Town of Ulysses, New York

Drinking Water Source Protection Plan

(DWSP2)

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List of Acronyms

CAFO	Concentrated Animal Feeding Operation
CEA	Critical Environmental Area
CUGIR	Cornell University Geospatial Information Repository
DEC	Department of Environmental Conservation
DWSP2	Drinking Water Source Protection Program
FHA	Federal Housing Administration
GPM	Gallons Per Minute
HAB	Harmful Algal Bloom
IWS	Individual Water Supply
LU/LC	Land Use / Land Cover

MCL	Maximum Contaminant Level
NYRWA	New York Rural Water Association
NYSDAM	New York State Department of Agriculture and Markets
NYSDEC	New York State Department of Environmental Conservation
NYSDOH	New York State Department of Health
PWS	Public Water System
PWSID	Public Water System Identification
RCAP	Rural Communities Assistance Partnership
SDWIS	Safe Drinking Water Information System
SEQR	New York State Environmental Quality Review Act
SPDES	State Pollution Discharge Elimination System
SWAP	Source Water Assessment Program
TMDL	Total Maximum Daily Load
THM	Trihalomethane
UNA	Unique Natural Area
USGS	United States Geological Survey
UV	Ultraviolet

EXECUTIVE SUMMARY

The New York State (NYS) Drinking Water Source Protection Plan (DWSP2) Program is a four-agency initiative co-led by NYS Department of Environmental Conservation and Department of Health, in collaboration with the Department of Agriculture and Markets and the Department of State, that helps municipalities create a road map to maintain and protect their drinking water supplies. Municipalities creating these plans use local knowledge and assistance from NYS to develop a vision and goals for the plan, outline concerns, and develop recommendations for the town to consider. Participation in the program is voluntary, and adoption of a plan does not impose any new mandates or regulations for protecting sources of public drinking water on the municipality.

The DWSP2 for the Town of Ulysses focuses on the protection of all the drinking water sources throughout the town, including public water systems, private wells, and direct withdrawals from Cayuga Lake. Section 2, Drinking Water Source Assessment, provides background on the physical features of the town and its drinking water sources, as well land uses, potential contaminants, and other factors that can affect water quality. Included in the assessment are the results of a townwide survey of residents about their water quality. Further information on water quality in individual well sources (IWS) gathered from sampling of wells tested for contaminants is also presented.

The Drinking Water Implementation and Protection Strategies (Section 3) of the plan recommends actions the Town should consider to protect and preserve water quality for its residents using a variety of approaches including public outreach and education, municipal regulation, monitoring and enforcement, and best management practices. Sections 4 and 5 outline suggested timelines for implementation of strategies and the progression and maintenance of the Plan. Lastly, Section 6 provides a compilation of useful references and resources. The DWSP2 committee recommendations and follow up actions should be considered in conjunction with other relevant plans, particularly the DWSP2 for Bolton Point (a source supplier for municipal water within Ulysses) currently being developed, and the Town of Ulysses Agriculture and Farmland Protection and Comprehensive Planning documents.

1. INTRODUCTION

1.1. Background and Purpose

Source water includes surface water or groundwater used for drinking purposes. A source water protection plan identifies source water protection areas and potential sources of contamination, defines priorities, identifies protection strategies, defines implementation tasks and milestones, sets a timetable for achieving the plan's vision and goals, and outlines a process for periodically evaluating progress towards these goals.

Recently, NYS has prioritized updating assessments that were developed in the early 2000s as part of the Source Water Assessment Program (SWAP). These assessments delineated source water assessment areas, generated potential contaminant inventories, and developed susceptibility analyses for public water systems. NYS is now focused upon creating and implementing updated

source water protection plans. This initiative has led to the development of the Drinking Water Source Protection Program (DWSP2). This program has issued a draft framework to help NYS communities build a locally tailored, implemented, and periodically updated source water protection plan, known by the state as a Drinking Water Source Protection Program (DWSP2) Plan. This framework can be downloaded from: https://www.dec.ny.gov/docs/water_pdf/dwsp2draftframework.pdf. The SWAP and DWSP2 do not impose any new mandates or regulations for protecting drinking water sources and municipal participation in the program is voluntary.

As outlined in the DWSP2 framework, participation in the program has numerous benefits for a community. A source water plan provides protection and confidence in the drinking water sources relied upon by community public water systems as well as indirect protection for non-community public water systems and individual well water sources. Additionally, a source water protection plan can contribute significantly to the conservation of natural resources in the community.

New York Rural Water Association (NYRWA)—a Technical Assistance Provider—has pledged to follow the phases and components of the DWSP2 framework to the greatest extent practicable when working with a community on the development of a DWSP2. This DWSP2 Plan for the Town of Ulysses, developed with the assistance of NYRWA, is consistent overall with the DWSP2 framework. It aims to protect the drinking water sources located in Ulysses for the residents and businesses of the town.

Drinking water for Town of Ulysses residents comes from numerous separate sources including the Southern Cayuga Lake Intermunicipal Water Commission (aka Bolton Point), the Village of Trumansburg, individual household wells (IWS), and directly from Cayuga Lake for many residents along the lakeshore. With such diverse sources, the potential for contamination of any of these sources varies. Many Drinking Water Source Protection Plans only address threats to municipal water, but the Town of Ulysses has a large portion of its population using unregulated sources—wells and lake water—therefore this document will address threats across all drinking water sources in the Town and provide strategies for protection of these critical resources.

1.2. Planning Team

On May 10, 2022, the Town of Ulysses Board passed a resolution to develop a Drinking Water Source Protection Plan, and on August 9, 2022 appointed a Water Source Protection Plan Committee as the knowledgeable stakeholder group to work with the NYRWA to develop the plan. The team included broad representation from across Ulysses and with experience in water quality, environmental protection, and municipal government. Members:

Linda Liddle – Chair
Roxanne Marino- Vice Chair
Michael Boggs – Town Councilperson
Tim Martinson
Steve Morreale
Amy Panek
Rebecca Schneider
Elizabeth Thomas

The Water Source Protection Plan Committee provides community-specific guidance during the DWSP2 development process. The committee convened in November 2022 with Steve Winkley, technical advisor from NYRWA, who outlined the procedures and steps involved in developing a DWSP2 plan. Following Steve Winkley's retirement in January 2023, the DWSP2 committee worked with NYRWA personnel Mary Theresa Julien (March 2023 - May 2024), then Jacob Gardner through completion.

DWSP2s are being or have been developed in the nearby adjacent communities. The Ulysses DWSP2 Committee reviewed plans of communities with similar characteristics.

1.3. Goals and Vision

Vision

The Town of Ulysses commits to protecting the quantity and quality of drinking water resources used by its residents, businesses, and landowners by identifying and implementing effective protection measures, engaging community support, and pursuing resources to ensure access to adequate potable water.

Goals

a. Inventory drinking water quality and quantity resources.

b. Assess water resource quality and quantity issues and possible solutions to protect public health and wellbeing.

c. Evaluate current and future land use and how it affects drinking water resources.

d. Identify and encourage practices that reduce surface water runoff and promote groundwater recharge.

e. Coordinate with municipal partners and community stakeholders to create or strengthen lasting partnerships to ensure implementation of this plan.

f. Increase public awareness of threats to water quality and the need for protection of source water as a shared community resource.

g. Identify areas of potential threat to surface and groundwater and adopt strategies to appropriately monitor and protect these resources.

h. Improve access to clean, safe drinking water for present and future generations, and reduce potential barriers to water access in accordance with Town and County planning documents.

2. DRINKING WATER SOURCE ASSESSMENT & PROTECTION AREAS

2.1. Water Supply Sources

A public water system is an entity that provides water to the public for human consumption through pipes or other constructed conveyances. As defined by the NYS DOH, any system having at least 5 service connections or that regularly serves an average of at least 25 people daily for at least 60 days out of the year is considered a public water system. In Ulysses, there are two types of public water systems (PWS): community and non-community. A *community water system* is a public water system that serves the same people year-round. Examples relevant to Ulysses include municipally owned public water supplies and privately-owned water suppliers such as homeowner associations, apartment complexes or mobile home parks that maintain their own systems. *Community water systems* have the most regulatory requirements of the system types, including the need for a certified operator and more extensive monitoring. *Non-community water systems* generally do not serve the same people year-round. A *transient non-community water system* serves different people for more than 6 months out of a year. Parks, convenience stores and restaurants with their own water supplies are examples. This type of system requires an annual nitrate test and a quarterly to monthly coliform bacteria test. A *non-transient non-community water system* is a public water system that regularly supplies water to at least 25 of the same people at least six months per year. Some examples are schools, factories, office buildings, and hospitals which have their own water systems.

2.1.1. Public Water Supply Wells

Public water system wells in Ulysses are shown in Figure 1 *Public Water Supply Well Protection Areas* and listed in Table 1: *Public Water Supply Wells*. A 1,500-foot radius protection zone has been mapped around each of the *Community; Transient Non-Community; and Non-Transient, Non-Community* sources on Figure 1. A one-mile radius protection zone has been plotted around the sand and gravel wells that serve the community water system of the Village of Trumansburg. Note that the 1,500-foot and one-mile protective zone distances correspond to the outer well zones delineated in source water assessments completed by the NYSDOH in the 2000s.

The Trumansburg Village source wells supply all the Village of Trumansburg and Ulysses WD1 and 2. A few addresses in the Town of Ulysses outside of the Village are served by Village water along the waterline to Ulysses WD1 but these areas are not officially established in a water district and are administered by the Village of Trumansburg (Figure 2 – Municipal Water Coverage). Trumansburg water source wells are located at Taughannock Falls State Park and in the Town of Covert the former Boy Scout Camp Barton on Frontenac Road.

A review of the federal Safe Drinking Water Information System (SDWIS) reveals that none of the twelve regulated public water systems in Ulysses supplied by wells have had any health-based violations for exceeding maximum contaminant levels (MCLs). Several systems have had monitoring and reporting violations, largely involving the failure to conduct regular monitoring or submitting monitoring results to the health department in a timely fashion.

Figure 2: Public Water Supply Well Protection Areas

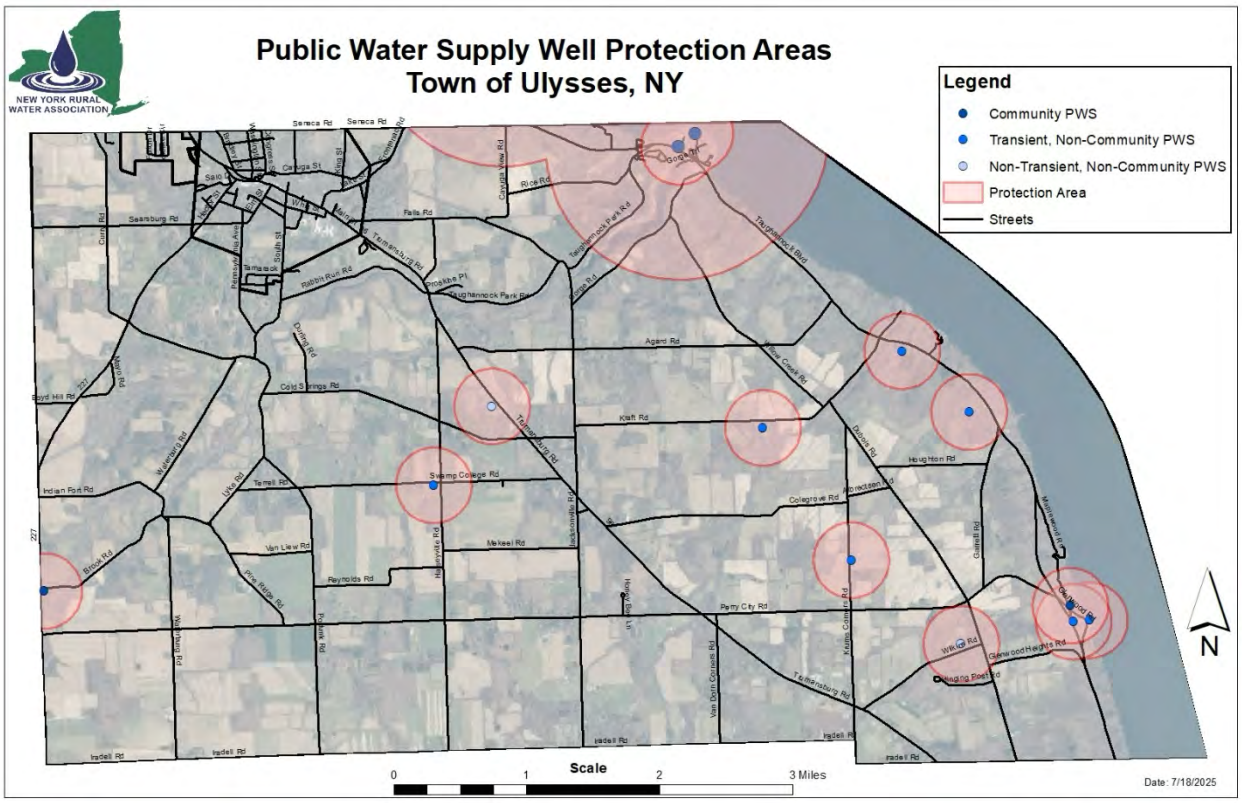


Table 1: Public Water Systems Supplied by Wells

PWS ID NUMBER	SYSTEM NAME	TYPE	POPULATION SERVED	SOURCE TYPE
NY5404417	TRUMANSBURG VILLAGE	COMMUNITY	2300	GROUNDWATER
NY5422329	BROOKSIDE APARTMENTS - TC	COMMUNITY	18	GROUNDWATER
NY5422330	GLENWOOD APARTMENTS	COMMUNITY	16	GROUNDWATER
NY5419629	FRANZISKA RACKER CENTERS	NON-TRANSIENT, NON-COMMUNITY	100	GROUNDWATER
NY5430087	SMART START	NON-TRANSIENT, NON-COMMUNITY	25	GROUNDWATER
NY5403827	GLENWOOD PINES	TRANSIENT, NON-COMMUNITY	70	GROUNDWATER UNDER THE INFLUENCE OF SURFACE WATER
NY5414785	SPRUCE ROW CAMPSITE	TRANSIENT, NON-COMMUNITY	150	GROUNDWATER
NY5414806	CAYUGA NATURE CENTER	TRANSIENT, NON-COMMUNITY	100	GROUNDWATER

