

# CITY OF NORTHAMPTON DEPARTMENT OF PUBLIC WORKS WATER DIVISION

**141 YEARS of SERVICE**

**1871 – 2012**

## Department Statistics

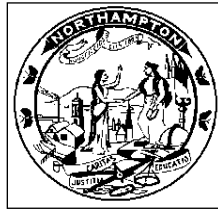
- Incorporated 1871
- 17 Full Time Employees
- 29,500 +/- Customers
- 168 Miles of Pipe
- 1800 +/- Fire Hydrants
- 1500+ Valves
- 3 Active Reservoirs
- 6.5 MGD Water Filtration Plant
- 2 Active Wells
- 1 Backup Reservoir
- 3000 +/- Acres of Watershed Land



The Northampton DPW Water Division's Mission is to provide sufficient amounts of safe, clean, and potable water for drinking and fire protection, while complying with all statutory regulations set by the Environmental Protection Agency and the Massachusetts Department of Environmental Protection.



Old Wilson Rd - New Water Main 2011



## City of Northampton Dept. of Public Works Water Quality Report

**For 2011**

### **MASS DEP PWS ID #1214000**

This annual report provides information on the quality of water delivered by the City of Northampton's Department of Public Works (DPW) - Water Division. The report describes where your water comes from, what it contains, and how it compares to state Department of Environmental Protection (DEP) and Federal Environmental Protection Agency (EPA) standards.

Our system is routinely inspected by DEP for its technical, financial and managerial capacity to provide safe drinking water to you. To ensure that we provide the highest quality of water available, our water system is operated by Massachusetts Certified Operators. David Sparks, Water Superintendent and Greg Nuttelman, Chief Water Treatment Operator oversee the operation of our system.

Additionally, the water quality of our system is constantly monitored by the Water Division and DEP to ensure compliance with all regulatory requirements. Water quality data is also reviewed to determine if any additional treatment is required.

Please read this report carefully, and if you have any questions call David Sparks, Water Superintendent at (413) 587-1098 or email questions to him at [DSparks@nohodpw.org](mailto:DSparks@nohodpw.org).

## **HOW MUCH WATER DID NORTHAMPTON USE IN 2011?**

In 2011, The City of Northampton supplied 1.034 billion gallons of water to its customers. On average the city supplied 2.84 million gallons of water each day. **The most water used in one day was 4.05 million gallons!** The design capacity of the water filtration plant is 6.5 million gallons a day, which is more than enough to meet the city's peak demand.

The DPW encourages water conservation. Please visit our website [www.northamptonma.gov/dpw/Water](http://www.northamptonma.gov/dpw/Water) for water conservation tips and for information on how to get a free residential water conservation kit!

## **WATER RESTRICTION POLICY**

In April 2010, the DPW adopted a water restriction policy in order to comply with new DEP requirements. DEP requires that water use be restricted when average daily stream flow in the Mill River drops below 26.3 cubic feet per second for a 3-day period or when the State issues a drought advisory. The Water Use Restriction can be lifted when the stream flow average meets or exceeds the minimum flow for 7 consecutive days. When a water use restriction is in place there will be a ban on non-essential outdoor watering. The Water Department will notify the public when a water restriction is in place and will also provide specifics about the water restriction.

## **WHO MAKES DECISIONS ABOUT OUR DRINKING WATER?**

When it was created in 1871, the Water Department was run by Water Commissioners. However, in 1961, the Board of Public Works (BPW) assumed all duties previously held by the Water Commissioners. Today, day-to-day activities are overseen by the Director of Public Works, Edward S. Huntley, P.E.; the City Engineer James R. Laurila, P.E.; the Water Superintendent David W. Sparks, and the Chief Water Treatment Operator, Greg Nuttelman.

Water quality, setting water rates, creating budgets and approving new land acquisitions for water supply protection is done by the Board of Public Works. If you would like to participate in discussions regarding these or other subjects the Board meets regularly on the 2<sup>nd</sup> and 4<sup>th</sup> Wednesdays of each month. The meetings start at 5:30 PM and are held at the main DPW offices, located at 125 Locust Street.

