

Village of Hempstead Water Department WATER SYSTEM FACTS

Village Water System 2018 – Facts and Figures

The Hempstead water system includes 93.4 miles of water mains to serve an area of 3.8 square miles which gives water to nearly 54,000 full time residents. The total amount of water withdrawn from the aquifer in 2018 was 1,848,742,000 gallons, 88% of which was billed directly to consumers. The water not billed was used for water main flushing, fire fighting, service to Village buildings, and losses due to leaks. The average amount of water pumped into the distribution system was 5,065,047 gallons per day. The peak day flow was 6,887,000 gallons on July 11, 2018. This compares to peak days of as much as 10,000,000 gallons in earlier year.

Where does our Water Come From?

Our tap water comes from rainfall that percolates into the ground. The soil layers are mostly sand and clay which become saturated with this rain water and are called Aquifers. We access this groundwater by drilling wells into the aquifer and then pumping water out of the wells. Long Island has a “Sole Source Aquifer” meaning that there is no alternate supply for our drinking water.

How does our Water System Work?

The water system has a total of nine wells spread between two water plants. The water is pumped and treated at each plant and is then sent out into the water mains buried beneath the streets. There are over 93 miles of water mains that are all connected to the water plants and they range in size from 24-inch diameter down to 4-inch diameter. Each building has a “water service line” which is a smaller pipe, typically 1-inch in diameter, which is tapped into the water main in the street and connects to your water meter. There are also two elevated water tanks which help to regulate water pressure during high water use days and store 1.5 million gallons of water for firefighting.

Are there Contaminants in our Water?

As the water travels through the ground, it can pick up contaminants. Past industrial activities in Nassau County resulted in improper disposal of chemicals such as solvents and metal degreasers, which are volatile organic compounds (VOCs). Farm activities in some areas released fertilizers such as nitrates and sulfates, as well as pesticides and herbicides. The Village built sanitary sewers about 100 years ago to protect water quality from cesspools and wastes. Some contaminants such as iron are naturally occurring and leach from the soils into the groundwater. The Water Department collects samples for thousands parameters throughout the year in order to ensure that our tap water is safe to drink.

How is Our Water Treated?

Groundwater from the nine wells has low pH levels (is acidic) before treatment. All wells have sodium hydroxide (caustic soda) added to raise the pH which makes it less corrosive to metal water pipes. While the wells are all disinfected to be free of harmful bacteria, sodium hypochlorite (Chlorine bleach) is added to prevent bacteria from growing in the water mains. Water from seven wells is aerated to remove volatile organic compounds, increase pH and to oxidize iron; and a new aeration treatment system is being constructed for the last two wells. Two wells have a manganese greensand filter which removes iron and manganese from the well water. Sodium hexametaphosphate (Calgon) is added after other treatment in order to make the finished water less corrosive to pipes in your home. These treatment processes ensure that our water is clean and safe to drink.

Village of Hempstead Water Department

WATER SYSTEM FACTS - CONTINUED

Water System Improvements

The Laurel Avenue water plant was impacted by Freon 22 which is suspected to have come from an air conditioning system some distance north or north east of the plant site. A packed media aeration tower (Air Stripping Tower) is now being built to treat the two wells at the Laurel Avenue water plant. While the AST and other components have been ordered and are being fabricated off site this system will not be operational until late in the summer season. Until the AST is placed into operation the Water Department is running Well 7 into the storm drain system so that Well 9 can still be used for potable water supply. When both wells are run together all of the Freon 22 bearing water flows into Well 7 and Well 9 remains clean. When the AST is completed both wells 7 and 9 will be treated and water will no longer need to be pumped to the storm drain.

Emerging Contaminants

The Village has participated in the USEPA “Unregulated Contaminant Monitoring Rule” (UCMR) for many years. This program uses cutting edge and experimental laboratory technology to analyze for “Emerging Contaminants” that have not been detectable in the conventional laboratory samples. One emerging contaminant, 1,4 Dioxane, was detected in village wells in part per billion concentrations. 1,4 Dioxane was reportedly used as a stabilizer in solvents and metal degreasers, but also as a trace level ingredient in lotions, cosmetics and detergents. There is not yet a Maximum Contaminant Level (MCL) established by USEPA for 1,4 Dioxane but the New York State Department of Health is considering adopting its own MCL of 1.0 part per billion.

Removal of 1,4 Dioxane will require construction of an Advanced Oxidation Process (AOP) treatment system. The AOP will use hydrogen peroxide (H₂O₂) which will then be activated by ultraviolet light or ozone (O₃). The AOP treated water then will need to pass through Granular Activated Carbon (GAC) filter units before being pumped to the water mains.

Other Improvements

Beyond constructing new AOP treatment systems at the waterer plants, there are a number of significant improvements to the water system which are planned for construction during the next several years. Some projects that are already in planning include drilling new wells at Kennedy Park and possible on the edge of the High School property; construction of ground level water storage tanks and booster pumps; and on-going replacement of old water mains and valves.

Improvement Costs

Capital improvement projects have traditionally been paid for through issuing 30 year bonds and making those annual bond payments from metered water sale revenues. The Village has been awarded grants from New York State for several projects and has applied for several others. The grants do not cover all of the costs but every dollar reimbursed from a grant reduces the amount of bonds required by a dollar and reduces future water rates for all customers.

Grants Awarded:	Laurel Avenue AST Construction	\$1,540,571
	Construction of New Wells	\$1,101,894
Grants Applied for:	AOP Planning	\$50,000
	Clinton Street AOP Construction	\$3,000,000
	Laurel Avenue AOP Construction	\$3,000,000