PWS ID NUMBER	SYSTEM NAME	TYPE	POPULATION SERVED	SOURCE TYPE
NY5414807	ITHACA YACHT CLUB	TRANSIENT, NON-COMMUNITY	100	GROUNDWATER
NY5430064	NEW PARK ITHACA	TRANSIENT, NON-COMMUNITY	25	GROUNDWATER
NY5430082	BET THE FARM WINERY	TRANSIENT, NON-COMMUNITY	25	GROUNDWATER
NY5430090	HONEYBEE EMBASSY	TRANSIENT, NON-COMMUNITY	26	GROUNDWATER

2.1.2. Public Water Supplies - Surface Water

A section of the town surrounding the intersection of Rt 96 and Jacksonville Road has a municipal water system with water provided by the Southern Cayuga Lake Intermunicipal Water Commission (SCLIWC) aka Bolton Point Water System PWSID 5404423 serving 384 households. The Bolton Point system treats surface water from Cayuga Lake and serves approximately 30,000 people in the Towns of Lansing, Dryden, and Ithaca as well as the Villages of Lansing, Dryden, and Cayuga Heights. Water for Ulysses Water Districts 3 (Jacksonville and surrounds) and 4 (Dubois Road at the Town of Ithaca line) is provided by Bolton Point, delivered to the town line via the Town of Ithaca transmission infrastructure. The Town of Ulysses is not officially a member of the commission.

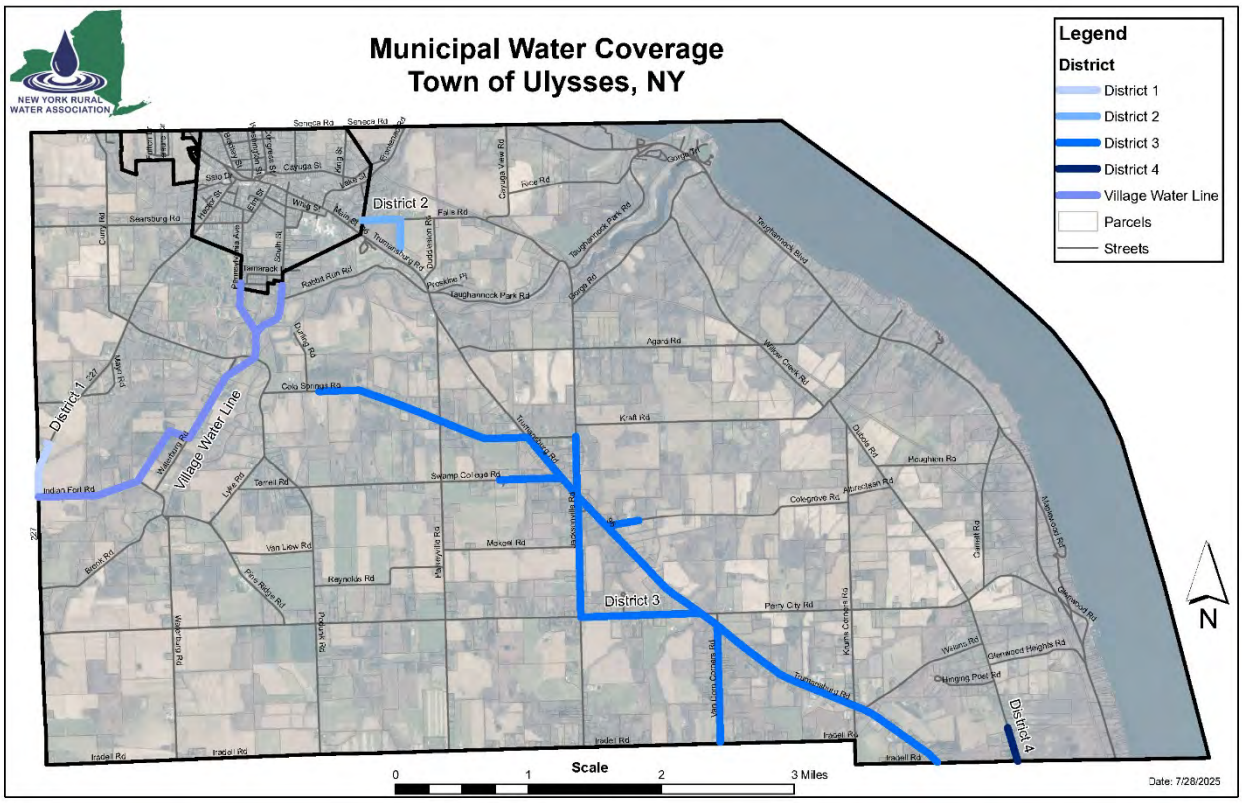
Water district 3 was installed in 2003 in response to multiple private household wells being contaminated by leaking underground gasoline tanks at the gas station in the Hamlet of Jacksonville. Due to multiple exceedances in the level of disinfection by-products dating back to 2010, specifically total Trihalomethanes (TTHMs) in Water District 3, the town contributed funding in 2017 to install one aerator in the Town of Ithaca water tank near the Ithaca/Ulysses town line to help reduce TTHMs. With additional grant funding obtained in 2019, the town installed an aerator in its own water tank on Van Dorn Corners Rd. Since installation was completed, TTHM levels have reduced dramatically and are well below the required maximum contaminant levels. The Town receives monthly testing reports for disinfection by-products from Bolton Point and an annual report that is posted on a publicly accessible site by May 31, as required by NYS regulations.

The protection zone for the public water supplies in Ulysses using treated surface water cannot be mapped out as has been done for the public water supply wells, as the source is Cayuga Lake. Bolton Point is preparing a DWSP2, and Ulysses will reference it when it is completed. This plan lists protection strategies Ulysses can implement generally aimed at protecting the lake water quality.

Table 2: Public Water Systems Supplied by Surface Water

PWS ID NUMBER	SYSTEM NAME	TYPE	HOUSEHOLDS SERVED	SOURCE TYPE
NY5430047	**Ulysses WD #3**	**COMMUNITY**	**400**	**Surface Water**
	Ulysses WD #4	**COMMUNITY**	**4**	**Surface Water**

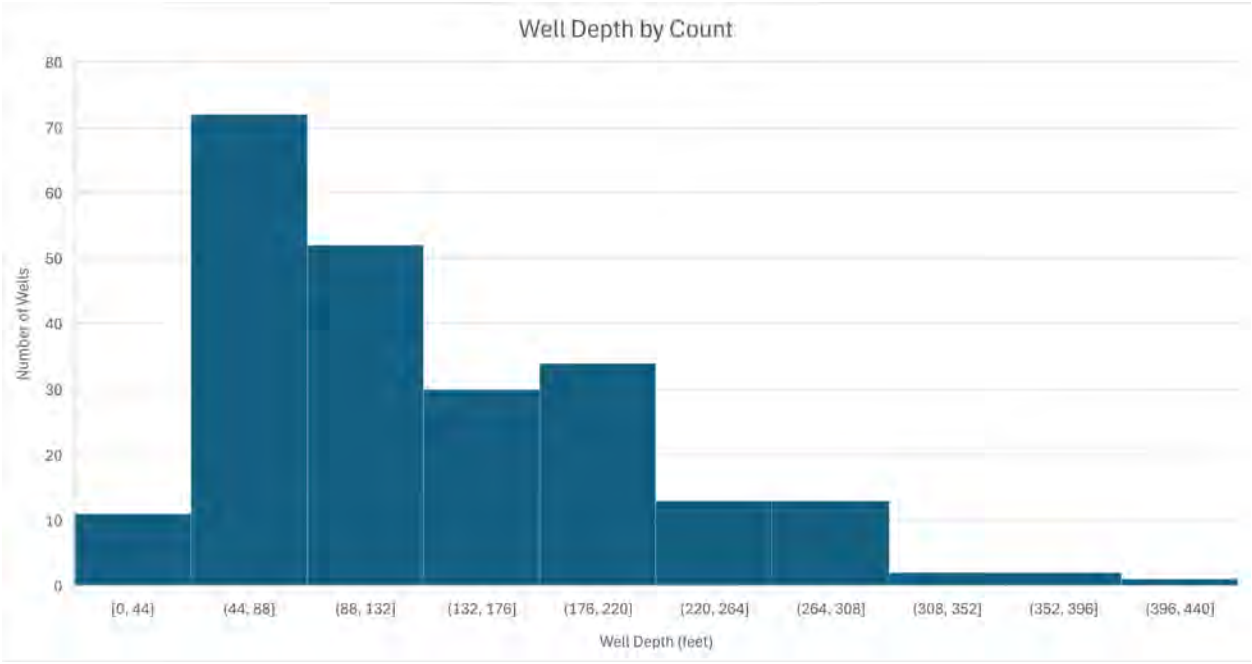
Figure 2: Municipal Water Coverage



2.1.3. Private Household Wells

In addition to the public water systems, homeowners and other businesses in Ulysses receive their drinking water from their own individual wells. Since 2000, any business drilling water wells must register annually with the NYSDEC before doing business anywhere in NYS. The water well contractor must notify NYSDEC prior to commencement of drilling a water well and file a *Water Well Completion Report* with NYSDEC upon completion of a water well. A copy of this report must also to be provided to the owner of the water well. Based upon these completion reports, 197 of 208 (94.7%) of water wells drilled in Ulysses during this period have been completed in bedrock. The median depth of these wells drilled in Ulysses is 118 feet, with a range from 0 to 399 feet (see Figure 3).

Figure 3: Private Household Well Depths



It is not possible to map protection areas around all individual water supply (IWS) wells. However, it is important to note that NYS regulations Part 5, Subpart 5-1 – Appendix 5B specifies separation distances of drinking water wells from potential sources of contamination. The specified separation distances in these regulations, shown in Table 3 should be exceeded by 50% whenever the source of water for the well is at a depth of less than 50 ft.