## **WHERE DOES NORTHAMPTON'S DRINKING WATER COME FROM? HOW IS IT TREATED?**

In 2011, approximately 99% of Northampton's drinking water came from three surface water reservoirs: the Francis P. Ryan, and the West Whately Reservoirs, located in West Whately, and the Mountain Street Reservoir located in Williamsburg and Hatfield. The remaining 1% came from our two groundwater wells in Florence.

To meet water quality standards for surface water supplies we treat water from the reservoirs at the Water Filtration Plant. Sediment, small particles and organisms such as algae and bacteria can cause taste and odor issues and may make it unhealthy to drink. To remove this material it is necessary to chemically treat the water and then pass it through two types of filtering units – an adsorption clarifier and a granular activated carbon filter.

When raw water from the reservoirs enters the Water Filtration Plant a flocculent (Aluminum Sulfate) is added. Flocculent is a chemical that grabs onto smaller particles that are found in the water. The water then goes through a clarifier where approximately 60% of the organic particles are removed. It is then filtered by granular activated carbon which removes the remaining particles. Once filtered, sodium hypochlorite, a disinfectant, is added prior to entering a 4 million gallon storage tank. As the water leaves the 4 million gallon storage tank, sodium carbonate is added for pH adjustment and corrosion control. At the Corrosion Control Facility in Leeds, zinc orthophosphate, which is referred to as a corrosion inhibitor, is added to the water. It forms a protective coating inside the water distribution pipes. Testing conducted throughout the water system in 2009, has shown that this treatment is effective at reducing lead and copper concentrations in drinking water.

All of the chemicals used by the DPW are approved by the one of the following organizations: National Sanitation Foundation, or Underwriters Laboratory (UL), both accredited by the American National Standards Institute (ANSI). These chemical also have to meet performance standards established by the American Water Works Association (AWWA).

## **HOW IS OUR DRINKING WATER PROTECTED?**

In 2003, the DEP completed a Source Water Assessment Program (SWAP) report. The SWAP Report assessed the potential for contamination of our water supplies. Northampton was ranked as having a moderate – low risk to our water supplies. The report reviewed both watershed lands and aquifer protection zones. It identified the largest threats to our water supply as residential fuel storage and some commercial uses.

If you are interested in the details of SWAP Report, more specific information can be obtained from the MASS DEP in Springfield or online at:

<http://www.mass.gov/dep/water/drinking/swapreps.htm>

## **WHAT'S IN THE WATER WE DRINK?**

Sources of drinking water (both tap 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 materials and in some cases, radioactive material. Water can also pick up substances resulting from the presence of animals or from human activity.

To ensure that tap water is safe to drink, the DEP and the EPA prescribe regulations that limit the amount of certain contaminants in water provided by public water systems. Regulations set by the Food & Drug Administration (FDA) and the Massachusetts Dept. Of Public Health (DPH) establish limits for contaminants in bottled water that 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:

**Safe Drinking Water Hotline  
At 1-800-426-4791**

Some people may be more vulnerable to contaminants in drinking water than the general population. Immuno-compromised persons such as persons with cancer undergoing chemo-therapy, 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 persons should seek advice about their drinking water from their healthcare providers.

EPA/Center for Disease Control (CDC) guidelines on appropriate means to lessen the risk of infection by cryptosporidium and other microbial contaminants are also available from the Safe Drinking Water Hotline listed above or at:

<http://www.epa.gov/safewater>



**Mountain St Reservoir Gate House**

## **STORMWATER**

Northampton has many pipes and drains that move stormwater off streets, parking lots and sidewalks that are separate from the sewage and drinking water pipe systems. This collected runoff from developed areas is discharged into the City's rivers, brooks, ponds, and wetlands. Stormwater runoff may collect oil, gas, pesticides, pet waste, salt and other contaminants that may be present in developed areas. The City's stormwater drainage system does not clean or treat stormwater before it is discharged to the environment.

Keeping stormwater as clean as possible is essential to protecting the environment and soon tougher federal regulations will require costly measures to improve and maintain good water quality. If everyone does a little to prevent stormwater pollution it will help keep Northampton's rivers, ponds, brooks and wetlands from becoming polluted. For more information about stormwater and what you can do to help, contact Doug McDonald at the DPW at 587-1582 or email [dmcdonald@nohodpw.org](mailto:dmcdonald@nohodpw.org).

## **CONTAMINANTS THAT MAY BE PRESENT IN DRINKING WATER SOURCES INCLUDE:**

**Microbial Contaminants** - Viruses and bacteria which may come from sewage treatment plants, septic systems, agricultural livestock operations and wildlife.

**Inorganic Contaminants** - Salts and metals can be naturally occurring or result from storm water runoff, industrial or domestic wastewater discharges, oil and gas production, as well as mining and farming.

**Pesticides and Herbicides** - may come from a variety of sources such as, agriculture, urban storm water runoff, and residential uses.

**Organic Chemical Contaminants** - Synthetic and volatile organic chemicals which are by-products of industrial processes and petroleum production, and can also come from gas stations, urban storm water runoff, and septic systems.

**Radioactive Contaminants** - can be naturally occurring or can be the result of oil and gas production and mining activities.

**2011 WATER TESTING INFORMATION**

**INORGANIC SUBSTANCES**

Regulated Contaminant	Dates Collected	Highest Result or Highest Running Average Detected	Range Detected	MCL or MRLD	MCLG or MRDLG	Violation? Y/N	Possible Sources of Contamination
Nitrates (ppm)	11/19/2011	2.07	0.019-2.07	10	10	NO	Runoff from fertilizer use; leaching from septic tank, sewage; erosion of natural deposits (Well #1)
Barium (ppm)	8/4/2011	0.302	0.037-.302	2	2	NO	Discharge or drilling wastes; Discharge from metal refineries; Erosion of natural deposits

**LEAD AND COPPER TESTING**

Substance (Units)	Date Collected	90 <sup>th</sup> percentile	AL	MCLG	# of sites sampled	# of sites above AL	Violation?	Major Sources
Lead (ppb)	Jul/Aug 2009	1.3	15	0	30	0	NO	Corrosion of household plumbing system; erosion of natural deposits
Copper (ppm)	Jul/Aug 2009	0.181	1.3	1.3	30	0	NO	Corrosion of household plumbing system; erosion of natural deposits, leaching from wood preservatives.

**FECAL INDICATORS**

Contaminant	Date Collected	Result or Range Detected	Average Detected	MCL	MCLG	Major Sources
Enterococci (Well#2) (MPN/100mL)	12/23/2011	1.0	n/a	TT	N/A	Human and Animal Fecal Waste

**ORGANIC CONTAMINANTS**

Contaminant	Date Collected	Result or Range Detected	Average Detected	SMCL	ORSG	Possible Source
MTBE – Methyl Tertiary Butyl Ether (ppb)	8/4/2011	Below Reporting Limit (BRL)	n/a	40	70	Fuel additive; leaks and spills from gasoline storage tanks

**DISINFECTION BY-PRODUCTS**

Regulated Contaminant	Date(s) Collected	Highest Result or Highest Running Average Detected	Range Detected	MCL or MCLG	MCLG or MRDLG	Violation?	Possible Source(s) of Contamination
Total Trihalomethanes (TTHMs) (ppb)	Quarterly	33.7	17.8 – 33.7	80	-----	NO	By-product of drinking water disinfection
Haloacetic Acids (HAA5's) (ppb)	Quarterly	11.45	BRL – 11.45	60	-----	NO	By-product of drinking water disinfection
Chlorine (ppm) (free, total or combined)	Monthly	1.42	0.03 - 1.42	4	4	NO	Water additive used to control microbes

