2 %	No	2.8 %	No	4.0 %	Naturally present in environment
Fecal coliform (FC) or <i>E. coli</i>	0	See Note 1	No	0	No	0	No	0	Human and animal fecal waste

Note 1: MCL = a routine sample and a repeat sample are TC positive, and one is also FC or *E. coli* positive

Definitions and Abbreviations:

- **MCLG:** Maximum Contaminant Level Goal, or 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.
- **MCL:** Maximum Contaminant Level, or 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 technique.
- **AL:** Action Level, or the concentration of a contaminant which, when exceeded triggers treatment or other requirements that a water system must follow. Copper AL = 1300 ppb; Lead AL = 15 ppb.
- **TT:** Treatment Technique or a required process intended to reduce the level of a contaminant in drinking water.
- **RV:** Reporting Value, or that used for determining compliance with the MCL, and is the highest average value for any single source tested. For VOCs and SOCs, RV= the highest annual average. For IOCs and radionuclides, RV= the highest value detected. If the RV is below the MCL, the water is meeting the health and safety-based standards.
- **Range:** range of values actually detected in samples from all the water tested
- **VOC:** Volatile Organic Chemical
- **SOC:** Synthetic Organic Chemical
- **IOC:** Inorganic Chemical
- **ntu:** nephelometric turbidity units
- **ppm:** parts per million, or milligrams per liter
- **ppb:** parts per billion, or micrograms per liter
- **ppt:** parts per trillion, or nanograms per liter
- **pCi/l:** picocuries per liter, a measure of radioactivity
- **mrem/yr:** millirems per year, a measure of radioactivity
- **nd:** not detectable at testing limits
- **n/a:** not applicable
- **ns:** no standard

Turbidity as Indicator of Filtration Performance

CONTAMINANT (units)	MCLG	MCL TT See Note 2	UGUM WATER		FENA WATER		Major Sources of Contaminant
			RV	Violation	RV	Violation	
Turbidity (ntu)	n/a		98.9%	No	100.0%	No	Soil runoff

Note 2: TT = 95 % of samples measured every 4 hours < 0.3 ntu

Unregulated Contaminants (Monitoring Required)**

CONTAMINANT (units)	MCLG	MCL	GROUND WATER		UGUM WATER		FENA WATER	
			Range	RV	Range	RV	Range	RV
Unregulated VOCs								
Bromodichloromethane (ppb)	ns	ns	0.5 - 6.2	6.2	4.6 - 10	10	8.2 - 11	11
Bromoform (ppb)	ns	ns	9.6 - 17	17	nd	nd	nd	nd
Chlorodibromomethane (ppb)	ns	ns	0.6 - 4.6	4.6	0.8 - 4.3	4.3	1.4 - 4.1	4.1
Chloroform (ppb)	ns	ns	0.5 - 3.4	3.4	0.9 - 25	25	14 - 37	37
Unregulated SOCs								
Dieldrin (ppb)	ns	ns	0.01 - 0.94	0.94	nd	nd	nd	nd
Unregulated IOCs								
Nickel (ppm) ¹	n/a	n/a	5.0 - 7.8	7.8	nd	nd	nd	nd
Sulfate (ppm) ¹	ns	250	2.7 - 270	270	11 - 13	13	13 - 25	25

** Unregulated contaminant monitoring helps EPA to determine where certain contaminants occur and whether there is a need to regulate those contaminants.

Secondary Maximum Contaminant Levels - Consumer Acceptance Limits***

CONTAMINANT (units)	MCLG	MCL	GROUND WATER	UGUM WATER	FENA WATER
			Range	Range	Range
Chloride (ppm)	n/a	250	16 - 442	35 - 45	26 - 54
Conductivity (µmho/cm)	n/a	1600	300 - 2010	121 - 151	196 - 230
pH (units)	n/a	6.5 - 8.5	7.0 - 7.88	7.04 - 7.65	6.95 - 7.40

*** Secondary MCL monitoring helps GWA to determine areas in need of adjustment, additional maintenance or rehabilitation in order to provide a high quality water that appeals to the consumer.

Additional Constituents Analyzed

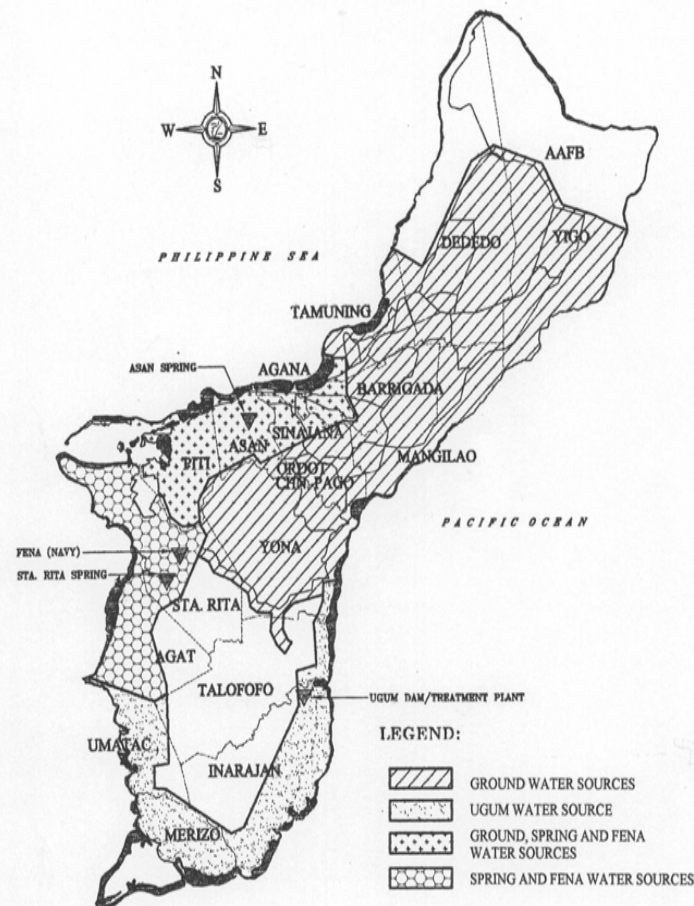
CONTAMINANT (units)	MCLG	MCL	GROUND WATER	UGUM WATER	FENA WATER
			Range	Range	Range
Alkalinity as CaCO ₃ (ppm)	n/a	n/a	144 - 869	35 - 80	52 - 139
Sodium (ppm)	n/a	n/a	8.5 - 180	12 - 13	9.2 - 11
Hardness as CaCO ₃ (ppm)	n/a	n/a	112 - 426	32 - 74	75 - 124

About the Data:

1. Data presented in these tables list the results of tests done between Jan 1 – Dec 31, 2005. Tables list only the contaminants detected. Detection does not necessarily mean a violation or exceedance of an MCL or Treatment Technique. GWA monitors for some constituents less than once per year because they are not expected to vary significantly from year to year. Therefore, some of the water quality data reported, although representative, may be more than one year old. If you have questions about this water quality report, please contact Carmen M. Sian-Denton, GWA's Monitoring Laboratory Services Administrator at 632-9697 or 637-2895.

2. Microbial, Haloacetic acid (HAA5), and total trihalomethane (TTHM) samples were taken from the distribution system, not from source waters.

GUAM WATERWORKS AUTHORITY GOVERNMENT OF GUAM



ISLAND OF GUAM WATER DISTRIBUTION