Table 3: Required Minimum Separation Distances to Protect Water Wells from Contamination

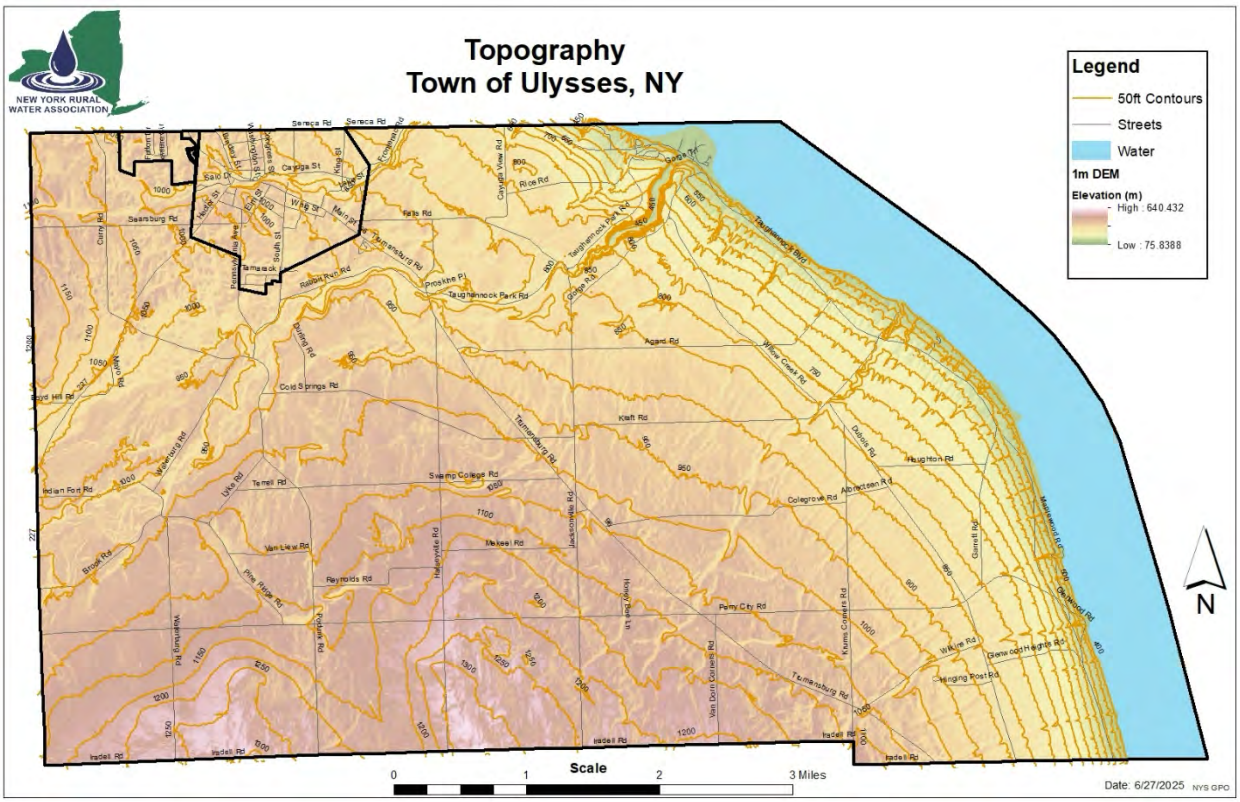
Contaminant Source	Distance (Feet)
Chemical storage sites not protected from the elements (e.g., salt and sand/salt storage)[2]	300
Landfill waste disposal area, or hazardous or radiological waste disposal area[2]	300
Land surface application or subsurface injection of effluent or digested sludge from a Municipal or public wastewater treatment facility	200
Land surface application or subsurface injection of septage waste	200
Land surface spreading or subsurface injection of liquid or solid manure [3]	200
Storage Areas for Manure piles [4]	200
Barnyard, silo, barn gutters and animal pens [5, 6]	100
Cesspools (i.e. pits with no septic tank pretreatment)	200
Wastewater treatment absorption systems located in coarse gravel or in the Direct path of drainage to a well	200
Fertilizer and/or pesticide mixing and/or clean up areas	150
Seepage pit (following septic tank) [5]	150
Underground single walled chemical or petroleum storage vessels	150
Absorption field or bed [5]	100
Contained chemical storage sites protected from the elements (e.g. salt and sand/salt storage within covered structures) [7]	100
Septic system components (non-watertight) [5]	100
Intermittent sand filter without a watertight liner [5]	100
Sanitary Privy pit [5]	100
Surface wastewater recharge absorption system constructed to discharge storm water from parking lots, roadways or driveways [5]	100
Cemeteries	100
Sanitary privy with a watertight vault	50
Septic tank, aerobic unit, watertight effluent line to distribution box	50
Sanitary sewer or combined sewer	50
Surface water recharge absorption system with no automotive-related Wastes (e.g., clear-water basin, clear-water dry well)	50
Stream, lake, watercourse, drainage ditch, or wetland	25
All known sources of contamination otherwise not shown above	100

2.2. Hydrogeologic Setting

2.2.1. Topography

Ulysses lies on the western shore of Cayuga Lake in New York's Finger Lake Region. Elevations in the town range between 400 and 1300 feet above sea level. The southwestern and south-central portions of the town contain the highest elevations while the lowest elevations can be found at the lake's shore. There is a gentle downward slope in the northeast direction towards the lake from the southwest corner of the municipality boundary to Rt 96—Trumansburg Road. At Rt 96, the slope gradually increases down to Willow Creek Rd. At that point the slope towards the lake becomes much steeper with the shoreline expressing cliff like slopes and a multitude of streams feeding into the lake. In the northeastern portion of the town, there is a glacially carved gorge contained in Taughannock State Park. The gorge presents cliffs with walls over 400 ft tall.

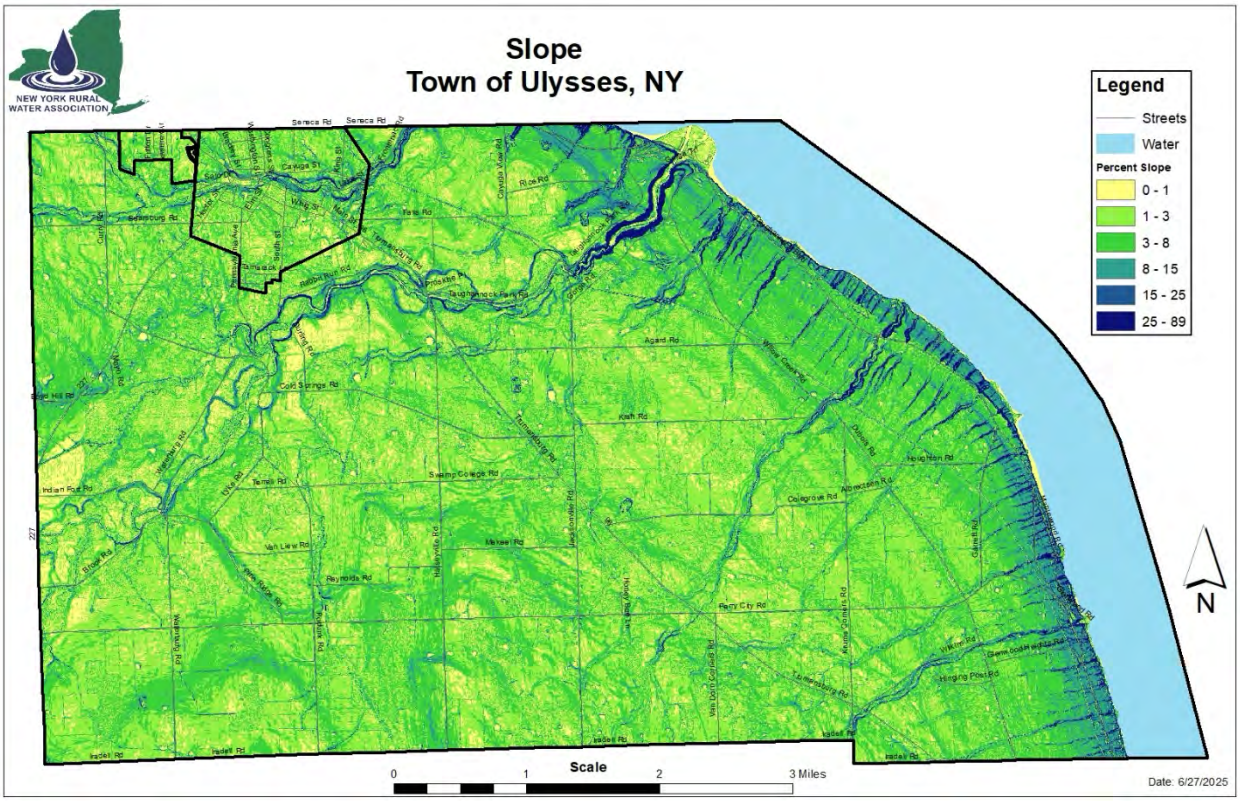
Figure 4: Topography



2.2.2. Slopes

Ground surface slopes in the Town of Ulysses range from 0% to 89%, with an average slope of 4%. Half of the surface of Ulysses has a slope that is less than 12%. Slope has a significant influence on groundwater recharge and runoff. Lower slopes allow for more infiltration while steeper slopes promote runoff.

Figure 5: Slope



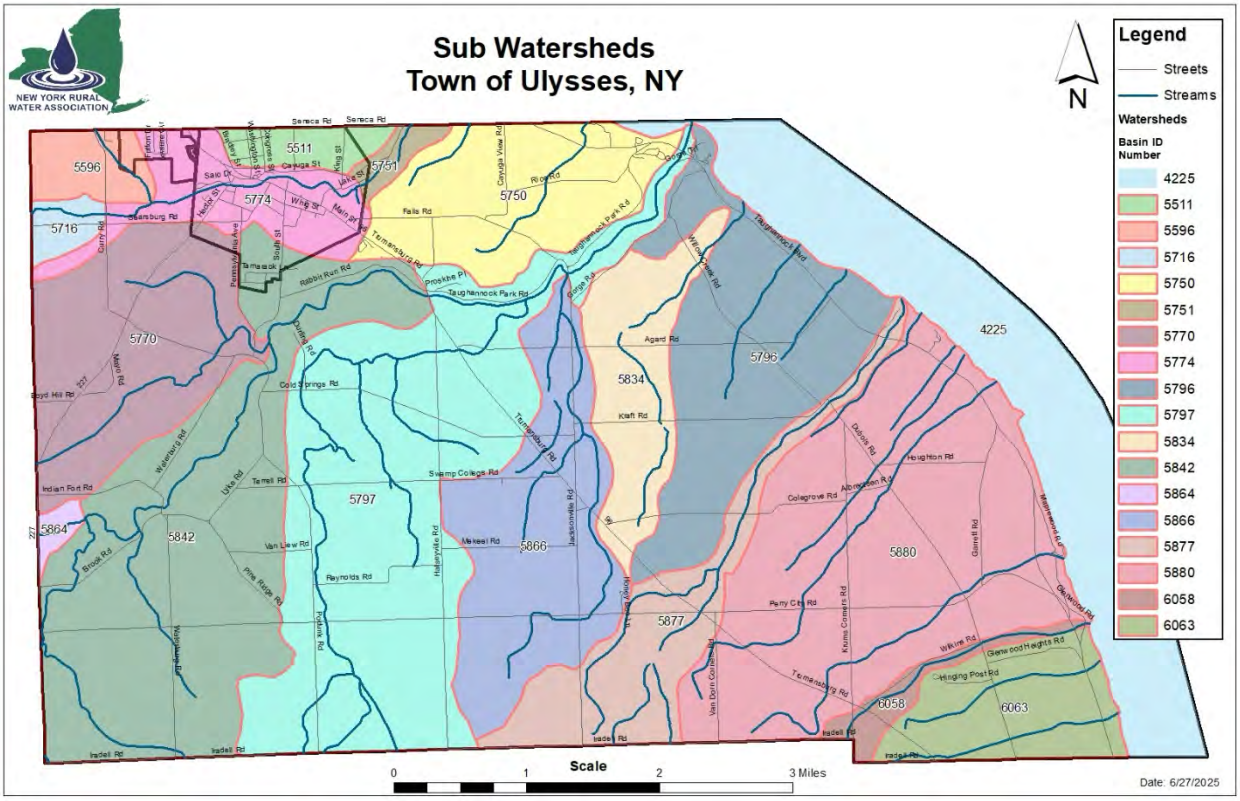
2.2.3. Watersheds

The entirety of the land area (23,592 acres) drains to Cayuga Lake through a network of many streams in 3 major watersheds comprised of 18 smaller unique watersheds (Figure 6 *Sub Watersheds*). The outlet for Cayuga Lake is the Seneca River which flows into the Oswego River and then drains north to Lake Ontario. Up until approximately 200 million years ago, drainage flowed south to the Susquehanna River system. But during the last ice age, glacial events produced deep gorges that became the Finger Lakes, and the retreat of the glaciers caused the reversal of drainage from south to north and created the relatively flat land in the western portions of Ulysses.

