



2016 ANNUAL DRINKING WATER QUALITY REPORT

NEWTOWN ARTESIAN WATER COMPANY, PWSID 1090043

Este informe contiene información importante acerca de su agua potable. Haga que alguien lo traduzca para usted, ó hable con alguien que lo entienda. (This report contains important information about your drinking water. Translate it, or speak with someone who understands it.)

Introduction

The Newtown Artesian Water Company (NAWC) is pleased to present our 2016 Drinking Water Quality Report. We are committed to providing a safe and dependable supply of good quality drinking water to our valued customers in the Newtown area. We are happy to inform you that your drinking water is in full compliance with current standards established by the United States Environmental Protection Agency (EPA) under the Safe Drinking Water Act (SDWA). Our dedicated staff takes pride in providing high quality drinking water and superior customer service, at a reasonable price. If you have any questions about this report or concerning your water quality, please contact the NAWC office at 215-968-6781.

NAWC Water System

The NAWC water system is supplied by five (5) groundwater sources (Wells 4A, 5, 6, 14 and 18), and through interconnections with the Bucks County Water and Sewer Authority (BCWSA) and the Pennsylvania American Water Company (PAWC).

The groundwater supplies consist of five (5) wells located throughout the NAWC service area.

The water purchased from BCWSA is a combination of water supplied by North Wales Water Authority and Lower Bucks County Joint Municipal Authority. North Wales Water Authority supplies surface water from the Delaware River that has been treated at Forest Park Water Treatment Plant. Lower Bucks County Joint Municipal Authority supplies a combination of surface water from the Delaware River that is treated at their water treatment plant and groundwater from five (5) wells.

The water purchased from PAWC is a surface water supply also originating from the Delaware River and treated at PAWC's Yardley WTP and groundwater from four (4) wells.

At the end of 2016, we provided service to 10,529 customers in Newtown Borough, Newtown Township and a portion of Middletown Township north and west of Core Creek.

Our 2016 average system demand equaled 2.134 million gallons per day. The well supplies provided 39 percent of the total supply. Well water receives disinfection treatment using sodium hypochlorite and corrosion control treatment using zinc orthophosphate. The purchased water from BCWSA and PAWC receives complete treatment, including filtration, at the Forest Park WTP and Yardley WTP, respectively. Purchased water provided 61 percent of the total supply in 2016 (BCWSA – 49.5 percent, PAWC – 11.5 percent). The only additional treatment provided to the BCWSA and PAWC supplies includes the addition of sodium hypochlorite to generate/maintain a free chlorine residual within the distribution system.

Source Water Assessment

A *Source Water Assessment* of our groundwater supply sources was completed by DEP in June 2005. The Assessment has found that we are potentially most susceptible to contamination from transportation corridors. Potential pollutants used in residential and commercial areas also pose a threat to our wells. A summary report of the Assessment is available on the DEP Source Water Assessment & Protection Web page at (www.elibrary.dep.state.pa.us/dsweb/View/Collection-10045). Complete reports were distributed to municipalities, water suppliers, local planning agencies and DEP offices. Copies of the complete report are available for review at the DEP Southeastern Regional Office, Records Management Unit.

Water Quality

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 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 water 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, urban stormwater runoff and residential uses.
- *Organic Chemical Contaminants*, including synthetic and volatile organics, which are by-products 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.

In order to ensure that tap water is safe to drink, EPA and DEP prescribes regulations which limit the amount of certain contaminants in water provided by public water systems. Food & Drug Administration (FDA) and DEP regulations establish limits for contaminants in bottled water that must provide the same protection for public health.

In addition to monitoring of certain contaminants governed by the EPA, there are other contaminants that are not regulated. These unregulated contaminants are monitored to help EPA determine where those contaminants occur and whether those contaminants should be regulated in the future.

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 the water poses a health risk. More information about contaminants and potential health effects can be obtained by calling the EPA Safe Drinking Water Hotline at (800) 426-4791 or by visiting the EPA's drinking water website www.epa.gov/safewater. NAWC works with local and state agencies to address water quality issues and protect its sources from contamination.

Monitoring Your Water

We routinely monitor for contaminants in your drinking water according to federal and state laws. The tables on the following pages show the results of monitoring for the period of January 1 to December 31, 2016. The State allows us to monitor for some contaminants less than once per year because the concentrations of these contaminants do not change frequently. Some of the data is from prior years in accordance with the Safe Drinking Water Act. The dates have been noted on the sampling results table.

