



2016 Water Quality Report
Horsham Water and Sewer Authority
www.horshamwater-sewer.com

*Este informe contiene información muy importante sobre su agua potable.
Tradúzcalo ó hable con alguien que lo entienda bien.*

About Your Drinking Water

Horsham Water and Sewer Authority (public water supply ID # PA1460033) (HWSA) is pleased to provide you with important information about your drinking water in this 2016 Consumer Confidence Report (CCR). The report summarizes the quality of water provided in 2016 - including details about water sources, what the water at your tap contains, and how it compares to standards set by regulatory agencies. We are pleased to report that we were in compliance with all water quality regulations in 2016. Although the report lists only those regulated substances that were detected in your water, we test for more than what is reported. This report is only a summary of our testing during 2016. If you have any questions about the information in this report, please call 610.645.4248 or visit our website at www.horshamwater-sewer.com.

The Horsham Township Water Authority was established in 1954. The merger of the Horsham Township Water Authority and the Horsham Sewer Authority was completed in 1998, forming the Horsham Water and Sewer Authority. Since that time, we have upgraded services and the water supply system. Aqua Pennsylvania, Inc. (Aqua) was contracted to manage water operations for the Authority during 2016. Consistent with the contract, Aqua performed the mandatory water quality testing required by the Pennsylvania Department of Environmental Protection (DEP).

Sources of Supply

Most of the water for the HWSA system comes from groundwater supplies (wells). A portion is derived from surface water. Sources of supply include 15 wells strategically located throughout Horsham Township and interconnections with other water suppliers: Aqua Pennsylvania's Main System (PWSID # PA1460073) and North Wales Water Authority (NWWA) (PWSID # PA1460048). In 2014, two of HWSA's public supply wells were shut down due to the detection of Perfluorooctane Sulfonate (PFOS) and/or Perfluorooctanoic Acid (PFOA) at concentrations exceeding the then-current EPA Provisional Health Advisory (PHA) of 200 and 400 ppt, respectively. Those wells remained out of service during 2016. On May 19, 2016, EPA issued a lifetime health advisory limit (LHAL) for a combined total concentration of PFOS and/or PFOA of 70 ppt. As a result, an additional three of HWSA's public supply were shut down and remained out of service through the end of 2016. Water purchased from Aqua Pennsylvania's Main system and NWWA supplemented the loss in production from those wells. Additional tables listing contaminants that were detected in each of those systems are included in this report.

The Pennsylvania Department of Environmental Protection (DEP) has completed source water assessments for the groundwater sources for this system. Information on source water assessments is available on the DEP Web site at www.depweb.state.pa.us (DEP keyword "source water"). Completed reports are distributed to municipalities, water suppliers, local planning agencies, and DEP offices. Copies of the reports are available for review at the DEP Southeast Regional Office, Records Management Unit (phone 484.250.5900).

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 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 urban storm runoff, industrial or domestic wastewater discharges, oil and gas production, mining, or farming.
- Pesticides and herbicides, which may come from a variety of sources such as agriculture, stormwater runoff, and residential uses.
- Organic chemical contaminants, including synthetic and volatile organics, which are byproducts of industrial processes and petroleum production and can also come from gas stations, urban stormwater runoff and septic systems.
- Radioactive contaminants, which can be naturally occurring or be the result of oil and gas production and mining activities. Radon is not regulated in drinking water. It is a radioactive gas that you can't see, taste or smell. Most radon enters homes directly from underground. Radon can be released into the air from tap water. Generally, tap water is a small source of radon in indoor air. The average concentration for radon during 2014 was 840 pCi/L. The range was ND – 2,020 pCi/L.

In order to ensure that tap water is safe to drink, EPA prescribes regulations that limit the amount of certain contaminants in water provided by public water systems. 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 potential health effects can be obtained by calling the Environmental Protection Agency's (EPA) Safe Drinking Water Hotline (800.426.4791).

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 for infections. These people should seek advice about drinking water from their health care providers. EPA/CDC guidelines on appropriate means to lessen the risk of infection by *Cryptosporidium* and other microbial contaminants are available from the Safe Drinking Water Hotline (800.426.4791).