**STAGE 2 DISINFECTANTS AND DISINFECTION BYPRODUCTS RULE - INDIVIDUAL DISTRIBUTION SYSTEM EVALUATION (IDSE)**

Contaminant	Date(s) Collected	Highest Running Annual Average	Range of Detects	MCL	MCLG	Violation	Possible Source(s) of Contamination
Total Trihalomethane (TTHMs) (ppb)	2008	30.52	0.73 - 57.5	80	N/A	NO	By-products of drinking water disinfection
Haloacetic Acid (HAA5's) (ppb)	2008	5.77	0.0 - 11.58	60	N/A	NO	

**TREATMENT TECHNIQUES**

Turbidity	TT	Lowest Monthly % of Samples	Highest Detected Daily Value	Violation?	Possible Source of Contamination
Monthly Turbidity (95%) NTU Limit	0.3	100% Compliance	0.363	NO	Soil Runoff
Max. Day Turbidity NTU Limit	1.0	100% Compliance	0.363	NO	

\* Monthly turbidity compliance is related to a specific treatment technique (TT). Our system filters the water so at least 95% of our samples each month must be below the turbidity limits specified in the regulations.

**UNREGULATED & SECONDARY CONTAMINANTS**

Inorganic Contaminants	Date Collected	Result or Range Detected	Average Detected	SMCL	ORSG	Possible Source
Sodium (ppm)	11/9/2011	4.90 – 14.0	N/A	-----	20	Natural sources; runoff from use as salt on roadways; by-product of treatment process

## 2011 WATER TESTING INFORMATION

The DPW is committed to supplying water that complies with DEP and EPA standards. All data shown was collected during calendar year 2011 unless otherwise noted in the table. Unregulated contaminants shown are those for which EPA has not established a drinking water standard. The purpose of unregulated contaminant monitoring is to assist EPA in determining concentrations and whether regulation is warranted. We are proud to report that last year your drinking water met all applicable health standards regulated by DEP and EPA.

### TABLE ABBREVIATIONS AND DEFINITIONS:

**Action Level (AL)** – The concentration of a contaminant that, if exceeded, triggers treatment or other requirements that a water system must follow.

**BRL** – Below Reporting Limit

**Detected Level** – This column represents an average of sample results collected during 2011. If only one sample was collected, there will not be a range listed in the adjacent column.

**Maximum Contaminant Level (MCL)** – The highest level of a contaminant that is allowed in drinking water. MCLs are set as close to the MCLGS (see below) as feasible using the best available treatment technology.

**Massachusetts office of Research and Standards Guideline (ORSG)** – This is the concentration of a chemical in drinking water, at or below which, adverse health effects are unlikely to occur after chronic (lifetime) exposure. If exceeded, it serves as an indicator of the potential need for further action.

**Maximum Residual Disinfectant Level (MRDL)** – The highest level of a disinfectant (chlorine, chloramines, chlorine dioxide) 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 (chlorine, chloramines, chlorine dioxide) below which there is no known expected risk to health. MRDLGs do not reflect the benefits of the use of disinfectants to control microbial contaminants.

**Maximum Contamination 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.

**MGD** – Million gallons per day

**N/A** – Not Applicable

**N/D** – Non-detectable with type of testing conducted.

**NTU** – Nephelometric turbidity units.

**90<sup>th</sup> Percentile** – Out of every 10 homes tested for lead and copper levels, 9 were at or below this level. We collected 60 samples therefore the 90<sup>th</sup> percentile would be the 54<sup>th</sup> highest sample (60 x 0.9 = 54).

**ppb** – Parts per billion or micrograms per liter (ug/l)

**ppm** – Parts per million, or milligrams per liter (mg/L)

**ppt** – Parts per trillion or nanograms per liter

**Secondary Maximum Contaminant Level (SMCL)** – These standards are developed to protect aesthetic qualities of drinking water and are not health based.

**Treatment Technique (TT)** – A required process intended to reduce the level of a contaminant in drinking water.

**Turbidity** – A measure of the cloudiness of the water. It is a good indicator of water quality. We measure turbidity in NTUs (Nephelometric Turbidity Units).

**\*\* Unregulated Contaminants** – Contaminants for which the EPA has not established drinking water standards. Some of these chemicals are unregulated, because there is little toxicity information available for these compounds. The purpose of monitoring unregulated contaminants is to assist EPA in determining their occurrence in drinking water and whether further regulations are warranted. For health risk information on these chemicals, please contact the DEP Office for Regional Standards (ORS) at: (617) 556-1157.

### COMPLIANCE WITH THE LEAD & COPPER RULE

Northampton treats the water to comply with lead and copper regulations. The treatment stabilizes pH and establishes a protective coating on the inside of water pipes. This treatment helps prevent lead and copper from entering your drinking water. During 2006 the DPW **remained in compliance** with the lead and copper rule, and the DEP reduced the monitoring requirements for lead and copper testing to once every three years because the water is not at risk for contamination. In 2009, lead and copper test results showed that Northampton remained in compliance and will not have to test again until 2012. 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. The Water Division is responsible for providing high quality drinking water, but cannot control the variety of materials used in plumbing components. When your water has been off 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 online at: <http://www.epa.gov/safewater/lead>

### WATERSHED PROTECTION

Maintaining a healthy, resilient forest is an important component of watershed management and water quality protection. To protect raw water quality, the DPW is working with a Massachusetts Licensed Forester to develop Forest Stewardship Plans for the 3,177 acres of forested city-owned property that surrounds the three reservoirs. These Plans will provide an inventory and assessment of forest stands, while providing a master plan intended to guide land management efforts.

DPW is pleased to have received cost share funding from the Department of Conservation and Recreation for preparation of these Stewardship Plans.

## FECAL INDICATORS IN DRINKING WATER

Fecal indicators are microbes whose presence indicates that the water may be contaminated with human or animal wastes. Microbes in these waters can cause short term health effects, such as diarrhea, cramps, nausea, headaches, or other symptoms. They may pose a special health risk for infants, young children, some of the elderly, and people with severely compromised immune systems.

On December 23, 2011, our water system was notified that a water sample collected on December 22, 2011 from Well #2 tested positive for enterococcus, which is a fecal indicator. While the Mountain Street Water Treatment Plant supplies the major portion of your drinking water, Well # 2 is one of two wells that also supply water to our system. When we were notified of the enterococcus-positive sample Well #2 was immediately taken off line. Chlorinated water samples taken from various locations throughout the distribution system were measured to contain an average of 0.06 parts per million (ppm) with a range of 0.05 ppm to 1.14 ppm. Water samples also collected on December 23, 2011 had a chlorine residual of 0.76 ppm at 17 Spring St., Florence, near the well. Only the untreated sample from Well #2 tested positive. Five confirmation samples were collected from Well #2 and analyzed on December 23, 2011. All five confirmation samples returned negative results, indicating no enterococcus contamination of Well #2.

### CROSS CONNECTION CONTAMINATION

A cross connection may occur whenever contaminated or non-potable water flows backwards into a drinking water supply line. This may cause a dangerous situation if the water line is connected to a piece of equipment that contains a harmful liquid, such as a boiler, an air conditioning system, or a fire sprinkler system, and the pressure in the water line drops (due to a fire, a water main break, etc). The drop in pressure can cause that harmful liquid to be drawn back into your drinking water supply. A cross contamination and back flow situation is not limited to commercial and industrial sites only, an outside hose connection can cause a dangerous condition at your home. If a hose is used to spray fertilizers, pesticides, or weed killers and the water pressure drops, the liquid you are spraying can be drawn back into the drinking water pipes.

To **prevent** a cross connection, **never submerge** hoses in buckets, pools, tubs or sinks and do not use spray attachments without a backflow prevention device installed on the faucet. These devices are inexpensive and are available at most hardware stores and home improvement centers. Just ask for a hose bib. One should be installed on all threaded faucets around your home, both inside and out, anywhere you may want to connect a hose. If you are the owner of an industrial, commercial, or institutional property, you **must** have your facility's plumbing surveyed for cross connections. This way you can help protect your employees and the public water supply from potential contamination.