On the following pages there are three (3) different sets of water quality tables:

- On pages 4 and 5 you will find Detected Contaminants for the water supplied by the NAWC groundwater wells and the water within the NAWC distribution system.
- On pages 6 to 7 you will find Detected Contaminants tables representative of water purchased from the Pennsylvania American Water Company's Yardley System.
- On page 8 you will find Detected Contaminants tables representative of water purchased from Bucks County Water & Sewer Authority.

As is shown in the following Detected Contaminants tables, our water system had no water quality violations in 2016.

Definitions

The following definitions will help you understand the key terms and abbreviations contained in the following Detected Contaminants table:

- *Action Level (AL)* – The concentration of a contaminant which, if exceeded, triggers treatment or other requirements which a water system must follow.
- *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 the 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 health risk. MRDLGs do not reflect the benefits of the use of disinfectants to control microbial contamination.
- *Minimum Residual Disinfectant Level (MinRDL)* – The minimum level of residual disinfectant required at the entry point to the distribution system.
- *Not Applicable (N/A)* – Does not apply.
- *Nephelometric Turbidity Unit (NTU)* – Measure of the clarity of water. Turbidity in excess of 5 NTU is just noticeable to the average person.
- *Non-Detects (ND)* – Laboratory analysis indicates that the constituent is not present.
- *Parts Per Million (ppm) or Milligrams per Liter (mg/L)* – One part per million corresponds to one minute in two years or a single penny in \$10,000 (1 ppm = 1,000 ppb).
- *Parts Per Billion (ppb) or Micrograms Per Liter ($\mu\text{g/L}$)* – One part per billion corresponds to one minute in 2,000 years, or a single penny in \$10,000,000 (1,000 ppb = 1 ppm).
- *Pico Curies Per Liter (pCi/L)* – A measure of radioactivity.
- *Treatment Technique (TT)* – A required process intended to reduce the level of a contaminant in drinking water.

Detected Contaminants
Newtown Artesian Water Company (NAWC) – Well Supplies

| Microbial Contaminants | MCL | MCLG | Highest Result or % of Positive Samples | Range of Detections | Violation | Sources of Contamination |
|-------------------------|---------------------------|----------------------------|---|---------------------|-----------|--------------------------------------|
| Total Coliform Bacteria | 1 positive monthly sample | 0 positive monthly samples | 1 positive monthly sample | ND – 1 | No | Naturally present in the environment |

| Inorganic Chemicals (IOCs) | Highest Result | Range of Detections | MCL in CCR units | MCLG | Violation | Sources of Contamination |
|--------------------------------------|----------------|---------------------|------------------|------|-----------|--|
| Arsenic (ppb) (2012 & 2015 Data) | 0.58 | ND – 0.58 | 10 | 0 | No | Erosion of natural deposits; Runoff from orchards; Runoff from glass and electronic production wastes |
| Barium (ppm) (2012 & 2015 Data) | 0.35 | 0.10 – 0.35 | 2 | 2 | No | Discharge of drilling wastes; Discharge from metal refineries; Erosion of natural deposits |
| Cadmium (ppb) (2012 & 2015 Data) | 0.04 | ND – 0.04 | 5 | 5 | No | Corrosion of galvanized pipes; Erosion of natural deposits; Discharge from metal refineries; Runoff from waste batteries and paints. |
| Chromium (ppb) (2012 & 2015 Data) | 2.6 | ND – 2.6 | 100 | 100 | No | Discharge from steel and pulp mills; Erosion of natural deposits. |
| Fluoride (ppm) (2012 & 2015 Data) | 0.412 | ND – 0.412 | 2 | 2 | No | Erosion of natural deposits; Water additive which promotes strong teeth; Discharge from fertilizer and aluminum factories. |
| Nickel (ppb) (2012 & 2015 Data) | 3.5 | ND – 3.5 | 100 | 100 | No | Erosion of natural deposits. |
| Nitrate (ppm) | 3.72 | 1.82 – 3.72 | 10 | 10 | No | Runoff from fertilizer use; Leaching from septic tanks, sewage; Erosion of natural deposits. |
| Selenium (ppb) (2012 & 2015 Data) | 0.79 | ND – 0.79 | 50 | 50 | No | Discharge from petroleum and metal refineries; Erosion of natural deposits; Discharge from mines. |