The following table lists contaminants that were detected in your water system. The table provides the average of the sources used to supply the area, as well as minimum and maximum observed levels of regulated contaminants.

Horsham Water and Sewer Authority, PWSID # PA1460033

Contaminants	Average Detection	Range of Detections	MCL	MCLG	Sample Date	Violation Y/N	Major Sources in Drinking Water
Total Coliform Bacteria	0	0 - 0	TT	NA	2016	N	Naturally present in the environment
Values above are for the number of positive samples per month. In 2016, none of the 307 samples collected was positive for Total Coliform Bacteria. All samples were negative for E.coli.							
Inorganic Contaminants							
Arsenic, ppb	ND	ND - 3	10	0	2015	N	Erosion of natural deposits; runoff from orchards; runoff from glass and electronics production wastes
Barium, ppm	0.41	0.11 - 1.13	2	2	2015	N	Discharge of drilling wastes; discharge from metal refineries; erosion of natural deposits
Chromium, ppb	4	3 - 5	100	100	2015	N	Discharge from steel and pulp mills; erosion of natural deposits
Selenium, ppb	ND	ND - 1.2	50	50	2015	N	Discharge from petroleum and metal refineries; erosion of natural deposits; discharge from mines
Nickel, ppb	ND	ND - 17	NA	NA	2015	N	Erosion of natural deposits
Nitrate, ppm	2.1	ND - 4.0	10	10	2016	N	Runoff from fertilizer use; leaching from septic tanks, sewage; erosion of natural deposits
Radiological Contaminants							
Alpha emitters, pCi/L	6.3	ND - 13	15	0	2011, 2014	N	Erosion of natural deposits
Combined radium, pCi/L	1.3	1.0 - 1.6	5	0	2011, 2014	N	
Uranium, ppb	2.4	0.7 - 5.4	30	0	2011, 2014	N	
Disinfectant Residual – Values below reflect results from routine monthly distribution sampling at multiple sites.							
Chlorine, ppm	1.1	0.8 - 1.4	MRDL = 4	MRDLG = 4	2016	N	Water additive used to control microbes
Disinfection Byproducts							
Haloacetic acids, ppb	5	1 - 17	60	NA	2016	N	Byproducts of drinking water disinfection
Total Trihalomethanes, ppb	17	4 - 46	80	NA	2016	N	
Volatile Organic Contaminants							
Tetrachloroethylene, ppb	ND	ND - 3.3	5	0	2016	N	Discharge from factories and dry cleaners
Toluene, ppm	ND	ND - 0.002	1	1	2016	N	Discharge from petroleum factories

Contaminants	Minimum Disinfectant Residual	Lowest Level Detected	Range of Detections	Sample Date	Violation Y/N	Major Sources in Drinking Water
Entry Point Disinfectant Residual – PA Ground Water Rule: This rule requires that no well station operate below specific minimum free chlorine levels for more than 4 hours.						
Chlorine, ppm	0.4 at most entry points	ND*	ND - 2.3	2016	N	Water additive used to control microbes

*Disinfectant levels did not drop below minimum required level for more than 4 hours.

Lead and Copper	90th Percentile	Total Number of Samples	Samples Exceeding Action Level	Action Level	MCLG	Sample Date	Violation Y/N	Major Sources in Drinking Water
Copper, ppm	0.6	32	0	1.3	1.3	2016	N	Corrosion of household plumbing
Lead, ppb	2.7	32	0	15	0	2016	N	

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. Horsham Water & Sewer Authority 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 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 or at <http://www.epa.gov/safewater/lead>.

The 1996 amendments to the Safe Drinking Water Act (SDWA) require that once every five years, the U.S. Environmental Protection Agency (EPA) issue a new list of no more than 30 unregulated contaminants to be monitored by public water systems (PWSs). The Unregulated Contaminant Monitoring Rule (UCMR) provides EPA and other interested parties with scientifically valid data on the occurrence of contaminants in drinking water. These data serve as a primary source of occurrence and exposure information that the agency uses to develop regulatory decisions. If a PWS monitoring for UCMR finds contaminants in its drinking water, it must provide the information to its customers in its annual water quality report. Samples were collected to monitor unregulated contaminants in June and December of 2014. Below is a table of the results of our 2014 UCMR3 monitoring. All other contaminants tested during UCMR3 were Not Detected.