Table 4: Major Watersheds

Major Watershed	Acres	Sq. Mi	Drainage Basin
Taughannock Creek	14,185	22	Cayuga Lake to Oswego River
West Cayuga Lakeshore North	2,794	4	Cayuga Lake to Oswego River
West Cayuga Lakeshore South	13,637	21	Cayuga Lake to Oswego River

Figure 6: Sub Watersheds

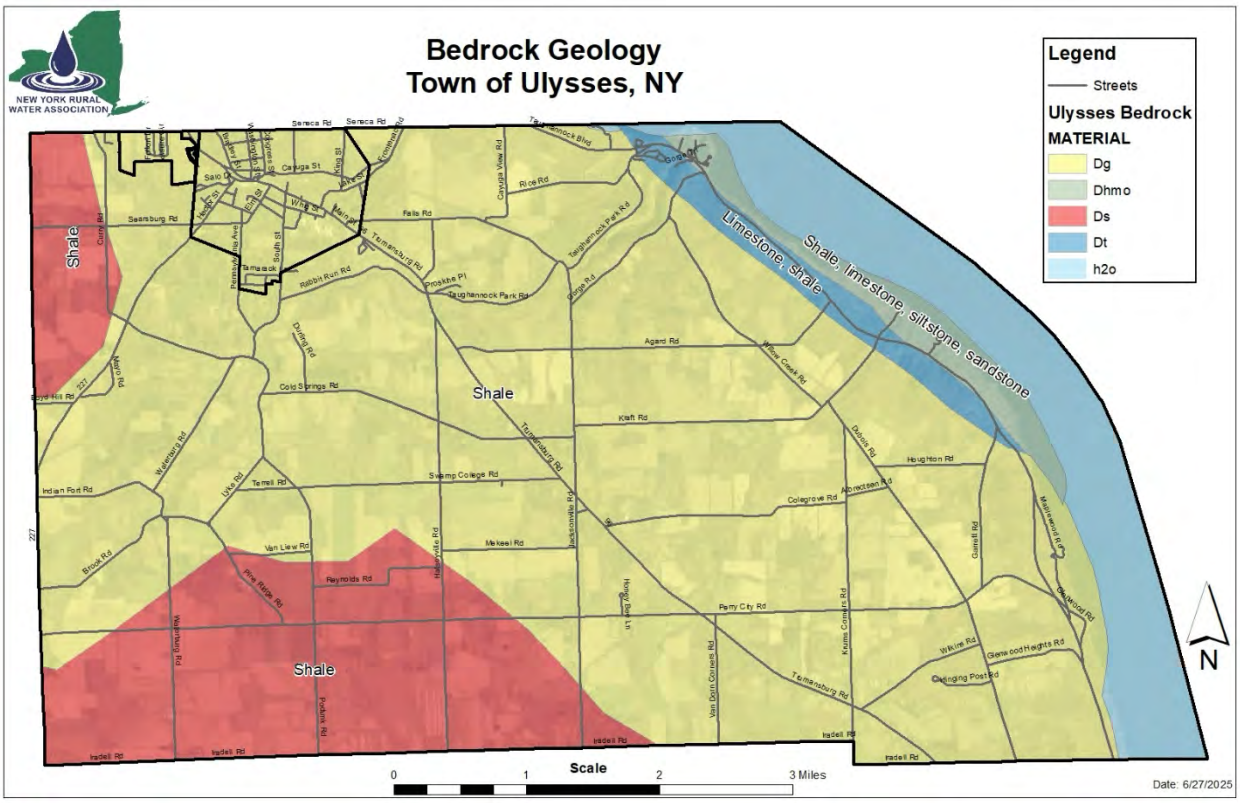


2.2.4. Bedrock Geology

The distribution of bedrock formations that underly Ulysses is presented in Figure 7: *Bedrock Geology*. NYRWA compiled bedrock geologic mapping from a number of sources to provide more detail than is afforded in the 1:250,000-scale Geologic Map of New York – Hudson Mohawk Sheet by Fisher et al. (1970).

The bedrock of Ulysses formed roughly 550 million years ago. The land that is now Ulysses was submerged under an ancient sea. For 325 million years sand, mud, silt, salt, and calcium carbonate were deposited on the seafloor and compressed into sedimentary rocks. This created the shale, limestone, siltstone, and sandstone formations that comprise Ulysses' bedrock. The bedrock has four formations that are part of three larger groups.

Figure 7: Bedrock Geology



Hamilton Group: (Dhmo)- This group is composed of dark grey to blackish shales and thin beds of limestone. This group accounts for roughly 0.2% of the town's bedrock and can be found along both sides of Cayuga Lake.

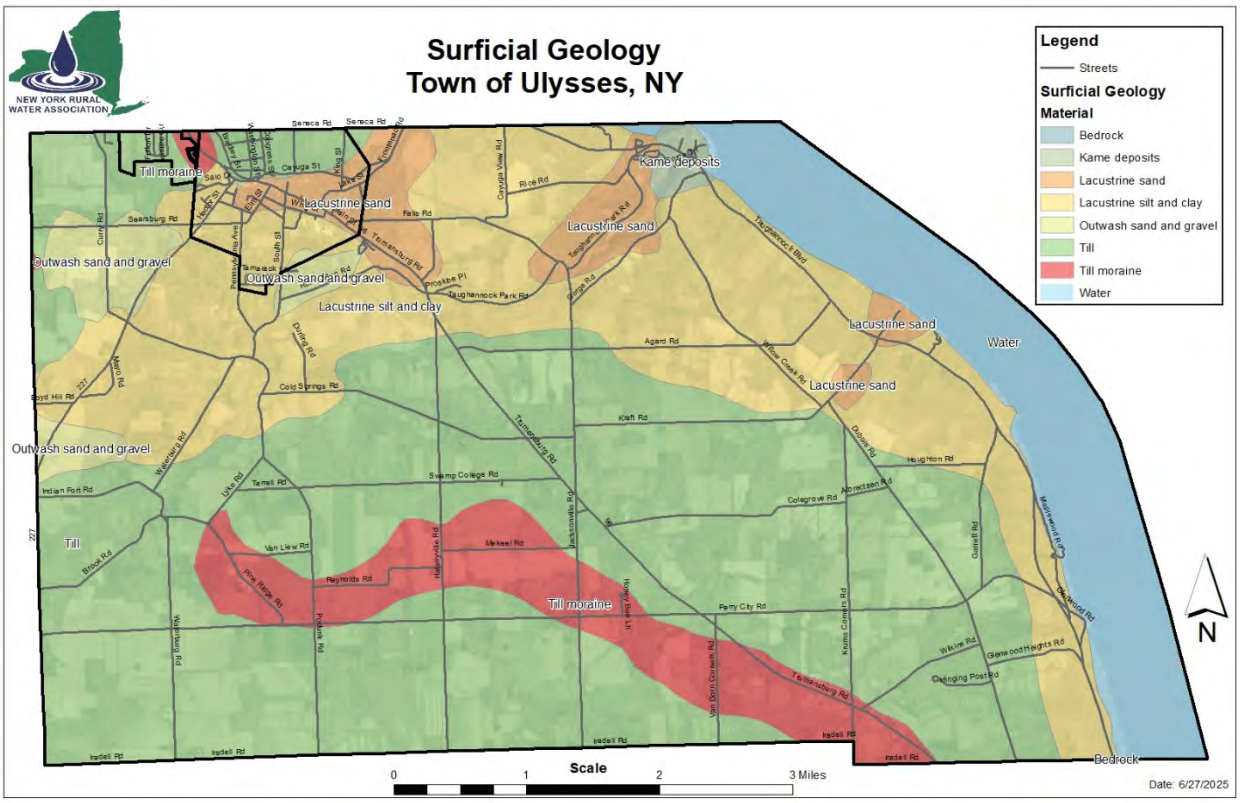
Sonyea Group: (Ds)- This is a group of shales and siltstones and comprise 37% of Ulysses bedrock

Genesee Group: (Dg, Dt)- This group consists of shale, limestone, and siltstone and is the formation visible in Taughannock Gorge. The Ithaca formation, Dg, comprises 62.6% of the bedrock and Tully Limestone (Dt) accounts for 0.2% of the bedrock formations.

2.2.5. Surficial Geologic Materials

Surficial geologic deposits are geologic materials that are found at or near the land surface. The unconsolidated deposits above the bedrock originated after the most recent episode of glaciation 10-14,000 years ago. As the glaciers retreated, they deposited a mixture of sediments over the bedrock, ranging in size from tiny clay particles to boulders. These sediments settled into variable layers above the bedrock. Dense glacial till, with modest water storage capacity, covers most of Ulysses. However, glacial till and 'glacial outwash' filled in the valleys (notably Taughannock Creek valley). This glacial outwash—relatively sorted pockets of clay, sand, and gravel created by glaciers and eroded by glacial meltwater—created aquifers capable of storing larger quantities of water. There are six types of surficial geologic material present in Ulysses, and they are represented in Figure 8.

Figure 8: Surficial Geology



Lacustrine Sands are well sorted (particles are of similar size) and stratified sand deposits that settled out when lakes were formed by the melting glaciers. Deposits found today range from 6 to 60 feet in thickness.

Lacustrine Silts are generally laminated silt and clay, deposited in lakes formed during the melting of the glaciers. They are high in calcite, have low permeability, and form potentially unstable land. These are found in variable thickness of up to 160 feet. This is a common type of surficial geology deposit in Ulysses, particularly along the shores of Cayuga Lake.

Outwash Sand and Gravel are coarse to fine gravel mixed with sand. The location of this deposit is restricted to valley bottoms and stream terraces. These deposits are of variable thickness of 5 to 65 feet.

Kames are small, irregular hills and terraces deposited by glaciers and are typically found in valleys. These deposits are composed of coarse to fine gravels and/or sands in thicknesses of 30 to 100 feet.

Till deposits are poorly sorted (particles of varying sizes) material of variable texture such as clay, silt-clay, or boulder clay that were deposited beneath the glacial ice. The permeability of these deposits varies with the amount of compaction. Thicknesses vary from 3 to 160 feet. This is the primary type of surficial geology deposit in Ulysses.

Till Moraine is much like till, but has a more variable sorting, and is more permeable than till. Deposits of till moraine were typically set down adjacent to glacial ice. Thickness varies from 30 to 100 feet.

Table 5: Surficial Geology

Type of Surficial Geology Deposit	Percent within Municipality
Till	67.8%
Lacustrine Silt and Clay	18.6%
Till Moraine	8.2%
Lacustrine Sand	3.1%
Outwash Sand and Gravel	1.9%
Kame Deposits	0.4%

2.2.6. Groundwater in Bedrock

Groundwater is subsurface water that fills (saturates) voids in rock or soil. Groundwater is found between in the pore spaces between individual grains that range in size from clay to gravel. This is referred to as primary porosity. Groundwater also occurs in cracks (fractures) found in rock. This is known as secondary porosity. Most of the water in bedrock is found in fractures.

Bedrock (sometimes referred to as "ledge") is the source of groundwater for the majority of residents and businesses in the Town of Ulysses. In bedrock, steel casing is set through the overburden (unconsolidated deposits) and into sound rock. Water well drilling regulations promulgated by the NYSDOH now specify a minimum of 20 feet of casing, 19 feet below ground. Wells in Ulysses that are not completed in bedrock typically have an open-ended casing.

Unfortunately, Well Completion Reports completed by the well contractor and filed with NYSDEC do not contain any water quality data. There are no specific local or state regulations that currently require water quality testing for private wells. At a minimum, FHA recommends testing for total coliform bacteria, nitrates and lead. However, NYSDOH has recommended testing new wells for arsenic, chloride, coliform bacteria, lead, nitrate/nitrite, iron, manganese, turbidity, sulfate, pH, hardness, alkalinity, and sodium.

2.2.7. Unconsolidated (Sand and Gravel) Aquifers

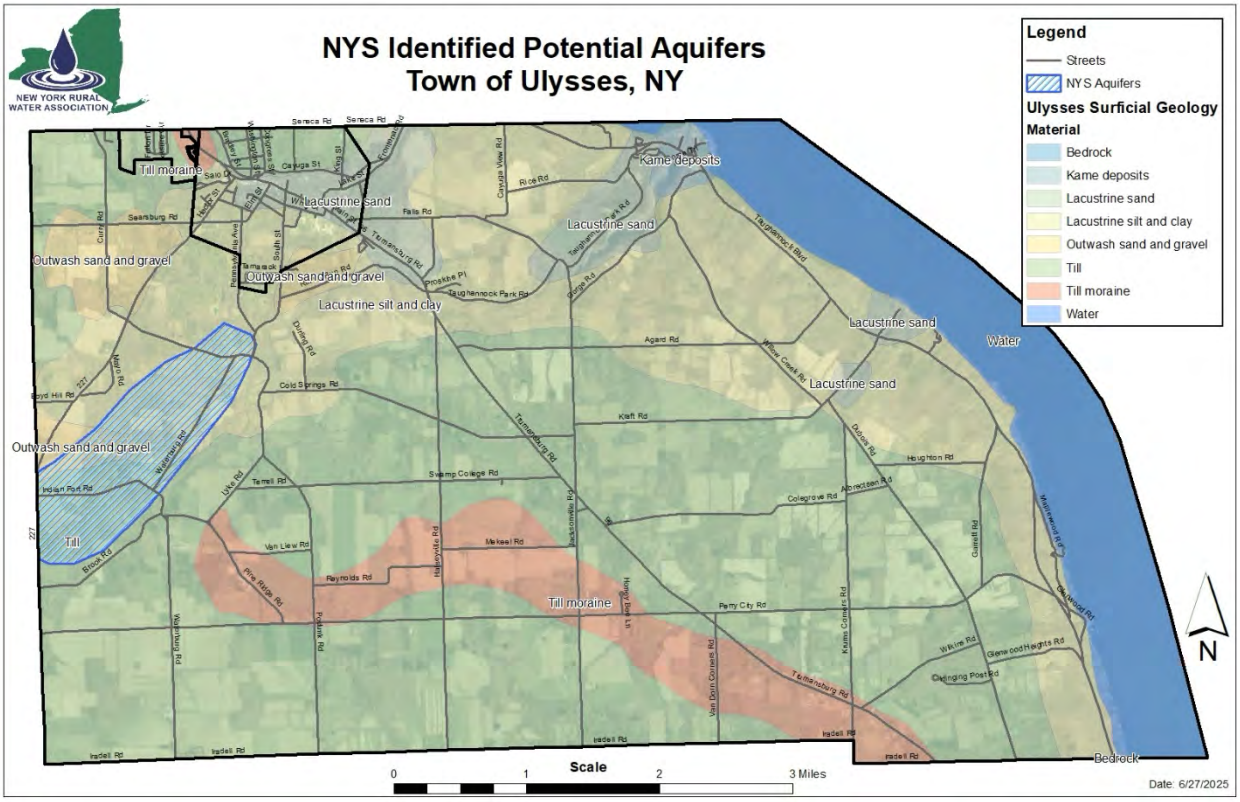
Figure 9 *Aquifers* shows the distribution of the unconsolidated aquifers in town. The distribution of water-bearing unconsolidated deposits is generally limited to areas along or near the western boundary of the town near Waterburg Rd. The boundaries of this aquifer were delineated by NYS DEC based on glaciofluvial deposits and available subsurface data.

