WRIGHT- PATTERSON AFB (WPAFB) DRINKING WATER CONSUMER CONFIDENCE REPORT 2016

INSIDE THIS REPORT

WHO TO CONTACT

Bioenvironmental Engineering
2325 Fifth Street, Bldg 675

Customer Service 255-6815
Water Program Mgr. 904-8335

Civil Engineering Water Utilities
1450 Littrel Road, Bldg 22

Customer Service 257-3131
Water Util. Manager 257-1928

Installation Management Division
1450 Littrel Road, Bldg 22

Source Water Management 257-5899

USEPA

Safe Drinking Water Hotline (800) 426-4791

WPAFB Meets Federal and State Drinking Water Quality Standards

This drinking water quality report has been prepared for you, the consumer, to provide valuable information on the quality of our drinking water. The Environmental Protection Agency (EPA) requires WPAFB to conduct regular water sampling to ensure drinking water safety. In calendar year (CY) 2016, we conducted sampling for bacteria, volatile organic chemicals (VOCs), nitrates, disinfection byproducts, and perfluorinated compounds. The Ohio EPA requires us to monitor for some contaminants less than once per year because the concentrations of these contaminants do not change very often. That is why some of our data, though accurate, is more than one year old. We are very pleased to report that WPAFB continued to meet all Federal and State drinking water health standards in 2016.

WPAFB Source Water

The source of WPAFB's drinking water is the Great Miami Buried Valley Aquifer. This aquifer is a large underground area of water-bearing sand and gravel deposits.

WPAFB has a current, unconditional license to operate two community public water systems (PWS) supplied by this groundwater aquifer. This natural aquifer provides WPAFB with approximately 1 billion gallons of water each year. There are six wells that serve Area A and four wells that serve Area B. Each well system has its own individual treatment process. Treatment includes air stripping to remove volatile organic chemicals (VOCs), chlorine disinfection to eliminate bacteria, and fluoridation which promotes strong teeth. The housing residents receive water which is also softened.

The Area A water system has interconnections with the City of Fairborn's PWS. The City of Fairborn is capable of supplying all of Area A with water in case of an emergency, however, we have not had a need to use water from the City of Fairborn in many years. The Area B water system has an alternate ground water supply from 3 wells located in the East Well Field near Huffman Prairie.

In 2007, the OEPA completed a study of WPAFB's source of drinking water to identify potential contaminant sources and provide guidance on protecting the drinking water source. According to this study, the aquifer that supplies water to WPAFB Areas A and B well fields has a high susceptibility to contamination. This determination is based on the following: the lack of a protective layer of clay or other material overlying the aquifer, a shallow depth (between 5-15 feet below ground surface) of the aquifer, the presence of significant potential contaminant sources in the protection areas, and the presence of man made contaminants in the ground water. Tetrachloroethene was detected within the treated water above the maximum contaminant level (MCL) on 1/10/91, 4/03/91, 5/01/91, and 6/04/91. WPAFB upgraded the treatment systems in 1992. Since that time, all results have been under the MCL for Tetrachloroethene in the treated water. Nitrate was also detected in the treated water above the aquifer susceptibility concentration of concern of 2.0 mg/L on several occasions. The nitrate MCL is 10.0 mg/L.

The risk of future contamination can be minimized by implementing appropriate protective measures. More information about the source water assessment and what consumers can do to help protect the aquifer is available by contacting the WPAFB Installation Management Division at 257-5899.

What are sources of contamination to drinking water?

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: **(A)** ***Microbial contaminants,*** such as viruses and bacteria, which may come from sewage treatment plants, septic systems, agricultural livestock operations, and wildlife; **(B)** ***Inorganic contaminants***, such as salts and metals, which can be naturally occurring or result from urban storm runoff, industrial or domestic wastewater discharges, oil and gas production, mining, or farming; **(C)** ***Pesticides and herbicides,*** which may come from a variety of sources such as agriculture, urban storm water runoff, and residential uses; **(D)** ***Organic chemical contaminants***, including synthetic and volatile organic chemicals, which are byproducts of industrial processes and petroleum production, and can also come from gas stations, urban storm water runoff and septic systems; **(E)** ***Radioactive contaminants,*** which can be naturally-occurring or be the result of oil and gas production and mining activities.

