



Additional Water Quality Issues

Suffolk County Department of Health Services

2017

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Introduction

The Suffolk County Comprehensive Water Resources Management Plan (Comp Plan) released in 2015 evaluated groundwater and surface water quality issues in Suffolk County. While the Comp Plan was broad in scope, specific contaminants were evaluated including nitrates, chlorinated solvents, methyl tertiary butyl ether (MTBE), pesticides, and possible emerging contaminants. Regional groundwater quantity needs and sea level rise were considered with an eye to the year 2030 for planning purposes. Surface water degradation and its correlation to coastal resiliency against storm damage, such as what was experienced during Superstorm Sandy in October 2012, were also discussed. The Comp Plan's first two sections covered the value of clean water globally and also outlined several possible policy and management initiatives for the County and others' consideration to finance, remedy, and protect these vital water resources. Sections 3 through 8 of the Comp Plan provided the then-current state of affairs and historical trends, where applicable, related to Suffolk County's groundwater quality/quantity, surface water, estuaries, coastal resiliency, and wastewater management. Section 9 provided a road map for plan implementation listing numerous recommendations and assigning responsible agencies in a framework for implementing prioritized goals guiding future resource management. Below is a discussion of some of the key takeaways and goals of Suffolk County's 2015 Comprehensive Water Resources Management Plan.

Groundwater and Drinking Water

Public water supply in Suffolk County is extremely undervalued. The Suffolk County Water Authority (SCWA), the largest water supply system in Suffolk County serving over 80% of the County's population, charged \$1.67 for 1,000 gallons of water at around the time the Comp Plan was written. At this price point, there is little incentive for consumers to conserve public water. Although Chapter 3 of the Comp Plan has estimates which indicate there is sufficient water in our groundwater aquifers to meet existing and projected demands, there are certain areas that are more sensitive to contamination including chlorides due to over-pumping and saltwater intrusion. As consumption increases, additional and expensive potable water supply infrastructure must be constructed which can include:

1. Property to be acquired at approximately \$100,000 to \$400,000 per acre,
2. New wells drilled at an estimated cost of \$300,000 to \$500,000 each,
3. New water treatment facilities with costs varying widely depending on the source water quality, costing \$500,000 to \$3 million each,
4. New bulk water storage tanks with an estimated cost of \$500,000 to \$3 million each, and/or
5. New and/or larger water mains at about \$150 to \$250 per foot including restoration.

One of the reasons drinking water in Suffolk County is so undervalued (inexpensive) is due to our high yield groundwater aquifers with generally very good groundwater quality. Suffolk County does contend with industrial, petroleum, defense industry, and agricultural water quality issues, but fortunately to a lesser extent than they could be, due in large part to source water protection efforts, regulatory permitting/inspections/enforcement, and effective planning. In 2015 approximately 24% of Suffolk's public water supply wells had treatment for volatile organic compounds or pesticides.

Monitoring, enforcement, and voluntary restriction of select products have helped to reduce contamination of Suffolk County's sole source aquifer. The County's bane remains a lack of sewerage as there is an estimated 74% of the population that continues to discharge sanitary waste and chemicals into on-site cesspools and conventional wastewater systems with little to no reduction of the contaminants poured down the drain or being flushed. The Comp Plan evaluated a select group of contaminants of concern for trends from 1987 through 2013 in the County's monitoring program. Nitrate levels in the County's shallowest Upper Glacial Aquifer increased by an average of 1 milligram per Liter (mg/L) in the same set of wells over the 26-year period and there was a similar increase of 0.76 mg/L in the same set of Magothy Aquifer wells, the next deepest aquifer. While the nitrate concentration in nearly

all public supply wells was below the drinking water standard of 10 mg/L, this is a disturbing trend. Increased nitrate concentrations in groundwater also can have an indirect impact on our surface water quality as groundwaters migrate through our aquifers and upflow into streams, rivers, and estuaries. Elevated nitrogen levels in surface waters can cause algal blooms which may be harmful themselves but also can reduce oxygen levels and result in fish kills.