Comparatively few wells are completed in the unconsolidated aquifer in Ulysses. Well yields in unconsolidated aquifers range from 5 to >500 gpm. Unconsolidated deposits can produce very high yields (200+ gpm) if wells are finished with a properly sized and developed screen. A well screen is a filtering device that permits water to enter the well but prevents the unconsolidated material (sand, etc.) from entering the well. Screening is placed in the well and the casing is generally pulled back to expose the screen to the unconsolidated material.

Similar to bedrock, groundwater from wells utilizing unconsolidated aquifers is sometimes hard and iron can be naturally elevated. Due to their shallow nature and high permeability, unconsolidated aquifers are sometimes more susceptible to sources of contamination such as spills, or from on-site sewage disposal in situations where there may be too high a density of septic systems. A study by

the USGS has determined that water from the aquifer in Ulysses is potentially high in arsenic. See Appendix A: *Arsenic Fact Sheet.*

Figure 9: NYS Identified Potential Aquifers

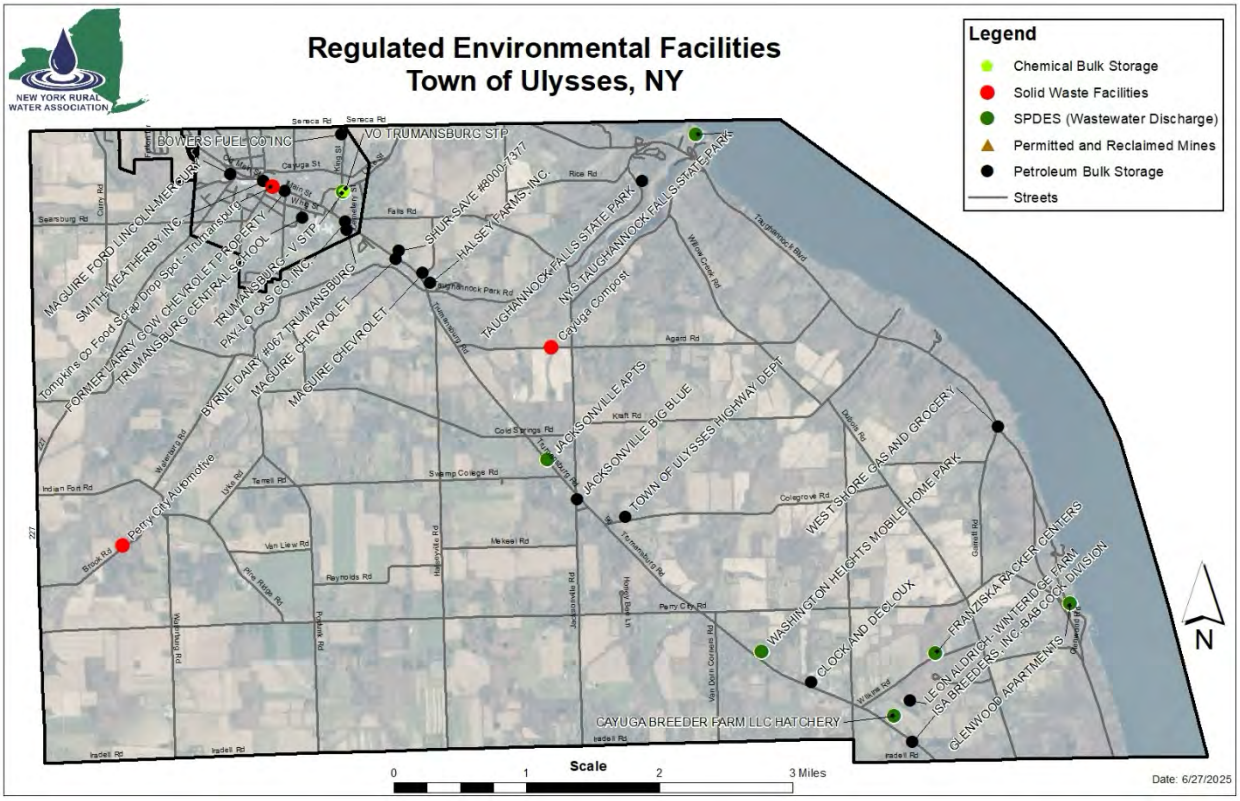


2.3. Potential Contaminant Sources.

2.3.1. Regulated Facilities

New York Rural Water Association (NYRWA) has conducted an inventory of facilities regulated by government agencies. Results are mapped in Figure 10: *Regulated Facilities*. As part of the inventory, NYRWA used databases on various regulated activities such as: wastewater dischargers (SPDES facilities); petroleum bulk storage facilities; solid waste facilities, mines/quarries, etc.

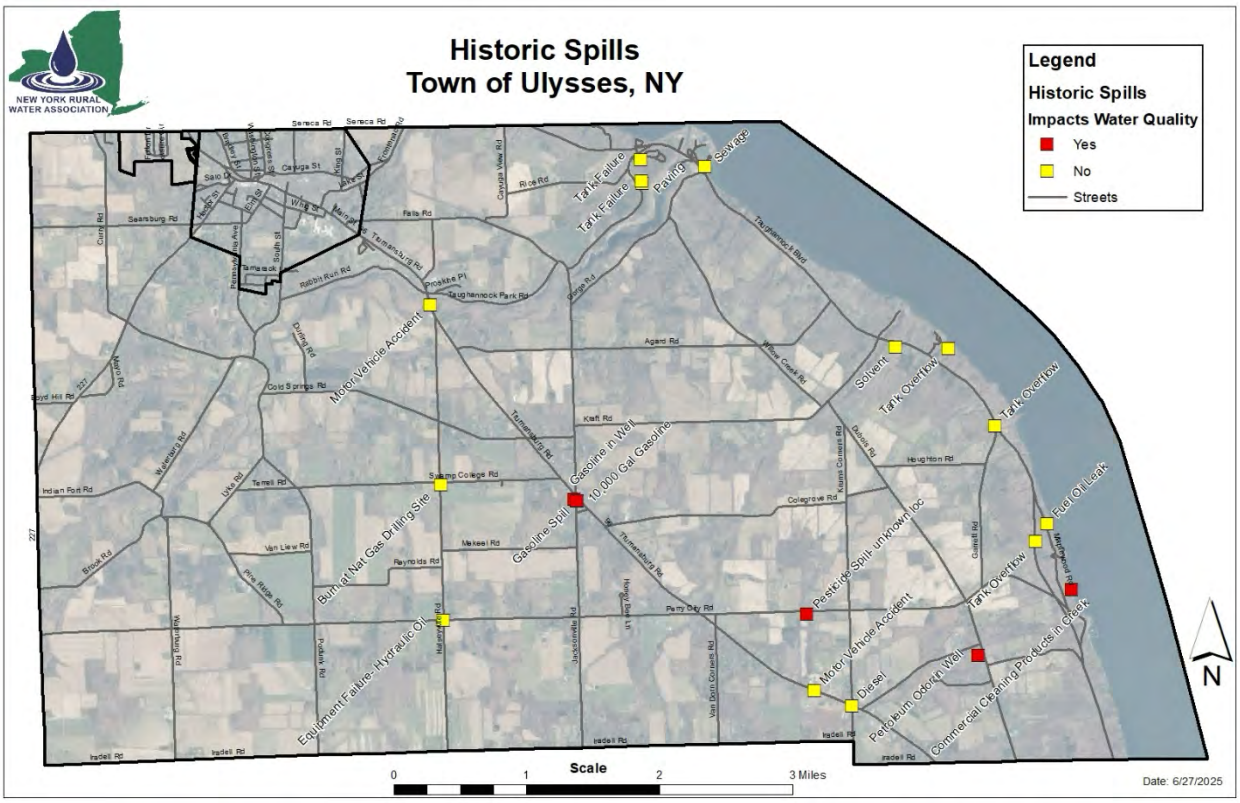
Figure 10: Regulated Environmental Facilities



2.3.2. Historic Spills

The NYSDEC maintains a database of chemical and petroleum spills throughout New York State and tracks the remediation process. The NYSDEC receives approximately 16,000 spill reports each year and roughly 90% of those releases involve petroleum products. Figure 11: *Historic Spills* below depicts the best-known location of the reported spills within the Town of Ulysses and the type of spill that occurred. Many of the reported spills are from motor vehicle accidents and pose only minor concerns. The most notable reported spill occurred at the intersection of Rt 96 and Jacksonville Road where the former ExxonMobil gas station--now a Mirabito service station-- lost ~10,000 gallons of gasoline from a faulty storage tank. The spill contaminated multiple private drinking water wells in the area and led to the installation of the Ulysses Water District 3 which utilizes water from the Bolton Point Water system (see 2.1.2).

Figure 11: Historic Spills



2.3.3. Higher Risk Land Uses

Shown on Figure 12 *Higher Risk Land Uses* are higher risk land uses as identified from property tax assessment data. These higher-risk uses include Concentrated Animal Feeding Operations (CAFO), cemeteries, auto service establishments, gas stations, mini-marts, and the town highway department. Oil and gas wells, and petroleum product pipelines are represented in a separate figure, Figure 13: *Petroleum Product Pipelines and Oil and Gas Wells*. Note that inclusion on Figures 12 and 13 does not mean that a particular property or use is active or has resulted in groundwater contamination. Also, CAFOs are represented at the address of registration with the NYSDEC and do not represent all areas where they may be spreading manure.