| Entry Point Disinfectant Residual – Chlorine ⁽¹⁾ | Lowest Result | Range of Detections | MinRDL | MRDLG | Violation | Sources of Contamination |
|---|---------------|---------------------|--------|-------|-----------|--|
| NAWC Wells (ppm) | 0.53 | 0.53 – 2.71 | 0.4 | N/A | No | Water additive used to control microbes. |

| Lead and Copper | 90th Percentile | No. of Sites above AL | Action Level | MCLG | Violation | Sources of Contamination |
|------------------------|-----------------------------------|------------------------------|---------------------|-------------|------------------|---|
| Lead (ppb) | ND | 1 | 15 | 0 | No | Corrosion of household plumbing systems; Erosion of natural deposits. |
| Copper (ppm) | 0.226 | 0 | 1.3 | 1.3 | No | Corrosion of household plumbing systems; Erosion of natural deposits; Leaching from wood preservatives. |

| Disinfectants / Disinfection Byproducts (NAWC) | Highest Result | Range of Detections | MCL or MRDL | MCLG or MRDLG | Violation | Sources of Contamination |
|---|-----------------------|----------------------------|--------------------|----------------------|------------------|---|
| Distribution Chlorine Residual (ppm) | 1.34 ⁽²⁾ | 0.79 – 1.34 ⁽²⁾ | 4 | 4 | No | Water additive used to control microbes. |
| Haloacetic Acids (ppb) | 7.72 ⁽³⁾ | ND – 10.6 ⁽⁴⁾ | 60 | N/A | No | Byproduct of drinking water disinfection. |
| Total Trihalomethanes (ppb) | 30.24 ⁽³⁾ | 8.87 – 60.0 ⁽⁴⁾ | 80 | N/A | No | Byproduct of drinking water disinfection. |

| Radionuclides | Highest Result | Range of Detections | MCL | MCLG | Violation | Sources of Contamination |
|---|-----------------------|----------------------------|------------|-------------|------------------|---------------------------------|
| Combined Uranium (ppb) (2015 Data) | 8.88 | N/A | 30 | 0 | No | Erosion of natural deposits. |
| Combined Radium 226 & 228 (pCi/L) (2014 Data) | 1.98 | ND – 1.98 | 5 | 0 | No | Erosion of natural deposits. |

- (1) Results presented in the table are for free chlorine from NAWC.
- (2) Monthly average values.
- (3) Highest Running Annual Average (RAA).
- (4) Range represents sampling at individual sample points.

Detected Contaminants Pennsylvania American Water Company – Yardley System

Water Quality Statement

We are pleased to report that during the past year, the water delivered to your home or business complied with all state and federal drinking water requirements. For your information, we have compiled a list in the table below showing what substances were detected in your drinking water during 2016. The Pennsylvania DEP allows us to monitor for some contaminants less than once per year because the concentration of the contaminants does not change frequently. Some of our data, though representative, are more than one year old. Although all of the substances listed below are under the Maximum Contaminant Levels (MCL) set by U.S. Environmental Protection Agency and the Pennsylvania DEP, we feel it is important that you know exactly what was detected and how much of each substance was present in the water.

Turbidity – A Measure of the Clarity of the Water at the Treatment Facility

| Plant | Substance (units) | Year Sampled | MCL | MCLG | Highest Single Measurement | Compliance Achieved | Typical Source |
|---------|------------------------------|--------------|-----|------|----------------------------|---------------------|----------------|
| Yardley | Turbidity (NTU) ¹ | 2016 | TT | NA | 0.40 | Yes | Soil runoff |

¹All turbidity readings were below the treatment technique (TT) requirement of 0.3 NTU in 95% of all samples taken for compliance on a monthly basis. Treatment technique requirement was met.

Total Organic Carbon Removal - Measured at the Yardley Water Treatment Facility

| Substance (units) | Year Sampled | TT | Range of Percent Removal Required | Range of Percent Removal Achieved | Compliance Achieved | Typical Source |
|---|--------------|-------------------------------|-----------------------------------|-----------------------------------|---------------------|----------------------------------|
| Total Organic Carbon (TOC) (% removal) ² | 2016 | Meet EPA Removal Requirements | 35 | 19 - 47 | Yes | Naturally decaying of vegetation |

² Adequate removal of TOC may be necessary to control the unwanted formation of chlorinated by-products. Naturally occurring organic matter present in the source water can react with the disinfectants used at the treatment facility to form these by-products.

Entry Point Disinfection Residual - Measured on Water Leaving the Yardley Treatment Facilities

| Location | Substance (units) | Year Sampled | Minimum Disinfectant Residual Level Required | Lowest Level Detected | Range Low - High | Compliance Achieved | Typical Source |
|----------------|----------------------|--------------|--|-----------------------|------------------|---------------------|---|
| Yardley Plant | Total Chlorine (ppm) | 2016 | 0.2 | 0.4 | 0.4 – 3.2 | Yes | Water additive used to control microbes |
| Highland Drive | Total Chlorine (ppm) | 2016 | 0.4 | 0.6 | 0.6 – 4 | Yes | Water additive used to control microbes |
| College Avenue | Total Chlorine (ppm) | 2016 | 0.4 | 0.6 | 0.6 – 2.5 | Yes | Water additive used to control microbes |

Regulated Substances - Measured on Water Leaving the Yardley Treatment Facilities

| Substance (units) | Year Sampled | MCL | MCLG | Amount Detected | Range Low - High | Compliance Achieved | Typical Source |
|------------------------|--------------|-----|------|-----------------|------------------|---------------------|---|
| Barium (ppm) | 2015 | 2 | 2 | 0.3 | ND – 0.5 | Yes | Discharge of drilling wastes; discharge from metal refineries; Erosion of natural deposits |
| Nitrate (ppm) | 2016 | 10 | 10 | 2.1 | 0.97 – 2.95 | Yes | Runoff from fertilizer use; Leaching from septic tanks, Sewage plant discharge; Erosion of natural deposits |
| Total Chromium (ppb) | 2015 | 100 | 100 | 0.3 | ND – 0.5 | Yes | Discharge from steel and pulp mills; erosion of natural deposits |
| Uranium (ppb) | 2011 | 30 | 0 | 1.6 | ND – 2.7 | Yes | Erosion of natural deposits |
| Alpha Emitters (pCi/L) | 2011 | 15 | 0 | 2.3 | 2.3 – 2.4 | Yes | Erosion of natural deposits |

Unregulated Substances – Measured on Water Leaving the Treatment Facility and in the Distribution System

| Substance (units) | Year Sampled | MCL / MCLG | Sample Location | Average Amount Detected | Range Low - High | Use or Environmental Source |
|---|--------------|---------------|---------------------|-------------------------|------------------|---|
| Chlorate (ppb) | 2015 | Not Regulated | Treatment Facility | 111 | ND - 380 | Agricultural defoliant or desiccant; disinfection byproduct; and used in production of chlorine dioxide |
| | | | Distribution System | 46 | ND - 97 | |
| Chromium 6 or Hexavalent Chromium (ppb) | 2015 | Not Regulated | Treatment Facility | 0.09 | 0.07 - 0.11 | Naturally-occurring element; used in making steel and other alloys; chromium-3 or -6 forms are used for chrome plating, dyes and pigments, leather tanning, and wood preservation |
| | | | Distribution System | 0.09 | 0.07 – 0.10 | |
| Strontium (ppb) | 2015 | Not Regulated | Treatment Facility | 300 | 58 - 717 | Naturally-occurring element; historically, commercial use of strontium has been in the faceplate glass of cathode-ray tube televisions to block x-ray emissions |
| | | | Distribution System | 112 | 69 - 197 | |
| Vanadium (ppb) | 2015 | Not Regulated | Treatment Facility | 0.6 | ND – 1.1 | Naturally-occurring elemental metal; used as vanadium pentoxide which is a chemical intermediate and a catalyst |
| | | | Distribution System | 0.2 | ND – 0.3 | |
| Molybdenum (ppb) | 2015 | Not Regulated | Treatment Facility | 2.8 | ND – 8.1 | Naturally-occurring element found in ores and present in plants, animals and bacteria; commonly used form molybdenum trioxide used as a chemical reagent |

Detected Contaminants Bucks County Water & Sewer Authority

Water Quality Data

The presence of contaminants in the water does not necessarily indicate that the water poses a health risk. Unless otherwise noted, the data presented is from testing done January 1 – December 31, 2016. The state requires us to monitor for certain contaminants less than once per year because the concentrations of these contaminants do not change frequently.