Unregulated Contaminants Detected During 2014. Results in ppb.			
Unregulated Contaminant	Average Detection	Range of Detections	MCL
Perfluorooctane sulfonate (PFOS)	0.06	ND - 1	NA
Perfluorooctanoic acid (PFOA)	ND	ND – 0.29	NA
Perfluoro – 1-butanedisulfonic acid	ND	ND – 0.11	NA
Perfluoro – 1-hexanesulfonic acid	0.037	ND – 0.59	NA
Perfluoro heptanoic acid	ND	ND – 0.039	NA
1,4-Dioxane	0.07	ND – 0.57	NA
1,1-Dichloroethane	ND	ND – 0.059	NA
Chlorodifluoromethane	ND	ND – 0.383	NA
Chlorate	34	ND - 138	NA
Chromium	1	ND - 30	NA
Hexavalent chromium	0.08	ND – 0.27	NA
Cobalt	ND	ND – 1.5	NA
Molybdenum	2.8	ND – 9.6	NA
Strontium	590	110 – 1,820	NA
Vanadium	1.5	0.32 – 6.8	NA

Since the discovery of PFOS and PFOA in Horsham's groundwater in 2014, and out of a commitment on the part of HWSA to better understand the trends of PFOS and PFOA in local groundwater, HWSA has continued to monitor its groundwater sources at Minimum Reporting Levels (MRLs) which are significantly more sensitive than the MRLs required for PFOS and PFOA under UCMR3. Below is a table of the results of additional monitoring for PFOS and PFOA which was performed in 2016.

Operational Monitoring Performed in 2016

HWSA Well # (raw water)	PFOS, ppt Average	PFOS, ppt Range	PFOA, ppt Average	PFOA, ppt Range	Well In-service?
1	8.5	6.3 - 11	11	7.5 - 15	Yes
2	22	14 - 39	15	9.6 - 22	Yes*
3	7.0	4.6 - 11	7.4	6.1 - 8.8	Yes
4	15	10 - 18	8.4	5.9 - 10	Yes
7	5.8	ND - 7.8	7.2	3.1 - 8.9	Yes
9	11	5.1 - 16	8.4	4.5 - 11	Yes
10	43	16 - 76	27	12 - 48	No
17	81	50 - 100	26	20 - 37	No
19	11	7.8 - 14	8.3	6.3 - 9.6	Yes
20	21	11 - 27	15	9 - 20	Yes
21	11	5.1 - 14	12	8.4 - 18	No
22	13	9.1 - 15	14	9.4 - 20	Yes

*Well 2 was in service through 11/18/16.

HWSA has adopted a plan to drastically reduce the average concentration of PFOS and PFOA in the public water supply. Detailed sample results and additional information about HWSA's response to the discovery of these contaminants are available on the HWSA website at www.horshamwater-sewer.com.

The following tables list contaminants that were detected in the water supplied through interconnections with other water suppliers.

North Wales Water Authority- Forest Park Treatment Plant

Contaminants	Average Detection	Range of Detections	MCL	MCLG	Sample Date	Violation Y/N	Major Sources in Drinking Water
Inorganic Contaminants							
Barium, ppm	0.02	ND - 0.02	2	2	2016	N	Erosion of natural deposits
Nitrate, ppm	0.5	0.26 - 0.76	10	10	2016	N	Runoff from fertilizer use; leaching from septic tanks, sewage; erosion of natural deposits
Disinfection Byproducts							
Bromate, ppb	2.9	1.8 - 3.8	10	0	2016	N	Byproduct of drinking water disinfection
Filtration Performance							
Turbidity, NTU	0.02	0.01 - 0.04	TT	NA	2016	N	Soil runoff

Raw water monitoring for *Giardia* and *Cryptosporidium* was performed monthly throughout 2016. *Giardia* was detected in 7 out of 12 samples and *Cryptosporidium* was detected in 6 out of 12 samples.