In order to ensure that your tap water is safe to drink, the US EPA prescribes regulations which 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 which must provide the same protection for public health.

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 their potential health effects can be obtained by calling the **EPA's Safe Drinking Water Hotline 800-426-4791.**

Who needs to take special precautions?

Some people may be more vulnerable to contaminants in drinking water than the general population. Immunocompromised 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 to infections. These people should seek advice about drinking water from their health care providers. EPA and 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 Safe Drinking Water Hotline at 800-426-4791.

Lead Education Information

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 the service lines and home plumbing. WPAFB is responsible for providing high quality drinking water, but cannot control the variety of material 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 want 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 USEPA's web site: http://www.epa.gov/safewater/lead.

Level 1 Assessment Triggered in Area A

Coliforms are bacteria which are naturally in the environment and are used as an indicator that other, potentially harmful, waterborne pathogens may be present or that a potential pathway exists through which contamination may enter the drinking water distribution system. In June 2016, we found coliforms indicating the need to look for potential problems in water treatment or distribution. When this occurs, we are required to conduct assessments to identify problems and to correct any problems that were found during these assessments. We were required to conduct one Level 1 assessment. One Level 1 assessment was completed and approved by OEPA. No specific deficiency was identified that may have caused the coliform contamination. Sample results since that time have all been negative for coliform bacteria.

Abbreviations and Definitions Used In Tables:

- **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 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.
- **Parts per Million (ppm) or Milligrams per Liter (mg/L)** are units of measure for concentration of a contaminant. A part per million corresponds to one second in approx. 11.5 days.
- **Parts per Billion (ppb) or Micrograms per Liter (ug/L)** are units of measure for concentration of a contaminant. A part per billion corresponds to one second in 31.7 years.
- **Parts per Trillion (ppt) or Nanograms per Liter (ng/L)** are units of measure for concentration of a contaminant.
- **Maximum Residual Disinfectant Level Goal (MRDLG):** The level of residual 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 contaminants.
- **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.
- **Action Level (AL):** The concentration of a contaminant which, if exceeded, triggers treatment or other requirements which a water system must follow.
- **Picocuries per liter (pCi/L):** A common measure of radioactivity.
- **Million Fibers per liter (MFL):** A measure of the presence of asbestos fibers that are longer than 10 micrometers.
- **NA:** Indicates Not Applicable.
- **ND:** Not Detected.
- **CY- Calendar Year:** (Jan through Dec)
- **Level 1 Assessment:** A study of the water system to identify potential problems and determine (if possible) why total coliform has been found in our water system.