Volatile organic compounds (VOCs) include industrial and commercial cleaners but they also include consumer products such as paint, household cleaning agents, deodorants, adhesives, and gasoline. The Comp Plan focused on three of the most commonly detected VOCs: the chlorinated solvents being tetrachloroethene (PCE), trichloroethene (TCE), and 1,1,1-trichloroethane (1,1,1-TCA) as well as a long-since banned but persistent gasoline additive, methyl tertiary butyl ether (MTBE). Water quality status and trends were evaluated for these contaminants between 1987 and 2013. Unfortunately, the total number of wells impacted by PCE doubled during this time frame (29 to 59) and the average concentrations in the Upper Glacial and Magothy Aquifers about doubled in a comparison of the same set of public supply wells. An evaluation of TCE showed similar results where the total number of impacted wells more than doubled (34 to 84). The average concentration of TCE in the same set of Upper Glacial and Magothy Aquifers nearly tripled in a same well comparison. On a positive note, chemical bans previously put in place for 1,1,1-TCA and MTBE appear to have been effective. Concentrations of 1,1,1-TCA have decreased in a same well comparison between 1987 and 2013 in the Upper Glacial Aquifer from 3.16 to 0.47 micrograms per Liter (ug/L) and the Magothy Aquifer from 0.57 to 0.47 ug/L. Similarly, MTBE saw a decrease in the number of public water supply wells with detections from 16% in 2005 to approximately 5% in 2013.

As one of the leading agricultural Counties in New York State based on sales, Suffolk County has rich agricultural roots. In the United States Department of Agriculture's 2012 Census, Suffolk County was listed as having 604 farms over a total of 35,975 acres (www.agcensus.usda.gov/Publications/2012/Full_Report/Volume_1,_Chapter_2_County_Level/New_York). An unfortunate byproduct of farming is the need to kill or control pests and nuisance vegetation using pesticides such as insecticides, herbicides, and fungicides. Many similar, or the same products, are used by homeowners and commercial businesses either to maintain lush, green, weed-free lawns or to control insects such as termites, ants, grubs, and ticks. Suffolk County Department of Health Services has implemented a widespread pesticide monitoring program to test for about 150 pesticides and their breakdown products to help inform the public, regulators, researchers, and farmers of detections and potential health impacts. Sampling efforts over the years from public and private drinking water wells and monitoring wells have identified more than 100 pesticide-related compounds. At least one pesticide compound was detected in about 20-25% of public community, non-community, or private water supply wells sampled between 1997 and 2012. Of the 10 most frequently detected pesticides in private well samples, only simazine, metalaxyl, imidacloprid, and atrazine were still registered for use on Long Island. Suffolk County continues to work with the New York State Department of Environmental Conservation (NYSDEC), Cornell Cooperative Extension, the United States Geological Survey (USGS) and others to monitor groundwater and surface water and advise policy makers on potential changes to be considered for pesticide regulations.

Several emerging contaminants were also discussed in Suffolk County's Comp Plan including a number of pharmaceutical and personal care products (PPCPs), 1,4-dioxane, chlorate, and hexavalent chromium. While the majority of these are not specifically regulated by the federal or state government, it is essential to develop occurrence data to support the development of regulation by one or both of these agencies. Suffolk County continues to monitor and identify suspected sources of many of these contaminants through groundwater investigation work. This places Suffolk County ahead on the learning curve prior to anticipated regulation of these compounds and benefits the Suffolk County residents, visitors, and environment by addressing contamination early on.

Section 3 and 4 of the Suffolk County Comp Plan discussed groundwater quantity in our aquifers. There is recognition of sanitary flow as a considerable source of water to the aquifers, albeit with the potential to contaminate said aquifers. This concept of indirect reuse of sanitary flows, although not highly publicized or savory, is a reality in the County's water cycle. The general public must be educated and understand that waste down the drain is likely to impact either a drinking water source (public or private supply well) or a surface water body on our island. In evaluating the alternative, Suffolk County also recognizes that discharging treated sanitary waste to surface waters will result in a net loss of groundwater to our aquifer. This may cause the elevation of groundwater to drop and can even result in streams drying up or the freshwater-saltwater interface to move inland closer to existing groundwater wells, potentially contaminating them with high chloride levels. The good news is that water balances confirmed that the Suffolk County aquifer system, on a county-wide basis, is sustainable for projected groundwater pumping and that average pumping was only about 15% of the recharge rate.

Surface Water, Estuaries, and Coastal Resiliency

Sections 5, 6, and 7 of the Comp Plan evaluate surface water quality, estuary programs, and the County's coastal resiliency. The NYSDEC has identified more than 200 freshwater streams and ponds and regulate over 1,050 freshwater wetlands covering nearly 24,000 acres in Suffolk County. Several of these water bodies are on New York State's list of impaired waters caused by impairments such as pathogens, metals, phosphorous, ammonia,

pesticides, silt/sediment, and a lack of dissolved oxygen. Storm water runoff has been identified as the primary source of these contaminants; however, contaminated groundwater also plays a role.

Since the majority of the County's stream baseflow is from groundwater, fresh and coastal resources may become impacted by contaminated groundwater. Sampling streams can help determine if there are contamination sources in a watershed. This can also be a great tool in evaluating the impact of different land use types in resource management and planning around sensitive watersheds. The increased nutrient loads from groundwater discharge, especially nitrogen, to surface waters have caused algal blooms, resulting in a drop in the dissolved oxygen concentrations. These conditions can impair various ecosystems by reducing eelgrass beds which are significant to the propagation of finfish and shellfish. These contaminants and conditions degrade the quality of Suffolk County's three major estuaries, the Long Island Sound, the South Shore Estuary, and the Peconic Estuary. It is estimated that 80 percent of all fish and shellfish used estuaries as a primary habitat or as a spawning or nursery ground, making them ecologically significant as well as a mainstay in Suffolk County's East End economy.

Modest sea level rise predictions between 2015 and 2100 are on average between about 2 to 3 feet. This projected rise in sea level coupled with a major storm event such as Superstorm Sandy would devastate places such as Fire Island and Suffolk County's south shore. The National Resource Council identified a strategy to reduce the impact of flooding or waves for coastal resiliency. In addition to hard structures, nature-based risk reduction strategies to absorb floodwaters and wave energy included restoration or expansion of natural areas such as oyster reefs and salt marshes. Improved water quality is key to wetland enhancement and establishing oyster reefs and expanding clam beds. While these nature-based risk reduction strategies are not the only measures that should be evaluated to enhance resiliency against sea level rise and large coastal storms, there are other indirect benefits to supporting these strategies.

Some of the recommendations identified to protect surface waters from degradation included additional open space preservation; improved sanitary wastewater management practices including a recommendation to require one acre density in hydrogeologic zones IV and VIII to protect surface water quality; expansion of existing sewer districts; evaluation of alternative on-site sewage systems as part of a County-wide wastewater planning study; and reduction the impacts of fertilizer on ground water and surface water.

Wastewater Management

Section 8 of the Comp Plan provides a history of wastewater management efforts in Suffolk County, a review of feasibility studies for major county sewerage projects, wastewater treatment technologies, and a look at several innovative on-site wastewater treatment systems. This chapter also covers wastewater as a source of contaminants that can impact groundwater and surface waters, as mentioned above. Pharmaceutical and personal care products, pathogens such as bacteria, viruses, and protozoans, and other contaminants of emerging concern that can originate from wastewater are discussed. Suffolk County has implemented a monitoring program to evaluate and understand the potential impact from some of these compounds while discussing and evaluating research and efficacy of various treatment technologies. Understanding these potential impacts is paramount in the decision-making process of wastewater treatment technology selection and final treated discharge endpoint.

Plan Implementation

Section 9 is the culmination of the Comp Plan and provides the prioritized list of implementation strategies to meet plan objectives. These are separated into seven separate, but often interrelated and overlapping categories including 1) nitrogen, 2) VOCs, 3) Pesticides, 4) PPCPs, 5) Potable Supply, 6) Project Management and Data Collection, and 7) Coastal Resiliency and Surface Water Quality. The crux of this management framework is to collaboratively tackle big-picture planning and management initiatives with federal, state, county, town and non-governmental organizations.

During and since publication of the 2015 Comp Plan, Suffolk County and numerous stakeholders have embarked on several initiatives to address groundwater quality. Suffolk has been extremely active in addressing high priority VOCs, pesticides, nitrates, and emerging contaminants. A brief overview for a few of these contaminants and initiatives is provided below.

Volatile Organic Chemicals

The 2015 Suffolk County Comprehensive Water Resources Management Plan highlighted several areas where additional resources could be allocated to reverse the trend of certain VOCs increasing in groundwater, namely chlorinated solvents and gasoline-related contaminants. Due to higher risk for environmental damage, gas stations and dry cleaners are the highest inspection priority and have been inspected annually under the VOC Action Plan. Compliance at gasoline stations has increased significantly since the plan was adopted. The annual inspections of dry cleaners ensure that the sites are operated properly and that chlorinated solvent spills are kept in check. Another benefit of the VOC Action Plan is that it has allowed the Office to increase the number of samples collected to more than 1,000/year from the approximately 200/year collected before the program began. Below is a summary of the outputs and outcomes from implementing Suffolk County's VOC Action Plan and other enhanced Office of Pollution Control (OCP) activities in 2016.