Unregulated Contaminants Detected During 2015, North Wales Water Authority			
Unregulated Contaminant	Average Detection	Range of Detections	MCL
Chlorate, ppb	126	93 - 190	NA
Chromium-6, ppb	0.04	ND - 0.07	NA
Molybdenum, ppb	1.0	ND - 1.4	NA
Strontium, ppb	113	93 - 130	NA
Vanadium, ppb	0.1	ND - 0.3	NA
Unregulated Contaminants Detected During 2016			
Perfluorooctanoic Acid (PFOA), ppt	0.55	ND - 2.2	NA

Aqua Pennsylvania's Main System, PWSID#: PA1460073

Contaminants	Average Detection	Range of Detections	MCL	MCLG	Sample Date	Violation Y/N	Major Sources in Drinking Water
Turbidity, % meeting	100%	99.7 - 100.0%	TT	NA	2016	N	Soil runoff
Values above are % meeting plant performance level. The Treatment Technique (TT) requirement is 95% of samples < 0.3 NTU							
Inorganic Contaminants							
Barium, ppm	0.06	0.04 – 0.09	2	2	2016	N	Erosion of natural deposits
Chromium, ppb	2.4	1.2 – 6.0	100	100	2016	N	
Fluoride, ppm	0.09	ND - 0.5	2	2	2016	N	Erosion of natural deposits; water additive to promote strong teeth
Nitrate, ppm	3.4	1.0 – 5.0	10	10	2016	N	Runoff from fertilizer use; leaching from septic tanks, sewage; erosion of natural deposits
Selenium, ppb	ND	ND – 2.3	50	50	2016	N	Erosion of natural deposits
Radiological Contaminants							
Gross alpha, pCi/L	1.8	ND – 8.14	15	0	2013, 2014	N	Erosion of natural deposits
Combined radium, pCi/L	0.2	ND - 1.4	5	0	2011, 2013, 2015	N	
Uranium, ppb	ND	ND - 7.6	30	0	2011, 2013	N	
Volatile Organic Contaminants							
Trichloroethylene, ppb	ND	ND - 2.3	5	0	2016	N	Metal degreasing sites and other factories
Tetrachloroethylene, ppb	ND	ND – 3.0	5	0	2016	N	Factories and dry cleaners

Most of the Main System is supplied from surface water sources; however, radon is more prevalent in groundwater supplies. In 2016, the average concentration of radon in groundwater sources was 350 pCi/L. The highest level observed was 1,530 pCi/L in a groundwater supply. There is no federal or state standard for radon in drinking water.

Cryptosporidium is a microbial parasite found in waters throughout the United States. During monitoring of raw surface water sources (prior to treatment), 192 samples were collected in 2016. The average concentration of *Cryptosporidium* oocysts was not detected. The range of samples collected during 2016 was ND – 0.1 oocysts per liter. As a frame of reference, the lowest category of risk has been set by EPA as an average concentration of less than 0.075 per liter. Results from 2016 support the low risk category. Monitoring will continue through March 2017.

Contaminants	Entry Point #	Minimum Residual Level Required	Lowest Level Detected	Range of Detections	Sample Date	Violation Y/N	Major Sources in Drinking Water
Entry Point Disinfectant Residual- *Disinfectant levels did not drop below the required minimum residual level for more than 4 hours.							
Chlorine, ppm	112, 115, 116, 117, 136, 138	0.2	0.55	0.55 – 3.65	2016	N	Water additive used to control microbes
	103, 107, 109, 111, 125, 132, 137, 139	0.4	0.01*	0.01 - 3.69	2016	N	
	105, 106, 110, 114, 126, 135	>0.4	0.01*	0.01 – 3.85	2016	N	

Total Organic Carbon (TOC)						
Contaminant	Range of % Removal Required	Range of % removal achieved	Number of quarters out of compliance	Sample Date	Violation Y/N	Sources of Contamination
TOC	25 - 35	24 - 50	0	2016	N	Naturally present in the environment