Figure 12: Higher Risk Land Uses

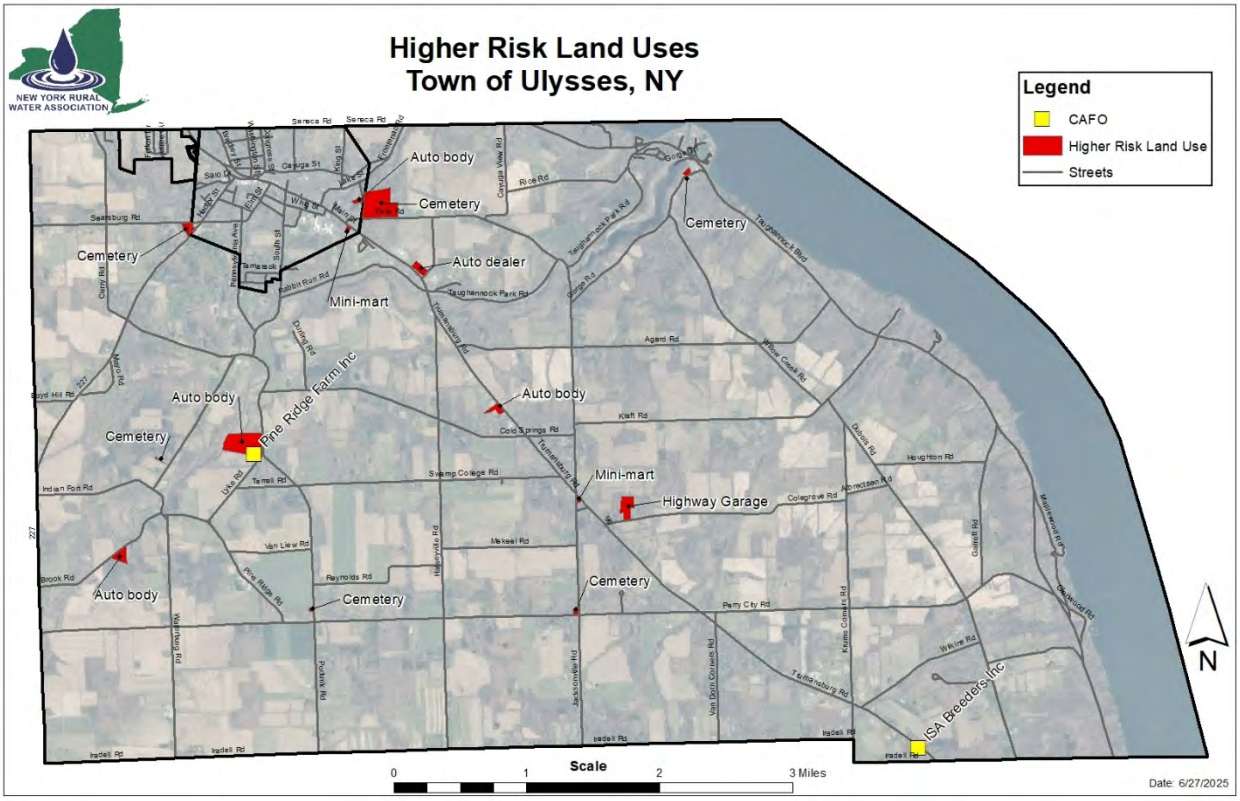
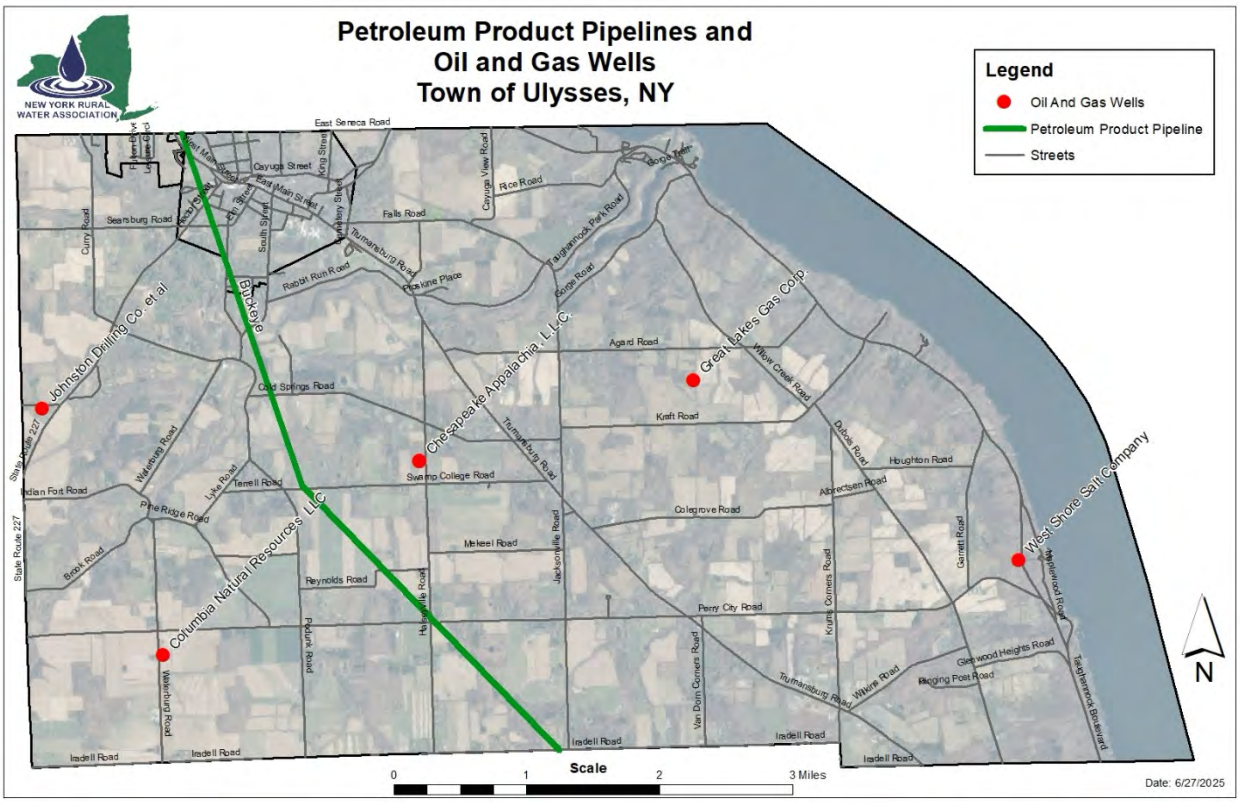


Figure 13: Petroleum Product Pipelines and Oil and Gas Wells



2.3.4. Non-Point Sources of Pollution

The above-mentioned regulated facilities and higher risk land uses are potential "point sources" of pollution since they are single identifiable potential sources of contamination. In contrast, "non-point source" pollution is caused by rainfall or snowmelt moving over and through the ground as runoff. This runoff sometimes carries away pollutants that are eventually deposited into surface water, wetlands, or recharged into groundwater. Local non-point source pollution can include: (1) nitrogen, phosphorus, pesticides, etc. from agricultural lands and residential areas; (2) sediment from construction, crop lands, forestry activities (silviculture), and stream bank and ditch erosion; (3) pathogens and nutrients from improperly managed livestock and/or pet wastes; poorly maintained, faulty, or densely located septic systems; and (4) oil, grease, toxic chemicals, and salts from roads and other paved areas.

Figure 14 is a map of land cover data using data from the 2015 CUGIR Land Use and Land Cover Tompkins County NY Dataset. Table 6 is a summary of land cover in the Town of Ulysses based upon this data, excluding the area of Village of Trumansburg and Cayuga Lake. Note that the Town is currently updating its 2009 Comprehensive Plan and when completed, that document will include a Land Use and Land Cover map with the newest available data and may differ slightly from the one presented here.

Figure 14: Land Use / Land Cover

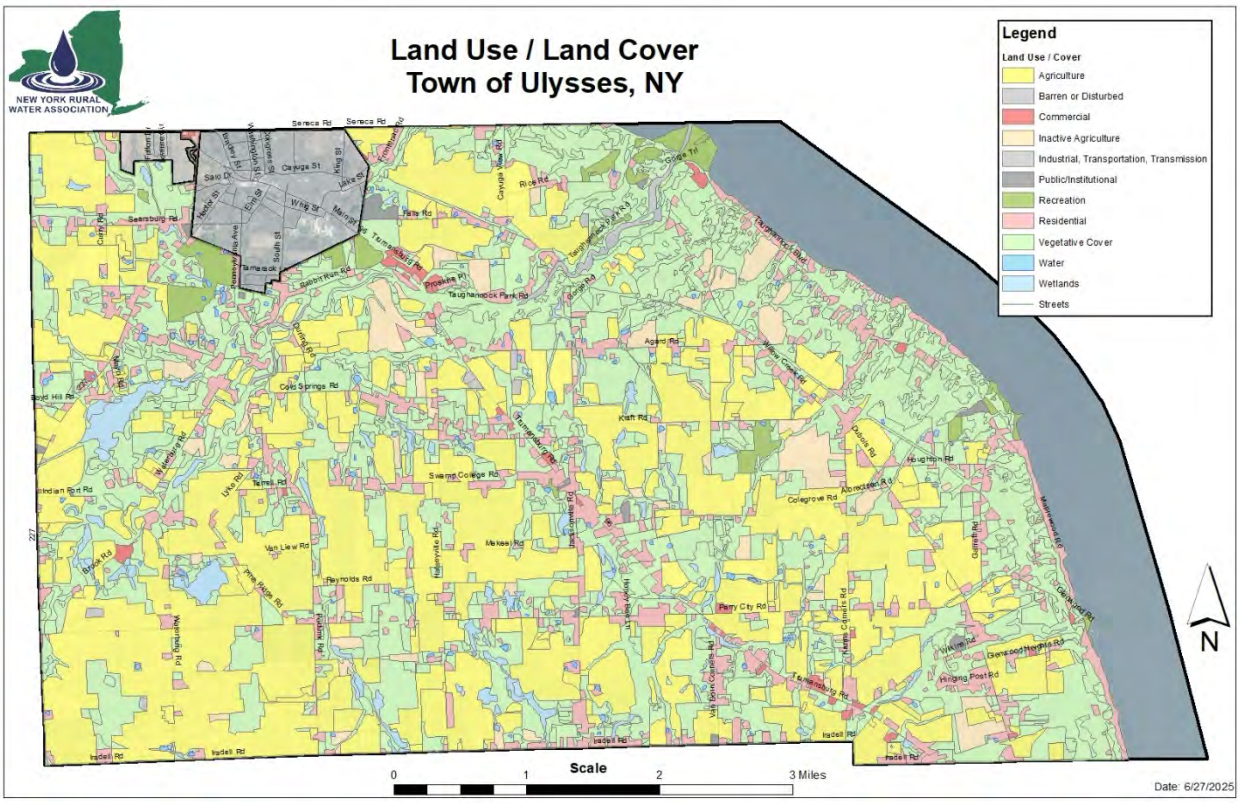


Table 6: Land Use and Land Cover

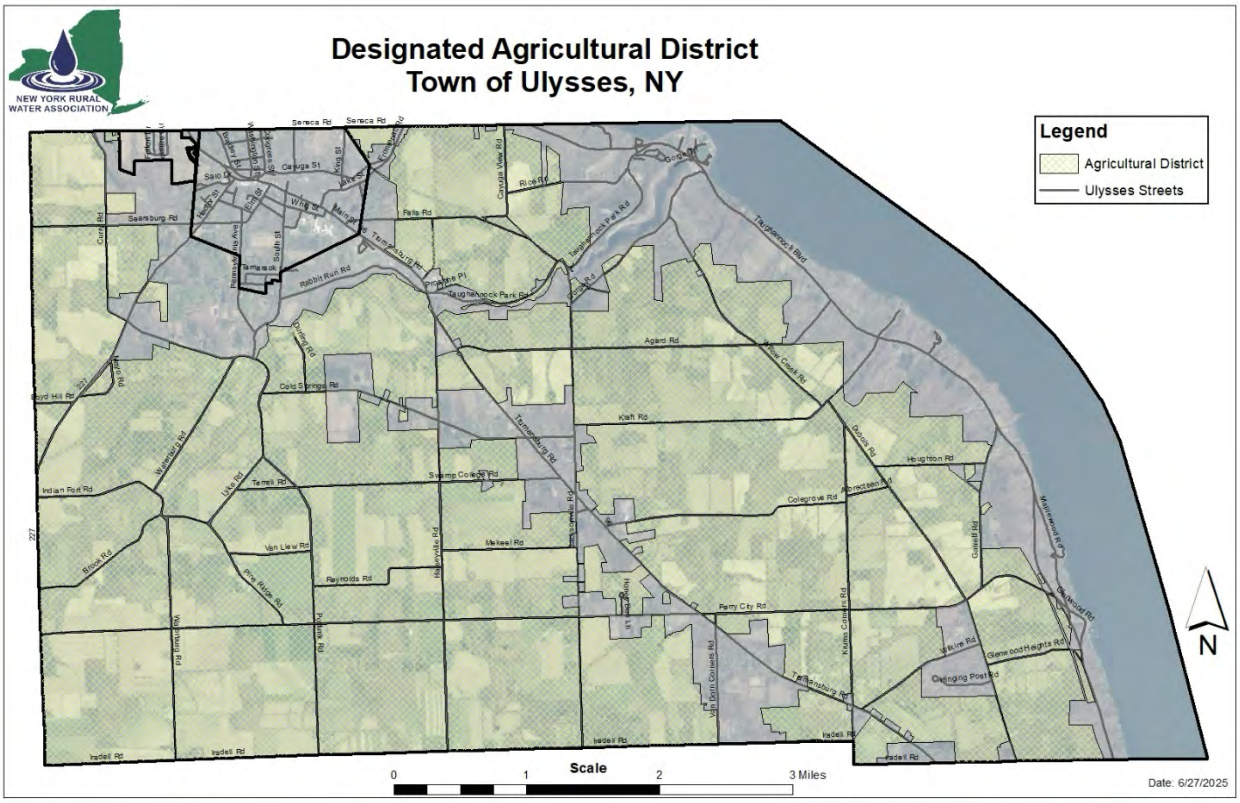
Category	Percentage of Land Area
Agriculture	41.10%
Barren or Disturbed	0.38%
Vegetative Cover	39.81%
Commercial	0.49%
Inactive Agriculture	3.47%
Industrial, Transportation, and Transmission	0.10%
Public/Institutional	0.27%
Recreation	1.47%
Residential	10.30%
Wetlands	1.86%
Water (Excluding Cayuga Lake)	0.42

Numbers exclude the Village of Trumansburg

Much of the town is located within a Tompkins County designated Agricultural District (see Figure 15). The areas of the town within this district are under the protection of New York State Agricultural District Law, administered by the New York State Department of Agriculture and Markets (NYSDAM). One of the benefits of being with an agricultural district is that owners of farmland receive reduced property taxes for land in agricultural production. Additionally, the Agricultural District Law protects

farmers against local laws which NYSDAM deems unreasonably restricting farm operations located within an agricultural district. The Town of Ulysses is a Right-to-Farm municipality.

Figure 15: Designated Agricultural District



2.4. ASSESSMENT OF PRIVATE WELLS - Issues and Concerns

2.4.1. Private Well Survey

In 2023, the DWSP2 committee initiated a survey for town residents to determine more about the source, quality and quantity of their water supply, working with RCAP Solutions (Rural Communities Assistance Partnership; Becky Sims Community Specialist). In October 2023, the survey was placed online and distributed to 1,334 property owners in the Town of Ulysses via a postcard with a QR code link to the survey. Paper versions were also made available at the town office. RCAP Solutions summarized the 348 responses (26% response rate) in a report delivered on March 25, 2024 (Appendix B: *Ulysses Drinking Water Survey*, Appendix C: *Drinking Water Survey Results (by RCAP Solutions)*, Appendix D: *Summary of Written Survey Comments*).

Survey responses were geographically well-distributed across the town. Of the responses received,
15% (55) had water supplied by a municipal water system,
74% (260) by private wells,
9% (30) by direct withdrawal from Cayuga Lake, and
2% (5) by rainwater (cisterns) or delivered water.
Responses indicated that:

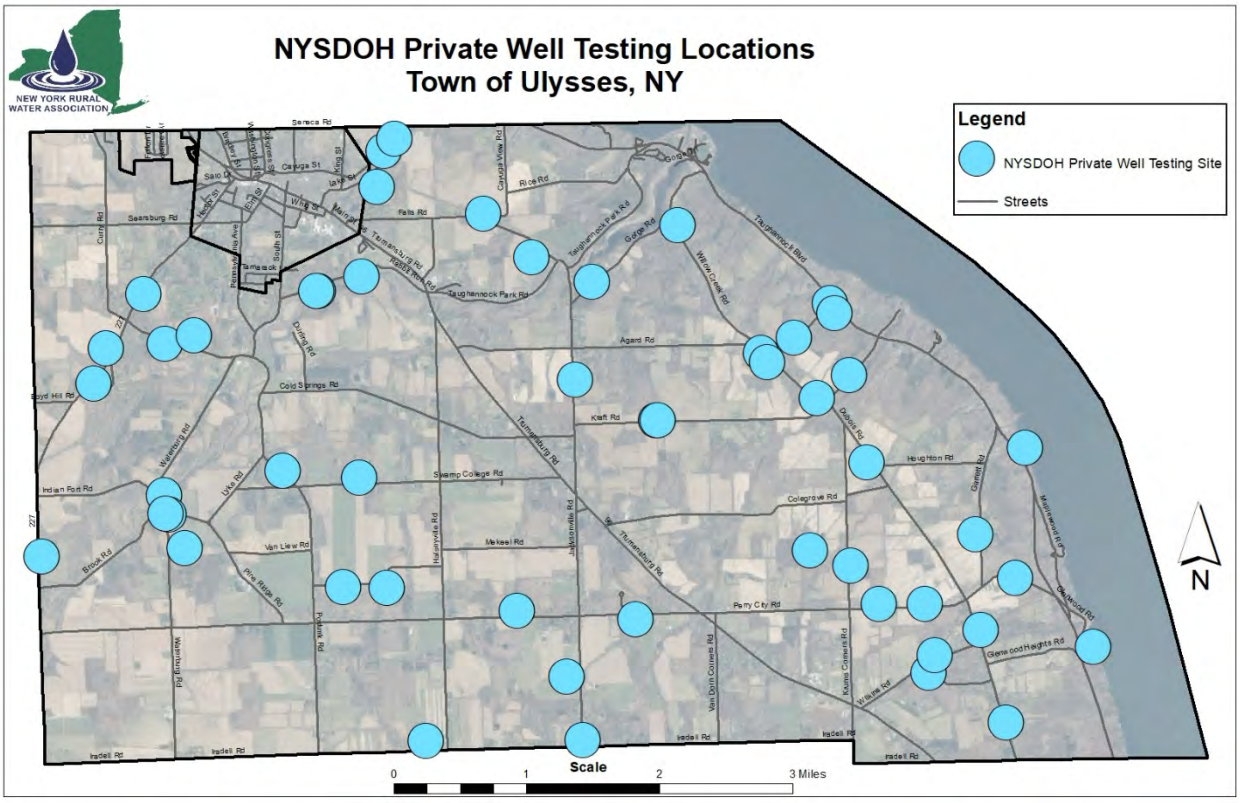
- Quantity: 13% reported inadequate seasonal water supply to meet their needs.
- Quality: 60% reported at least one water quality problem, and 51% reported three or more problems. 25% reported using bottled water for drinking water.
- Common quality issues were hardness (61%), iron (48%), sulfur (47%), odor (33%), bad taste (28%) and sediment (27%). 33% rated their overall water quality as "excellent" or "good", while 67% rated overall quality as fair, poor, or very poor.
- Treatment: 60% reported treating their drinking water (water softener, carbon filter, sediment filter, UV disinfection, and/or chlorine), with 1 in 3 spending $500 or more annually on their water supply.
- Infrastructure: 48% made major investments in their water supply in the past 10 years, ranging from $200 to $50,000, with the median cost being $2500.
- Municipal water: 60% were somewhat to very interested in being connected to a municipal supply system, with equal proportions willing to pay <$500 (34%) or $500 to $1000 (33%) per year, and 18% either unwilling or unable to pay for municipal water.
- Top concerns about potential threats affecting the water supply included: manure and fertilizer storage and application, drought or flooding, pesticide storage; petroleum or chemical contamination, contamination from septic systems, and lack of water due to new adjacent wells.

Additional comments about survey topics were supplied by 123 survey respondents in response to the final question: "Any additional information related to your water that you'd like to share?" These are summarized in Appendix D: *Summary of Comments.*

2.4.2. New York State Department of Health Sampling of Private Wells

The NYSDOH Bureau of Water Supply control conducted two sampling campaigns for individual well water sources (IWS) in Ulysses to complement the resident drinking water survey and provide further insights for this plan. The town requested volunteers to have their well tested in this program and received over 100 positive responses. The sampling sites were chosen to achieve the best possible coverage of sites across the town, informed by land uses, responses from the drinking water survey, history of facilities of possible concern for groundwater contamination, general areas of vulnerability based on DOH experience statewide, topography, and geology (Figure 16). The NYWRA technical specialist chose 51 sampling sites using the above criteria. IWS wells were sampled over two 2-day periods in May and September 2024, for a suite of analytes including coliform and *E. coli* bacteria, color, turbidity, odor, pH, conductivity, hardness, nitrate, iron, manganese, chloride, sulfate, sodium, fluoride, arsenic, and lead. Two other sites were sampled only for coliform bacteria. Raw well water samples were collected before treatment from the pressure tank or another accessible location if necessary. Of the wells sampled, the vast majority were drilled wells likely completed in bedrock (most well owners were unsure of the depth of their wells), with the rest of the wells either shore (2), dug (2) or artesian (1).

Figure 16: NYSDOH Private Well Testing Locations



The NYS sanitary code designates a maximum contaminant level (MCL)—a health-based standard or an action level for parameters of potential concern in public drinking water. When a result exceeds the value as determined by the applicable standard it is considered an exceedance. Private wells are not regulated, but these standards are useful as guidelines. The Monroe County Health Department

has a useful quick reference guide[1] that lists the MCL/Standard/ Action Level, the likely source, and the concerns for a full range of analytes including all of those tested for in Ulysses.

For the 51 IWS wells sampled during the two NYSDOH surveys, exceedances were seen for 8 different contaminants. The number of exceedances observed in the Ulysses wells tested are higher than the estimates of statewide averages from the DOH database (Table 7 and 8.).

Table 7: Exceedances of contaminants in Ulysses IWS samples tested by NYSDOH

	1 exceedance	2 exceedances	3 exceedances
Ulysses test wells	89%	68%	42%
State-wide average	65%	34%	15%

The most often detected parameters of concern for human health were coliform bacteria including E. coli, and arsenic, all of which occurred in Ulysses wells much more frequently than the statewide averages (Table 8).

Table 8: Parameters of public health concern in Ulysses IWS samples tested by NYSDOH

	Coliform	E. Coli	Arsenic
Ulysses test wells	66%	24%	8%
State-wide average	40%	6%	2%

Arsenic naturally occurs in trace amounts in bedrocks and sediments, and some areas in Ulysses are naturally enriched in arsenic. Arsenic concentrations can be variable and change over time, so regular monitoring in these areas is advisable. Coliform bacteria are commonly found in the environment, and include bacteria found in soil, water influenced by surface water, and human and other animal wastes. A positive test for total coliforms can indicate a problem with well integrity or pathogen contamination. *E. coli* is the major species of coliform bacteria found in the gut of warm-blooded animals and is the best indicator of likely fecal pollution in well water and a need for corrective action. Annual private well testing for coliforms and *E. coli* is recommended (see Appendix E).

Lead contamination above the MCL (0.015 mg l^{-1}) was detected in 2 wells, with 3 others having concentrations at or above 50% of the standard level. Nitrate was below the MCL in all the wells tested (10 mg l^{-1} as N), with a mean concentration of 0.3 mg l^{-1} and a maximum of 3.4 mg l^{-1}. The MCL is a maximum level indicated by EPA[2] to protect against blue-baby syndrome, however EPA also suggests that concentrations over background levels (1-3 mg l^{-1}) indicate contamination. Agricultural fertilizer application adjacent to shallow wells and leaking septic tanks are potential contamination sources to be aware of. Testing for arsenic, nitrate, and lead every 3-5 years is advisable (see Appendix A- *Arsenic Fact Sheet*, Appendix E – *Test Your Well—Protect Your Family's Water*) and Appendix I – *Sources of Lead in Drinking Water*).

The water quality parameters of non-health concern that were most detected and exceeded the standards were iron (41% of wells tested), iron plus manganese (33%), hardness (82%), and odor (16%). NYSDOH consulted with individual homeowners on their results and potential corrective actions for any parameters that tested above the MCL / standards of concern.

[1] https://www.monroecounty.gov/files/health/eh/WaterSupply/WaterSampleResult%20QuickReferenceGuide.pdf
[2] https://www.epa.gov/nutrientpollution/estimated-nitrate-concentrations-groundwater-used-drinking

3. DRINKING WATER PROTECTION STRATEGIES AND IMPLEMENTATION

3.1. Public Education and Outreach

Since the Town of Ulysses residents access water through several different sources, strategies for outreach and education will vary. Regardless of the water source, the Town of Ulysses should make a broad effort to publicize the existence and recommendations from this plan. For town residents, outreach goals include learning the importance of water quality in general, how it impacts their lives and that of other residents, and how they can be involved in efforts to protect water quality.

3.1.1. Drinking Water

Municipal Water Sources

The town has water districts connected to both the Southern Cayuga Lake Intermunicipal Water Commission aka Bolton Point and the Village of Trumansburg. The source of water for Bolton Point is surface water from Cayuga Lake. Trumansburg is supplied by wells near Cayuga Lake at both the Boy Scout Camp in the Town of Covert and Taughannock State Park in the Town of Ulysses.

Outreach/Education Recommendations:

- Post the annual water quality reports from the providers (Bolton Point and the Village of Trumansburg) on the Town website.
- Raise awareness of the impact of contaminants from stormwater runoff on the overall water quality of Cayuga Lake as it is the drinking water source for those connected to Bolton Point.
- Raise awareness of the increasing episodes of Harmful Algal Blooms (HABs) and their connection to land use practices.

Private Wells – Dug and Drilled Drinking Water Sources

Based on water testing of a sampling of wells throughout the Town of Ulysses, many residents have water quality issues (see Section 2.4 and Appendix C- *Survey Results*).

Outreach/Education Recommendations:

- Hold outreach events and distribute information to Ulysses residents about potential hazards commonly seen in Ulysses wells and how to test for them locally.
- Publicize and hold workshops and provide written materials about the importance of well casing maintenance and inspection to prevent infiltration of contaminants into well water.
- Ensure the Ulysses Code Enforcement official is aware of the publication *Guidance for Code Enforcement Officials* (*Appendix J*).
- Provide information on the importance of periodic testing of individual household drinking water wells for potential contaminants using the town's communication outlets. No state or county entities have oversight over private well water quality, which leaves this safety issue up to the homeowner. Provide information to residents about the impact of lead water service lines on human health. Encourage periodic testing water for lead levels, even for residences on private wells. Relevant appendices:
    - *Test Your Well-Protect Your Family's Water (*Appendix E).

- *NYS DOH Fact Sheet #5: Individual Water Supply Wells* (Appendix F).
- *NYS DOH Fact Sheet #7: Individual Water Supply Wells—Testing, operation, and maintenance of residential wells (Appendix G).*
- *Tompkins County DOH: Private Well Use During Drought (Appendix H).*
- *Sources of Lead in Drinking Water* (Appendix I)

Progress to date:
The Town of Ulysses sponsored a public information session on well and septic system information and maintenance, organized by the WSPP committee and including participation by NYSDOH, RCAP Solutions, and NYRWA on May 29, 2025. The recording of that workshop is posted on the Town's website.

Direct Withdrawals from Cayuga Lake
The Town of Ulysses has miles of lakeshore heavily populated with residential homes--many of which draw water directly from the lake or use lake wells for drinking water.

Outreach/Education Recommendations**:**

- Ensure residents living along the lake are aware of the potential risks of drinking untreated water directly from the lake.
- Provide residents with information on available treatment options for surface water treatment

All Drinking Water Sources

Outreach/Education Recommendations:

- Raise awareness of the improvement of water quality through use of drinking water filters (reverse osmosis and charcoal).
- Provide information to residents about the impact of lead water service lines on human health. Encourage periodic testing water for lead levels, even for residences on private wells (see Appendix I).

3.1.2. Septic Systems

The goal of a properly designed and maintained septic system is to prevent contaminants in effluent from reaching drinking water sources. This is especially important for systems that are in close proximity to water bodies or near ditches and streams that lead to the lake.

Outreach/Education Recommendations:

- Educate homeowners on the proper operation and maintenance of onsite wastewater treatment systems/septic systems and their potential impact on surface water, especially those located near waterways including ditches. See Appendix K: *NYS DEC Septic System Operation and Maintenance*.
- Urge the Tompkins County Health Department to enact a wastewater treatment system inspection program such as the programs in place in both Seneca and Cayuga Counties as well as many others throughout NY.
- Provide information to residents on septic repair/replacement grant programs.

3.1.3. Stormwater Management

Stormwater is water from rain and snow melt that make its way into ditches and streams that are conduits for contaminants to find their way into water bodies.

Outreach/Education Recommendations:

- Support local lake organizations and encourage collaborative education efforts such as the Cayuga Lake Watershed Network's Lake Friendly Living program and periodic outreach from the Community Science Institute with a focus on stormwater.
- Provide information about the benefits of vegetative buffers and their role in preserving water quality.
- Educate residents about the importance of slowing rainwater runoff and encourage all landowners, including farmers, to use Best Management Practices (BMPs) to manage nutrient runoff.

Progress to date:
The Town of Ulysses is part of the Tompkins County Stormwater Coalition which provides education and outreach annually for member municipalities.

3.1.4. General Water Quality Protection

Outreach/Education Recommendations:

- Develop distributable information making residents aware of local laws that are protective of water quality.
- Encourage residents to be aware of, and/or get involved with, local organizations working and educating about preserving water quality. For example (see Section 6, Resources for full list and websites):
    - The Cayuga Lake Watershed Network
    - The Stormwater Coalition of Tompkins County through the Tompkins County Soil and Water Conservation District
    - The Cayuga Lake Watershed Intermunicipal Organization
    - The Community Science Institute
    - Tompkins County Environmental Management Council
    - Tompkins County Water Resources Council
    - Discover Cayuga Lake
    - Cayuga Lake Environmental Action Now
- Support recycling and trash programs to keep trash from waterways and encourage participation in clean-up days to remove trash from waterways.
- Educate residents about proper fertilizer and pesticide applications and how they relate to water quality. Encourage residents to take the Lake Friendly Living pledge[3]
- Collaborate with the Soil and Water Conservation District to help farmers implement best management practices (BMPs) to reduce nutrient, sediment, and manure contaminant runoff from

[3]https://www.cayugalake.org/lake-friendly-living/

farmlands.

3.2. Highway and Department of Public Works

Recommendations:

- Work with the Department of Public Works/Highway Department on practices that are protective of water quality including strategies to reduce use of salt. Implement ditching practices that slow water runoff, and construct swales and water retention areas to encourage recharge of aquifers.

3.3. Regulatory Strategies

3.3.1. Zoning and Local Laws

Through NY State's home rule legislation, towns have broad authority over land uses using methods such as zoning, land use ordinances, and overlay districts.

Recommendations:

- Create an Environmental Protection Zone for stormwater catchment areas.
  The Environmental Protection Area outlined in the 2009 Comprehensive Plan should be enacted into law as a zone where extra measures are taken to slow stormwater runoff. This catchment area is where stormwater begins to quickly accumulate and accelerate as it heads to steeper slopes closer to the lake. Ulysses has already experienced the damage these waters can cause with the washout of a large culvert on Maplewood Road in August 2014 and on Agard Road more recently. Fast running stormwater leads to sedimentation and nutrient runoff into Cayuga Lake—the drinking water supply for Water Districts 3 and 4.

- Adopt Overlay Districts to protect areas of high hydrogeologic sensitivity. Identify and protect areas that are critical for maintaining groundwater quantity and quality, such as forests or wetlands that serve as groundwater infiltration and recharge areas.

- Consider amending the site plan review process in the Town zoning regulations to include impacts on water quantity and quality and prevent unsustainable withdrawals from new wells, recognizing the limited availability of groundwater in some areas and the potential of the depletion of groundwater resources by competing uses (i.e. well interference).

- Implement rural land protections, as informed by state, county, and Ulysses planning guidance document recommendations (especially 2009 Comprehensive Plan and the 2025-2045 update once adopted, and the 2013 Ag and Farmland protection Plan).

- Explore a drainage local law as it relates to drinking water.

Progress to date:
Over the years, the Town of Ulysses has been active in protecting water quality in its streams and Cayuga Lake. The following actions are currently in effect:

- The town formally adopted the 2012 Tompkins County wetlands map to more closely reflect

locations of existing wetlands. The 2019 zoning update included buffers and setbacks to these wetlands and waterways to better protect them.

- In the 2009 zoning update, Conservation and Lakeshore zones were added to the zoning, as these areas are particularly prone to erosion making stormwater even more damaging. Development is restricted in these zones as well as restrictions on tree removal, excavation, and percentage of land coverage. Setbacks to waterways and the lake are required for buildings.
- The town prohibits extractive industry (212-128) which bans hydrofracking for natural gas.
- The town has standards for vegetated buffer areas and setbacks from waterways are in place (212-124).
- The zoning includes regulations on animal waste storage facilities (212-139.3).
- The zoning includes regulations on concentrated animal feeding operations (CAFOs) (212-139.4).
- Farmland and open space protections were considered and debated prior to the 2019 update of the zoning; however, the Town Board voted against the recommended protections.
- Flood Damage Prevention[4] Local Law (Chapter 89 of Ulysses local laws – 1987)
- Stormwater Management and Erosion & Sediment Control[5] local law (Chapter 156 of local laws-2007)
- Storm Sewers[6] (Chapter 149 of Ulysses Local Laws includes Article 1-Illicit Discharges, Activities, and Connections to Separate Storm Sewer System-2012).

3.3.2. Critical Environmental Areas

Critical Environmental Areas (CEAs) are lands that have been identified by the County as Unique Natural Areas (UNAs) that are exceptional or unique with respect to their environmental impact, human health, aesthetics, historical or cultural significance, educational value, or other important aspects. Tompkins County has the authority to designate UNAs and has done so within the Town of Ulysses. However, some of these UNAs have not been protected by the town through official codification of CEAs. Doing so would then offer protections during the site plan review process.

Recommendations:

- Explore designating Unique Natural Areas (as identified by Tompkins County) that contribute to water quality protection as Critical Environmental Areas (CEAs).
  See Appendix L: *Critical Environmental Areas – Tools for Conservation in Your Community* and Appendix M: *Critical Environmental Areas – Designation and Adoption Process.*

Progress to date:
The Town of Ulysses recognized the County designated UNAs in its Natural Resources Inventory[7] and

[4]https://ecode360.com/28982170
[5] https://www.townofulyssesny.gov/__cms/docs/stormwater2007.pdf
[6]https://ecode360.com/28982579#28982579
[7]https://townofulyssesny.gov/__cms/docs/2018-06-NRI-Ulysses.pdf

in its 2009 Comprehensive Plan. The Conservation and Lake shore zones include several UNAs and they have increased protections.

3.4. Monitoring and Enforcement

To be effective, enacted laws and regulations need to be enforced to ensure the intended positive results from the law's enactment.

Recommendations:

- Emphasize enforcement of new and existing zoning regulations that are protective of drinking water sources.
- Request and analyze existing monitoring data from state or other entities to ensure sites of concern are not contaminating waterways, and to understand if additional monitoring is warranted within the Town of Ulysses.
- Request monitoring outcomes from the NYS DEC pertaining to CAFO regulated farms to ensure nutrient management plans are being followed and effective.
- Work with the Community Science Institute, the Soil and Water Conservation District, or other entities already monitoring runoff into the lake to determine potential gaps in runoff data for areas of concern.
- Request NY State increase monitoring of waterbodies and enforcement of water protective legislation. Working as an individual municipality or in conjunction with others, urge NYS legislators and regulators to adequately fund enforcement of water protective legislation and monitoring of contaminants that can degrade Cayuga Lake as a drinking water source.

3.5. Extension of Public Water Supply and Sewer Infrastructure

Many Ulysses residents live in rural areas too sparsely populated to afford municipal water without significant state or federal funding assistance, and/or in a county-adopted, state-certified agricultural district where there is a statutory duty to avoid or minimize adverse impacts of new and existing water and sewer lines to farm operations (NYS Agricultural Districts Law). Water district formation requires an affirmative vote by those living within the district representing more than half of the total assessed value of the taxable properties.

Recommendations:

- Explore extensions of both water and potentially sewer lines using guidance from the Town of Ulysses Comprehensive Plans of 2009 and the 2025-2045 update once adopted, along with the Tompkins County Water and Sewer Plan and Comprehensive plans. The town planning documents should clearly state objectives on land and open space preservation which will in turn speak to where higher density housing will be allowed and thus inform where new water districts may be desirable, such as areas with poor water quality.
- Add a section to Chapter 200 of the Ulysses Town Code, Public Water System, that specifies special conditions and restrictions on any proposed construction or extension of water lines where the affected or benefited lands are located within the officially designated County-adopted and State-certified Agricultural District. This action helps to discourage the irreversible

conversion of prime agricultural farmland into other uses, and to satisfy NYS Department of Agriculture & Markets law AA25. Extending a water or sewer line with public funds to serve non-farm structures within an agricultural district requires a notice of intent process (§305-4). To fulfill the requirement to minimize adverse impacts municipalities may adopt lateral restrictions on hook-ups for non-farm structures. The NYS Department of Agriculture provides suggested language for municipal legislation.

- Resolve with the Village of Trumansburg to clearly state which municipality is responsible for the maintenance of the waterline going to the water service area denoted as Water District 1.

  Progress to date:
  The Town of Ulysses conducted surveys of residents in both 2009 and in 2023 to better understand the need for municipal water. These surveys have highlighted a great range of problems in well water throughout the town and gauged public interest in municipal water service and cost tolerances for it.

  The Town of Ulysses allotted funding in 2017 for a preliminary report to explore the cost of developing a water district along NYS Route 89 to provide municipal drinking water from Bolton Point to residents along the lake. This was done again in 2018 for residents along Falls Road with the source being the Village of Trumansburg. Again, a decade earlier a water main extension proposal failed. It included parts of Podunk/Cold Springs/Curry/Indian Fort/Waterburg/227 Roads. As per NYS Law, residents within a proposed water district vote to make the ultimate decision about creating a water district. A straw poll of residents determined many residents in both the Rt 89 and Falls Road proposed districts felt the very high annual expense/household was too high to continue exploring this option.

  The town has a formal procedure to request a study for a municipal water line extension or addition.

3.6. Other Water Protection Strategies

Recommendations:

- Adopt voluntary manure management guidelines. NYS does not require nutrient management plans for dairy herds with fewer than 300 cows, but smaller livestock operations can serve as sources of nutrient runoff into Cayuga Lake especially in the Town of Ulysses where the topography creates a multitude of pathways to the lake. Example guidelines[8] that pertain to smaller livestock operations and farmlands receiving regular manure applications have been adopted by Cayuga County

- Set up reserve funds to purchase and protect lands that are critical to water quality and drinking water supplies.

- Urge NYS legislators and regulators to enact water protective legislation either by working as an individual municipality or in conjunction with others.

- Keep aware of actions, data, and information related to the salt mine under Cayuga Lake in

[8] https://www.cayugacounty.us/DocumentCenter/View/1507/Cayuga-County-Water-Quality-Management-Agency-Manure-Management-Guidelines-PDF

the Town of Ulysses. Some geological anomalies have caused concern especially to drinking water should there ever become a connection between the lake and mine activities such as brine storage. