

# 2016 Annual Drinking Water Quality Report

For

## Merrimac Water Department

Merrimac Massachusetts

MASSDEP PWSID # 318000

This report is a snapshot of drinking water quality that we provided last year. Included are details about where your water comes from, what it contains, and how it compares to state and federal standards. We are committed to providing you with information because informed customers are our best allies.

### I. PUBLIC WATER SYSTEM INFORMATION

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#### Water System Improvements

Our water system is routinely inspected by the Massachusetts Department of Environmental Protection (MassDEP). MassDEP inspects our system 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, your water system is operated by a Massachusetts certified operator who oversees the routine operations of our system. As part of our ongoing commitment to you, last year we made the following improvements to our system: Finalization of Booster Stations was completed, work to commence in January 2017

#### Opportunities for Public Participation.

If you would like to participate in discussions regarding your water quality, you may attend the following meetings or educational events: Public Power Week/ First week in October

### 2. YOUR DRINKING WATER SOURCE

#### Where Does My Drinking Water Come From?

Source Name	MassDEP Source ID#	Source Type	Location of Source
East Main St.	3180000-04G	Groundwater	Wallace Way
Bear Hill	3180000-02G	Groundwater	Sargent's Pit

#### Is My Water Treated?

- We add Potassium Hydroxide for PH adjustment.
- We add Potassium Permanganate to remove iron and manganese.
- We add Sodium Hydroxide for disinfection.
- We add orthophosphate for corrosion control.

Our water system makes every effort to provide you with safe and pure drinking water. To improve the quality of the water delivered to you, we treat it to remove several contaminants.

- We add a disinfectant to protect you against microbial contaminants.
- We chemically treat the water to reduce levels of iron and manganese.

The water quality of our system is constantly monitored by us and MassDEP to determine the effectiveness of existing water treatment and to determine if any additional treatment is required.

**How Are These Sources Protected?** Our water sources are protected by gate access to authorized personnel only. MassDEP has prepared a Source Water Assessment Program (SWAP) Report for the water supply source(s) serving this water system. The SWAP Report assesses the susceptibility of public water supplies.

**What is My System's Ranking?**

A susceptibility ranking of MODERATE was assigned to this system using the information collected during the assessment by MassDEP.

**Where Can I See The SWAP Report?**

The complete SWAP report is available at the water department, board of health, and online at <http://www.mass.gov/dep/water/drinking/sourcewa.htm#reports> . For more information, call, Merrimac Water Department (978-346-8407)

**3. SUBSTANCES FOUND IN TAP WATER**

Sources of drinking water (both tap water and bottled water) include rivers, lakes, streams, ponds, reservoirs, springs, and wells. As water travels over the surface of the land or through the ground, it dissolves naturally-occurring minerals, and in some cases, radioactive material, and can pick up substances resulting from the presence of animals or from human activity.

Contaminants that may be present in source water include:

**Microbial contaminants** -such as viruses and bacteria, which may come from sewage treatment plants, septic systems, agricultural livestock operations, and wildlife.

**Inorganic contaminants** -such as salts and metals, which can be naturally-occurring or result from urban stormwater runoff, industrial, or domestic wastewater discharges, oil and gas production, mining, and farming.

**Pesticides and herbicides** -which may come from a variety of sources such as agriculture, urban stormwater runoff, and residential uses.

**Organic chemical contaminants** -including synthetic and volatile organic chemicals, which are by-products of industrial processes and petroleum production, and can also come from gas stations, urban stormwater runoff, and septic systems.

**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, the Department of Environmental Protection (MassDEP) and U.S. Environmental Protection Agency (EPA) prescribe regulations that limit the amount of certain contaminants in water provided by public water systems. The Food and Drug Administration (FDA) and Massachusetts Department of Public Health (DPH) regulations establish limits for contaminants in bottled water that must provide the same protection for public health. All 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 EPA's 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 some 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 and Prevention (CDC) guidelines on lowering the risk of infection by cryptosporidium and other microbial contaminants are available from the Safe Drinking Water Hotline (800-426-4791).

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 Merrimac Water Dept. 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>.

## 4. IMPORTANT DEFINITIONS

**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 (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 or expected risk to health. MRDLG's do not reflect the benefits of the use of disinfectants to control microbial contaminants.