Microbiological Contaminants	Unit of Measure	MCLG	MCL	AREA A # of Positive	AREA A Range of Detections	AREA B # of Positive	AREA B Range of Detections	Violation	Typical Sources of Contaminant
Total Coliform	# Positive	0	NA	5 in June	0-5	1 in June	0-1	No	Naturally present in the environment.
Residual Disinfectants	**Unit of Measure**	**MRDLG**	**MCL**	**AREA A Level Found**	**AREA A Range of Detections**	**AREA B Level Found**	**AREA B Range of Detections**	**Violation**	**Typical Sources of Contaminant**
Total Chlorine	ppm	4	4	1.1	0.4 –1.6	1.1	0.7 - 1.5	No	Water additive used to control microbes.
Disinfection By-products	**Unit of Measure**	**MCLG**	**MCL**	**AREA A Level Found**	**AREA A Range of Detections**	**AREA B Level Found**	**AREA B Range of Detections**	**Violation**	**Typical Sources of Contaminant**
Haloacetic Acids (HAA5)	ppb	na	60	3.84	3.69-3.84	6.36	3.27-6.36	No	By-product of drinking water chlorination.
Total Trihalomethanes	ppb	na	80	12.76	5.9-12.76	9.07	5.49-9.07	No	By-product of drinking water chlorination.
Inorganic Contaminants	**Unit of Measure**	**MCLG**	**MCL**	**AREA A Level Found**	**AREA A Range of Detections**	**AREA B Level Found**	**AREA B Range of Detections**	**Violation**	**Typical Sources of Contaminant**
Asbestos CY 2011	MFL	7	7	0.17	0.17	NA	NA	No	Decay of asbestos cement water mains; erosion of natural deposits.
Barium CY 2014	ppm	2	2	0.177	0.015 - 0.177	0.138	0.028 - 0.138	No	Discharge of drilling wastes; discharge from metal refineries; erosion of natural deposits.
Nitrate {measured as Nitrogen}	ppm	10	10	2.09	1.97-2.09	1.64	1.52-1.64	No	Runoff from fertilizer use; leaching from septic tanks, sewage; erosion of natural deposits.
Fluoride	ppm	4	4	1.09	0.82-1.21	1.10	0.82-1.17	No	Erosion of natural deposits; Water additive which promotes strong teeth; discharge from fertilizer and aluminum factories.
Radioactive Contaminants	**Unit of Measure**	**MCLG**	**MCL**	**Area A Level Found**	**Area A Range of Detections**	**Area B Level Found**	**Area B Range of Detections**	**Violation**	**Typical Sources of Contaminant**
Radium 228 CY 2014	(pCi/L)	0	5	1.4	ND - 1.4	ND	NA	No	Erosion of natural deposits.
Gross Alpha CY 2014	(pCi/L)	0	15	5.1	ND - 5.1	ND	NA	No	Erosion of natural deposits.
Volatile Organic Contaminants	**Unit of Measure**	**MCLG**	**MCL**	**Area A Level Found**	**Area A Range of**	**Area B Level Found**	**Area B Range of**	**Violation**	**Typical Sources of Contaminant**
Xylene	ppm	10	10	NA	NA	1.07	0 - 1.07	No	Discharge from petroleum factories; Discharge from chemical factories.

Lead and Copper - AREA A

Contaminants (units)	Action Level (AL)	Individual Results over the AL	90% of test levels were less than	Violation	Year Sampled	Typical Source of Contaminants
Lead (ppb)	15 ppb	22.2 / 76.9 / 233	13.5	No	2015	Corrosion of household plumbing systems, erosion of natural deposits
	3 out of 30 samples were found to have lead levels in excess of the lead action level of 15 ppb.					
Copper (ppm)	1.3 ppm	0	0.746	No	2015	
	0 of 30 samples were found to have copper levels in excess of the copper action level of 1.3 ppm.					

Lead and Copper - AREA B

Contaminants (units)	Action Level (AL)	Individual Results over the AL	90% of test levels were less than	Violation	Year Sampled	Typical Source of Contaminants
Lead (ppb)	15 ppb	17.6	2.54	No	2015	Corrosion of household plumbing systems, erosion of natural deposits
	1 of 30 samples were found to have lead levels in excess of the lead action level of 15 ppb.					
Copper (ppm)	1.3 ppm	1.46 / 1.67 / 2.57	1.27	No	2015	
	3 of 30 samples were found to have copper levels in excess of the copper action level of 1.3 ppm.					

Unless otherwise noted, the data presented in this Table is from sampling performed during the 2016 calendar year.

*Unregulated Contaminants	Unit of Measure	Area A Average	Area A Range	Area B Average	Area B Range	Year Sampled	Typical Sources of Contaminant
Nickel **(CY 2014)**	ppb	6.61	ND - 6.61	ND	NA	2014	Erosion of natural deposits.
Bromodichloromethane	ppb	2.08	0.52-3.62	3.62	1.4-8.64	2016	Disinfection By-Products
Bromoform	ppb	0.65	ND –1.17	0.82	ND-1.25		
Chloroform	ppb	4.07	ND-14.2	6.2	ND-22.5		
Dichlorodifluoromethane	ppb	ND	NA	1.27	ND-1.27		
Dibromochloromethane	ppb	2.01	0.81-3.60	3.04	1.38-5.0		
Chromium **(CY2015)**	ppb	0.24	ND - 0.38	0.30	0.28 - 0.31	2015	Naturally-occurring element; used in making steel and other alloys
Chromium-6 **(CY2015)**	ppb	0.041	0.04 - 0.05	0.12	0.12 - 0.13		
Strontium **(CY2015)**	ppb	136.0	31.7 –208	370.0	104 - 506	2015	Naturally occurring element; commercial use in faceplate glass of cathode-ray tube televisions to block x-ray emissions
Molybdenum **(CY2015)**	ppb	1.62	1.4 –1.8	3.60	3.5 - 3.7	2015	Naturally-occurring element found in ores and present in plants, animals and bacteria
Chlorate **(CY2015)**	ppb	33.7	ND-49.8	ND	NA	2015	Agriculture defoliant or desiccant; used in production of
Perfluorohexanesulfonic Acid **(PFHxS**	**ppt**	37	32 - 42	47	37 - 57	2016	Man made chemical; used in products to make stain, grease; heat and water resistant; also used in fire fighting foam.
Perfluorooctanoic Acid **(PFOA)**	**ppt**	4.6	ND - 32	10.4	6 - 16		
Perfluorooctanesulfonic Acid **(PFOS)**	**ppt**	NA	ND - 110	NA	ND		

***Unregulated contaminant monitoring helps the EPA to determine where certain contaminants occur and whether it needs to regulate those contaminants.**

Unregulated Contaminant Monitoring

The EPA requires monitoring for certain unregulated contaminants. **Unregulated contaminants** are those for which EPA has not established drinking water standards. The purpose of unregulated contaminant monitoring is to assist the EPA in determining the occurrence of unregulated contaminants and whether future regulation is warranted.

In CY 2014 and 2015, WPAFB was required to sample for perfluorinated compounds (PFCs) under the Unregulated Contaminant Monitoring Rule. Monitoring revealed detections of Perfluorooctanoic Acid (PFOA) and Perfluorooctanesulfonic Acid (PFOS) in the Area A distribution system. Sampling was done at the wells in March 2016 and it was determined that two of the six wells located in Area A had elevated levels of PFOS/PFOA. In April 2016, monitoring revealed a PFOS level of 110 parts per trillion (ppt) in the distribution system.

On 19 May 2016, the US EPA issued a lifetime drinking water Health Advisory (HA) limit of 70 ppt for human exposure to PFOA and PFOS (individually and combined). This placed the Area A distribution system above the HA limit. On 20 May 16, a drinking water advisory was issued for Area A informing the public that Area A had a PFOS detection that exceeded the new HA limit of 70 ppt. The public notice advised pregnant/lactating women to use an alternative source of water as well as advising parents to use bottled water for making infant formula. The public notice also advertised the availability and location of bottled water for those identified. Monthly monitoring was initiated for Area A as well as quarterly monitoring for Area B.

On 25 May 16, OEPA issued an Emergency Order (effective for 90 days,) stating that: (1) the two wells be removed from service; (2) that we immediately issue a public drinking water advisory for Area A; (3) offer an alternative source of drinking water for pregnant-lactating women and bottle fed infants.

WPAFB complied with all aspects of the Emergency Orders that were issued by the OEPA and we are working closely with OEPA to remediate the contaminant. Monthly monitoring continues at all of the remaining wells in Area A as well as at the entry points and within the distribution system. PFOS/PFOA levels have been below the reporting limit since the two contaminated wells were taken offline in June 2016. Granular Activated Charcoal (GAC) Units are being installed to remove the contaminant. The GAC units are scheduled to go online this spring.

Monitoring results for 2016 are listed in the table above. More information may be obtained by contacting the Bioenvironmental Engineering Office at (937) 255-6815.

Public Participation Information

Thank you for taking time to read our annual Drinking Water Quality Report. If you would like more information about WPAFB drinking water quality, or if you have any questions pertaining to the information contained in this report, please contact Mrs. Kimberly McSparran, Drinking Water Manager at (937) 255-6815 or (937) 904-8335.

The Bioenvironmental Engineering Office holds a Drinking Water Working Group that meets quarterly to discuss local drinking water issues involving compliance, risk reduction and continuous improvement. Your suggestions are encouraged and can be discussed at these meetings by contacting the Bioenvironmental Engineering Office. This report is also available at the following web sites:

http://www.wpafb.af.mil/Portals/60/documents/Index/environmental/170518-2016-Drinking-Water.pdf?

https://mdg.wpafb.af.mil/88amds/BioEng/SitePages/Home.aspx