2016 Outputs

Tank Compliance Inspections

- 7,139 tanks inspected
- 488 gasoline station facilities inspected
- 61 gasoline station sites sampled
- 0 gasoline station sites required remediation in 2016

Dry Cleaner Inspections

- 283 facilities inspected
- 42 facilities sampled
- 3 chlorinated solvent remediations
- 9 other chemical remediations (e.g. toluene)

Industrial State Pollutant Discharge Elimination System (SPDES) Inspections

- 62 facilities inspected
- 1,118 industrial samples collected

Environmental Assessment Report Reviews

- 390 reports reviewed
- 99% resulted in remediations

Sanitary Abandonment Reviews

- 120 facility reports
- 30% resulted in remediations

OPC Random Industrial Facility Sampling

- 100 facilities sampled
- 30% resulted in remediations

2016 Outcomes

Environmental Enforcement

- 541 enforcement actions resulting in \$400,000 in penalties

Gasoline Station Compliance

- 52% compliance for gasoline site inspections in 2015
- 32% compliance for gasoline site inspections in 2016
- 28% compliance for gasoline site inspections in 2017 (to-date)

Environmental Remediations

- 222 remediations performed
- 4,934 tons of contaminated soil removed from the environment
- 871,650 gallons of contaminated liquid removed from the environment
- 80 remediations to-date are a direct result of the VOC Action Plan

The next phase of the VOC Action Plan, the Reducing Toxics Study, also is critically important. This study is intended to develop a method to control hazardous materials at industrial and commercial sites in Suffolk County which are not inspected on a regular basis. Random sampling performed at these sites shows that they are a threat to the environment. This study will look at data collected from such sites and suggest methods and practices to ensure that hazardous materials at the sites are properly controlled.

Nitrates

In accordance with Suffolk County's Reclaim Our Water initiative and the Long Island Nitrogen Action Plan (LINAP), Suffolk County is pursuing proactive measures to reduce nitrogen pollution to its waters. The Suffolk County Comp Plan characterized negative trends in the quality of groundwater in the Upper Glacial and Magothy Aquifers in recent decades. The Comp Plan linked increasing nitrogen levels in groundwater not only to drinking water, but also to surface waters, including significant adverse impacts of nitrogen on dissolved oxygen, harmful algal blooms (HABs), eelgrass and other submerged aquatic vegetation, wetlands, shellfish, and, ultimately, coastal resiliency. For the first time, the Comp Plan established an integrated framework to address the legacy problem of on-site wastewater disposal systems in a meaningful manner, with acknowledgement that patchwork sewerage will not be sufficient to solve the problem.

The Suffolk County Subwatersheds Wastewater Plan (SC SWP), an early action/initial step of the overall long-term LINAP program, will provide a recommended wastewater management strategy to reduce nitrogen pollution from wastewater sources. In addition to being a guide for establishing County wastewater policy, the primary objective of the SC SWP will be to provide critical information regarding data gaps, areas requiring further detailed study, and ultimately to present data that can support long-term LINAP scope refinement and focus and other related initiatives ongoing throughout Suffolk County (e.g., the Long Island Sound Study, the Peconic Estuary Program, the South Shore Estuary Reserve, and related town/village initiatives). Recommended wastewater upgrades will focus on the use of innovative alternative on-site wastewater treatment systems (I/A OWTS), the use of sewerage at locations where existing sewer feasibility studies indicate sewerage is cost-effective, and the use of decentralized/clustered systems (e.g., small pre-packaged treatment plants or I/A OWTS that connect multiple tax lots or buildings together).

The SC SWP cost benefit analysis will, among other evaluations, identify the criteria and locations where the use of decentralized/clustered systems represent the most cost-beneficial wastewater management approach. In addition, the SC SWP will evaluate and provide preliminary recommendations on how to overcome some of the potential challenges associated with implementing these systems (e.g., existing setback constraints, long-term O&M responsibility, approval process, etc.). Finally, an increase of the minimum lot size may be considered in select subwatersheds where sufficient undeveloped land exists to provide a meaningful environmental benefit.

Pesticides

Suffolk County has been a leader in water quality monitoring and assessment of pesticides working in close cooperation with the USGS, NYSDEC, New York State Department of Health (NYSDOH), Cornell Cooperative Extension and others. Pesticide monitoring and management is complicated as many pesticide compounds breakdown into other chemicals that leach through our sandy soils, are mobile in groundwater, and may persist for decades. Over the 20 years since Suffolk County initiated their pesticide program in 1997, the Suffolk County Department of Health Services (SCDHS) has installed groundwater monitoring wells at nearly 70 different locations such as golf courses, greenhouses, nurseries, sod farms, row crop farms, vineyards, etc. The analytical results from this testing is used to advise the NYSDEC in their pesticide registration decisions, support the Long Island Pesticide Pollution Prevention Strategy, and assess the status and trends of pesticide contamination in groundwater, surface waters, and drinking water wells. Over 100 pesticide-related compounds have been detected by Suffolk County in groundwater since the program's inception. Analytical data from samples collected between 1997 and 2012 from drinking water sources revealed that pesticide compounds were detected with the following results:

- At least one pesticide compound was detected in about 22% of public community supply wells tested during this period (196 of 865 wells sampled),
- At least one compound was detected in about 25% of the public non-community supply wells sampled during this period (150 of 589 wells sampled), and
- At least one compound was detected in about 23% of the private wells sampled during this period (2300 of 9900 wells sampled).

The SCDHS, with input from involved stakeholders, plans to continue to address pesticides and their potential impacts to groundwater, surface waters, and drinking water supplies. Suffolk County expects to continue to sample and monitor for a variety of pesticides and degradation products in groundwaters, surface waters, and drinking water supplies, continue to sample for a broad range of pesticides as part of surveillance monitoring and self-monitoring programs, continue to expand existing analytical capabilities of the Suffolk County Public and Environmental Health Laboratory (PEHL) to detect pesticide compounds and degradation products, and continue to identify commercial products that are frequently used on Long Island which can potentially impact our water resources. Finally, as part of the *NYSDEC's Pesticide Pollution Prevention Strategy*, stakeholders, regulatory agencies, and agricultural communities will continue to work together to implement Best Management Practices (BMP) at various agricultural settings to help mitigate the impact of pesticide use on Long Island.

Emerging Contaminants such as 1,4-Dioxane and Perfluorinated Compounds (PFOS and PFOA)

Suffolk County has implemented a three-point approach to addressing emerging contaminants such as 1,4-dioxane and perfluorinated compounds. These include: 1) facilitating and supporting maximum contaminant level (MCL) development by providing data from monitoring efforts to the NYSDOH and the NYSDEC, 2) encourage public water supply management to reduce exposure where possible, and 3) providing public education and outreach. Below is an overview of Suffolk County's efforts under this approach for 1,4-dioxane and the perfluorinated compounds, perfluorooctanoic acid (PFOA) and perfluorooctane sulfonate (PFOS).

1. Support MCL development
 - a. 1,4-Dioxane

- i. The SCDHS PEHL has obtained Environmental Laboratory Approval Program (ELAP) approval for analysis of 1,4-dioxane in drinking water (March 2015) and high-level soils, low-level soils, and non-potable liquids (November 2016).
- ii. 1,678 drinking water samples were analyzed by the PEHL from SCDHS Office of Water Resources samples collected April 2015 to December 2016.
 - 1. ~29% detection rate in community water supply wells tested
 - 2. ~16% detection rate in non-community water supply wells tested
 - 3. ~7% detection rate in private wells tested

*1,4-Dioxane appears to be much more prevalent in deeper wells, which would strongly suggest that its presence in groundwater may be associated with historic releases, not recent discharges. The Office of Water Resources has a goal test all non-community and community public supply wells by the end of 2017

- iii. Based upon 2015 and 2016 monitoring efforts by the SCDHS Office of Ecology, 1,4-dioxane was detected in 6 water bodies at levels as high as 9.65 parts per billion (ppb) (at Little Neck Run in Brookhaven). The goal is to sample all routinely monitored freshwater streams and tributaries again in 2017.
 - iv. The SCDHS OPC has sampled for 1,4-dioxane at various industries including laundromats, dry cleaners, car washes, salons, etc. Beginning January 2017 through June 2017, 370 samples were collected at 89 facilities. Five detections from 5 ppb to 12 ppb were observed in sludge and liquid samples. Sites found to exhibit 1,4-dioxane detections include a multi-tenant commercial center with dry cleaner, a dry cleaner, a car wash, and two laundromats. The SCDHS OPC goal is to collect about 500 samples in 2017 at high-risk facilities and at random sites. High risk facilities to be considered include: laundromats, wet cleaners, dry cleaners, car washes, wineries/breweries, power plants, airports, auto repair shops, and junkyards (1,4-dioxane may be present in auto coolants and deicing fluids). The SCDHS and NYSDEC are conducting a collaborative sampling effort evaluating laundromat SPDES discharges and existing treatment effectiveness in 2017.
 - v. The SCDHS Office of Wastewater Management is collecting samples from several sewage treatment plant effluents in 2017
 - vi. The SCDHS Office of Water Resources is collecting samples from upgradient and downgradient monitoring wells near sewage treatment plant outfalls and is also targeting groundwater investigations near 5 or more laundromats in 2017.
- b. Perfluorinated Compounds
- i. The SCDHS has leveraged resources with the SCWA Laboratory and the NYSDOH's Wadsworth Laboratory to enable sampling and analysis of perfluorinated compound samples from public and private wells and groundwater samples near areas of known or suspected contamination.
 - ii. The SCDHS Office of Water Resources has collected samples from over 150 public and private drinking water wells between July 2016 and September 2016. Of these, about 29 samples were above the United States Environmental Protection Agency's (USEPA) health advisory level of 70 parts per trillion and an additional 44 samples had detections below the USEPA's health advisory level (HAL). Approximately 45 groundwater monitoring wells have also been installed and sampled by the SCDHS at various locations near known or suspected sources of perfluorinated compounds in Suffolk County. Of these, 22 wells had detections above the health advisory level and 14 wells had detections below the health advisory level. The goal is to continue sampling at locations suspected to have stored or released perfluorinated compound containing products in consultation with local, state, and federal agencies.

2. Encourage Public Water Supply Management to Reduce Exposure Where Possible

a. 1,4-Dioxane

- i. Public health significance of drinking water results to date:
 - 1. The EPA lifetime HAL is 200 ppb in drinking water.
 - 2. There is no current federal or New York State drinking water standard specifically for 1,4-dioxane. It is currently regulated under a general 50 ppb standard for unspecified organic contaminants (UOC) in New York State.

3. The EPA 1 in 1 million cancer risk, assuming consumption of 2 liters of water per day for 70 years, is 0.35 ppb.
 4. New Hampshire has created a drinking water standard around 1 in 100,000 cancer risk at 3 ppb.
 5. While the majority of Suffolk County's detections are below 3 ppb, there have been at least 4 pump stations in the county that have pumped water into the distribution system above 3.5 ppb (the highest was 12.5 ppb). The SCDHS has encouraged affected water suppliers to continue to blend wells to reduce concentrations where possible and Suffolk County is supporting the full-scale Advanced Oxidation Process (AOP) pilot program of the SCWA. This treatment consists of a hydrogen peroxide injection, an ultraviolet reactor, and granular activated carbon quenching of residual hydrogen peroxide at a site located in Brentwood. This application was approved after review by NYSDOH and SCDHS and construction of the pilot project was completed in July 2017 and is undergoing rigorous analytical testing during startup.
- b. Perfluorinated Compounds
 - c. Public health significance of drinking water results to date:
 1. The EPA lifetime HAL for PFOS and/or PFOA is 70 parts per trillion.
 2. There is no current federal or New York State drinking water standard specifically for PFOS and/or PFOA. They are currently regulated individually under a general 50 ppb standard for unspecified organic contaminants (UOC) in New York State.
 3. As of September 2017, SCDHS was aware of PFOS and/or PFOA detections in at least 24 community public water supply wells. All community public water supply wells with detections have either been voluntarily removed from service, provided with treatment, or are blended to reduce concentrations below the HAL.
3. Public Education and Outreach
 - a. The SCDHS has required large community public water suppliers to continue sampling for select emerging contaminants from the Unregulated Contaminant Monitoring Rule 3 (UCMR3), such as 1,4-dioxane, PFOS, and PFOA in 2016 and 2017 where they have observed detections. These results must be reported in the public water suppliers' annual water quality reports which are provided to the public.
 - b. The SCDHS, in collaboration with the NYSDOH and NYSDEC, has developed a 1,4-dioxane fact sheet and frequently asked questions for perfluorinated compounds tailored specifically to Suffolk County. This information on emerging contaminants is posted on the County's website at:
www.suffolkcountyny.gov/Departments/HealthServices/EnvironmentalQuality/EmergingContaminants.aspx.