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

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

**90<sup>th</sup> Percentile** – Out of every 10 homes sampled, 9 were at or below this level.

ppm = parts per million, or milligrams per liter (mg/l)

ppb = parts per billion, or micrograms per liter (ug/l)

NTU = Nephelometric Turbidity Units

ND = Not Detected

N/A = Not Applicable

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

**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.

## 5. WATER QUALITY TESTING RESULTS

### What Does This Data Represent?

The water quality information presented in the table(s) is from the most recent round of testing done in accordance with the regulations. All data shown was collected during the last calendar year unless otherwise noted in the table(s).

	Highest # Positive In a month	MCL	MCLG	Violation (Y/N)	Possible Source(s) of Contamination
Total Coliform	None	1	0	N	Naturally present in the environment
Fecal Coliform or <i>E. coli</i>	None	*	0	N	Human and animal fecal waste

\* Compliance with the Fecal Coliform/*E. coli* MCL is determined upon additional repeat testing.

Turbidity	TT	Lowest Monthly % of Samples	Highest Detected Daily Value	Violation (Y/N)	Possible Source(s) of Contamination
Daily Compliance (NTU)	5	-----	.18	N	Soil runoff
Monthly Compliance*	At least 95%	100%	-----		

Turbidity is a measure of the cloudiness of the water. We monitor it because it is a good indicator of water quality.

\*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.

Regulated Contaminant	Date(s) Collected	Highest Result or Highest Running Average Detected	Range Detected	MCL or MRDL	MCLG or MRDLG	Violation (Y/N)	Possible Source(s) of Contamination
<b>Volatile Organic Contaminants</b>							
Benzene (ppb)	8/4/2016 8/17/2016	ND	ND	5	0	N	Discharge from factories; leaching from gas storage tanks and landfills

Regulated Contaminant	Date(s) Collected	Highest Result or Highest Running Average Detected	Range Detected	MCL or MRDL	MCLC or MRDLG	Violation (Y/N)	Possible Source(s) of Contamination
Carbon tetrachloride (ppb)	8/4/2016 8/17/2016	ND	ND	5	0	N	Discharge from chemical plants and other industrial activities
o-Dichlorobenzene (ppb)	8/4/2016 8/17/2016	ND	ND	600	600	N	Discharge from industrial chemical factories
p-Dichlorobenzene (ppb)	8/4/2016 8/17/2013	ND	ND	5	5	N	Discharge from industrial chemical factories
1,2-Dichloroethane (ppb)	8/4/2016 8/17/2016	ND	ND	5	0	N	Discharge from industrial chemical factories
1,1-Dichloroethylene (ppb)	8/4/2016 8/17/2017	ND	ND	7	7	N	Discharge from industrial chemical factories
cis-1,2-Dichloroethylene (ppb)	8/4/2016 8/17/2016	ND	ND	70	70	N	Breakdown product of trichloroethylene and tetrachloroethylene
trans-1,2-Dichloroethylene (ppb)	8/4/2016 8/17/2016	ND	ND	100	100	N	Discharge from industrial chemical factories
Dichloromethane (ppb)	8/4/2016 8/17/2016	ND	ND	5	0	N	Discharge from pharmaceutical and chemical factories
1,2-Dichloropropane (ppb)	8/4/2016 8/17/2016	ND	ND	5	0	N	Discharge from industrial chemical factories
Ethylbenzene (ppb)	8/4/2016 8/17/2016	ND	ND	700	700	N	Leaks and spills from gasoline and petroleum storage tanks
MTBE - Methyl Tertiary Butyl Ether (ppb)	8/4/2016 8/17/2016	ND	ND	ORSL 70	-	N	Fuel additive; leaks and spills from gasoline storage tanks
Styrene (ppb)	8/4/2016 8/17/2016	ND	ND	100	100	N	Discharge from rubber and plastic factories; leaching from landfills
Tetrachloroethylene (PCE) (ppb)	8/4/2016 8/17/2016	ND	ND	5	0	N	Discharge from factories and dry cleaners; residual of vinyl-lined water mains
1,2,4-Trichlorobenzene (ppb)	8/4/2016 8/17/2016	ND	ND	70	70	N	Discharge from textile-finishing factories
1,1,1-Trichloroethane (ppb)	8/4/2016 8/17/2016	ND	ND	200	200	N	Discharge from use in septic system cleaners
1,1,2-Trichloroethane (ppb)	8/4/2016 8/17/2016	ND	ND	5	3	N	Discharge from industrial chemical factories
Trichloroethylene (TCE) (ppb)	8/4/2016 8/17/2016	ND	ND	5	0	N	Discharge from metal degreasing sites and other factories

Regulated Contaminant	Date(s) Collected	Highest Result or Highest Running Average Detected	Range Detected	MCL or MRDL	MCL or MRDLG	Violation (Y/N)	Possible Source(s) of Contamination
Toluene (ppm)	8/4/2016 8/17/2016	ND	ND	1	1	N	Leaks and spills from gasoline and petroleum storage tanks; discharge from petroleum factories
Vinyl Chloride (ppb)	8/4/2016 8/17/2016	ND	ND	2	0	N	Leaching from PVC piping; discharge from plastics factories
Xylenes (ppm)	8/4/2016 8/17/2016	ND	ND	10	10	N	Leaks and spills from gasoline and petroleum storage tanks; discharge from petroleum factories; discharge from chemical factories
<b>Synthetic Organic Contaminants</b>							
2,4-D (ppb)	3/24/2016 8/4/2016	ND	ND	70	70	N	Runoff from herbicide used on row crops
2,4,5-TP (Silvex) (ppb)	3/24/2016 8/4/2016	ND	ND	50	50	N	Residue of banned herbicide
Alachlor (ppb)	3/24/2016 8/4/2016	ND	ND	2	0	N	Runoff from herbicide used on row crops
Atrazine (ppb)	3/24/2016 8/4/2016	ND	ND	3	3	N	Runoff from herbicide used on row crops
Benzo(a)pyrene (ppt)	3/24/2016 8/4/2016	ND	ND	200	0	N	Leaching from linings of water storage tanks and distribution lines
Carbofuran (ppb)	3/24/2016 8/4/2016	ND	ND	40	40	N	Leaching of soil fumigant used on rice and alfalfa
Chlordane (ppb)	3/24/2016 8/4/2016	ND	ND	2	0	N	Residue of banned termiticide
Dalapon (ppb)	3/24/2016 8/4/2016	ND	ND	200	200	N	Runoff from herbicide used on rights of way
Di (2-ethylhexyl) adipate (ppb)	3/24/2016 8/4/2016	ND	ND	400	400	N	Discharge from chemical factories
Di (2-ethylhexyl) phthalate (ppb)	3/24/2016 8/4/2013	ND	ND	6	0	N	Discharge from rubber and chemical factories
Heptachlor (ppt)	3/24/2016 8/4/2016	ND	ND	400	0	N	Residue of banned pesticide
Heptachlor epoxide (ppt)	3/24/2016 8/4/2016	ND	ND	200	0	N	Breakdown of heptachlor
Hexachlorobenzene (ppb)	3/24/2016 8/4/2016	ND	ND	1	0	N	Discharge from metal refineries and agricultural chemical factories

Regulated Contaminant	Date(s) Collected	Highest Result or Highest Running Average Detected	Range Detected	MCL or MCLL	MCLG or MRDLG	Violation (Y/N)	Possible Source(s) of Contamination
Hexachlorocyclopentadiene (ppb)	3/24/2016 8/4/2016	ND	ND	50	50	N	Discharge from chemical factories
Lindane (ppt)	3/24/2016 8/4/2016	ND	ND	200	200	N	Runoff/leaching from insecticide used on cattle, lumber, gardens
Methoxychlor (ppb)	3/24/2016 8/4/2016	ND	ND	40	40	N	Runoff/leaching from insecticide used on fruits, vegetables, alfalfa, livestock
Oxamyl (Vydate) (ppb)	3/24/2016 8/4/2016	ND	ND	200	200	N	Runoff/leaching from insecticide used on apples, potatoes and tomatoes
Pentachlorophenol (ppb)	3/24/2016 8/4/2016	ND	ND	1	0	N	Discharge from wood preserving factories
Picloram (ppb)	3/24/2016 8/4/2016	ND	ND	500	500	N	Herbicide runoff
Simazine (ppb)	3/24/2016 8/4/2016	ND	ND	4	4	N	Herbicide runoff

## 6. COMPLIANCE WITH DRINKING WATER REGS

### Does My Drinking Water Meet Current Health Standards?

We are committed to providing you with the best water quality available. We are proud to report that last year your drinking water met all applicable health standards regulated by the state and federal government.

### Health Effects Statements

Infants and children who drink water containing lead in excess of the action level could experience delays in their physical or mental development. Children could show slight deficits in attention span and learning abilities. Adults who drink this water over many years could develop kidney problems or high blood pressure.

## 7. EDUCATIONAL INFORMATION

### Do I Need To Be Concerned About Certain Contaminants Detected In My Water?

*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 Merrimac Water Dept. 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>.*