| Contaminants | MCLG or MRDLG | MCL, TT, or MRDL | Your Water | Range | | Sample Date | Violation | Typical Source |
|------------------------------|---------------|------------------|------------|-------|--------|-------------|-----------|---|
| | | | | Low | High | | | |
| Chemical Contaminants | | | | | | | | |
| Chlorine (ppm) | 4 | 4 | 0.87 | 0.33 | 0.87 | 2016 | No | Water additive used to control microbes |
| Barium (ppm) | 2 | 2 | 0.20 | ND | 0.20 | 2016 | No | Discharge of drilling wastes; discharge from metal refineries; erosion of natural deposits |
| Nitrate (ppm) | 10 | 10 | 0.497 | 0.259 | 0.760 | 2016 | No | Runoff from fertilizer use; leaching from septic tanks, sewage; erosion of natural deposits |
| Bromate (ppb) | 0 | 10 | 2.9 | 1.8 | 3.8 | 2016 | No | By-product of drinking water disinfection |
| Chromium (ppb) | 100 | 100 | 1.5 | ND | 1.5 | 2016 | No | Discharge from steel and pulp mills; erosion of natural deposits |
| Fluoride (ppm) | 2 | 2 | 0.68 | ND | 1.06 | 2016 | No | By-product of drinking water disinfection |
| Gross Alpha (pCi/L) | 0 | 15 | 3.35 | ND | 3.35 | 2014 | No | Erosion of natural deposits |
| Combined Radium (pCi/L) | 0 | 5 | 0.7427 | ND | 0.7427 | 2014 & 2015 | No | Erosion of natural deposits |

| Contaminant | MCLG | MCL | Level Detected | Sample Date | Violation | Typical Source |
|------------------|------|---|----------------|-------------|-----------|----------------|
| Turbidity | | | | | | |
| Turbidity (NTU) | 0 | TT = 1 NTU for a single measurement | 0.16 | 2016 | No | Soil runoff |
| | | TT = at least 95% of monthly samples \leq 0.3 NTU | 96.8% | | No | |

Additional Information

The monitoring results, presented in the Detected Contaminants tables, indicate that certain constituents including lead, copper and nitrate have been detected. The following paragraphs provide additional educational information on these contaminants.

NAWC met all requirements under the SDWA Lead and Copper Rule. We sampled water at thirty-two homes in June through September 2016. Regulations state that ninety (90) percent of samples taken must be below the Action Levels of 15 ppb for lead and 1.3 ppm for copper. In our water, the 90th percentile level for lead was not detectable, and the 90th percentile level for copper was 0.226 ppm. There was one sample taken that exceeded the Action Level for lead. There were no samples taken that exceeded the Action Level for copper.

If present, elevated levels of lead can cause serious health problems, especially for pregnant women and young children. Lead in drinking water is primarily leached from materials and components associated with service lines and home plumbing. NAWC 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>.

Nitrate in drinking water at levels above 10 ppm is a health risk for infants of less than six months of age. High nitrate levels in drinking water can cause blue baby syndrome. Nitrate levels may rise quickly for short periods of time because of rainfall or agricultural activity. If you are caring for an infant, you should ask advice from your health care provider.

Radon

NAWC has tested for radon at its groundwater supplies and found elevated levels of this constituent. Radon is a radioactive gas that you cannot see, taste, or smell. It is found throughout the U.S. and occurs naturally in most groundwater. Radon can move up through the ground and into a home through cracks and holes in the foundation, and can build up to high levels in all types of homes. Radon can be released from water into the air through showering, bathing, washing dishes, or washing clothes. Radon gas released from tap water is a very small part of the total radon in the air. The inhalation or breathing of radon gas has been linked to lung cancer, although it is unclear how radon in your drinking water contributes to this health effect. If you are concerned about radon in your home, tests are available to determine the total exposure level. For additional information, contact EPA's Radon Hotline at (800) SOS-RADON. EPA does not currently regulate radon in drinking water under the SDWA. However, when an MCL is set for radon, NAWC will take appropriate action to comply with the Radon Rule at their groundwater supplies and comply with Safe Drinking Water Regulations.

Vulnerability

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 Safe Drinking Water Hotline at (800) 426-4791 or on-line at www.epa.gov/safewater.

Conclusions

The drinking water we provide to our customers meets and is in compliance with Federal and State requirements. Although certain water quality parameters have been detected, the EPA and DEP have determined that the water is safe. NAWC works around the clock to provide high quality water to all our customers. Please contact us if you have any questions about this report or the public water supply service we provide to you.

Contact Information

We trust this report will help you understand the NAWC water system, the regular monitoring performed to insure your drinking water is safe, the 2016 water quality results, and related information. If you have any questions about the report, or NAWC and the service you receive, please contact us at our office. Please visit our website at www.newtownwater.com for information about NAWC rates and rules, and for direct electronic access of this report visit <http://www.newtownwater.com/ESW/ccreport.pdf>.

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