Unregulated Contaminants Detected During 2013, Aqua PA Main System			
Unregulated Contaminant	Average Detection	Range of Detections	MCL
1,1-Dichloroethane, ppb	ND	ND - 0.138	NA
1,4-Dioxane, ppb	0.195	ND - 1.51	NA
1,2,3-Trichloropropane, ppb	ND	ND - 0.169	NA
Chlorate, ppb	122	ND - 838	NA
Chromium, ppb	0.20	ND - 2.6	NA
Hexavalent chromium, ppb	0.28	ND - 2.6	NA
Molybdenum, ppb	ND	ND - 3.6	NA
Strontium, ppb	163	31 - 354	NA
Vanadium, ppb	0.46	ND - 1.2	NA

Notes:

Action Level (AL): The concentration of a contaminant which, if exceeded, triggers treatment or other requirements.

Arsenic: While your drinking water meets EPA's standard for arsenic, it does contain low levels of arsenic. EPA's standard balances the current understanding of arsenic's possible health effects against the cost of removing arsenic from drinking water. 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.

Fluoride: Fluoride may help prevent tooth decay if administered properly to children, but can be harmful in excess. Customers served by the Horsham Water and Sewer Authority receive water from unfluoridated supplies. For more information about fluoride in your tap water, call Aqua at 610.645.4248. This information may be helpful to you, your pediatrician or your dentist in determining whether fluoride supplements or treatment are appropriate.

Lifetime Health Advisory Limit (LHAL): Health Advisories (HAs) provide information on contaminants that can cause human health effects and are known or anticipated to occur in drinking water. EPA's HAs are non-enforceable and provide technical guidance to state agencies and other public health officials on health effects, analytical methodologies, and treatment technologies associated with drinking water contamination. The LHAL value for PFOS and PFOA are based on non-cancer health effects for a duration of exposure, in this case, over the course of a lifetime. To provide Americans, including the most sensitive populations, with a margin of protection from a lifetime of exposure to PFOA and PFOS from drinking water, EPA established the health advisory levels at 70 parts per trillion.

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. Some levels are based on a running annual average.

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 contaminants.

Minimum Reporting Level (MRL): An indicator of the sensitivity of a laboratory test method. Results less than the MRL are reported as Not Detected (ND).

NA: Not applicable. **ND:** Not detected.

Provisional Health Advisory (PHA): Provisional Health Advisory values were developed to provide information in response to an urgent or rapidly developing situation. They reflect reasonable, health-based hazard concentrations above which action should be taken to reduce exposure to unregulated contaminants in drinking water. They will be updated as additional information becomes available and can be evaluated.

PFCs: Abbreviation for perfluorochemicals. PFCs are a class of man-made chemicals which have been used for many years to make products that resist heat, stains, grease and water. In April 2016, HWSA voluntarily adopted its own reduced reference level for PFC of 1 ppt.

PFOS: Abbreviation for perfluorooctane sulfonate which is one of the compounds within the classification of PFCs. Two wells had concentrations of PFOS over the EPA provisional health advisory of 0.2 ppb. These wells were immediately shut off. Public Notice was issued in August 2014.

PFOA: Abbreviation for perfluorooctanoic acid which is one of the compounds within the classification of PFCs. The EPA provisional health advisory for PFOA is 0.4 ppb. None of the wells had results above this level.

pCi/L, picoCuries/Liter: A unit of concentration for radioactive contaminants.

ppt: A unit of concentration equal to one part per trillion. **ppb:** A unit of concentration equal to one part per billion.

ppm: A unit of concentration equal to one part per million. **PWSID:** Public water supply identification number.

UCMR: Unregulated Contaminant Monitoring Rule. The 1996 Safe Drinking Water Act (SDWA) amendments require that once every five years EPA issue a new list of no more than 30 unregulated contaminants to be monitored by public water systems (PWSs). EPA uses UCMR to collect data for contaminants that are suspected to be present in drinking water and do not have health-based standards set under the Safe Drinking Water Act (SDWA).

UCMR3: The third Unregulated Contaminant Monitoring Rule was published on May 2, 2012. UCMR3 required monitoring in large water systems for a specific list of contaminants between 2013 and 2015.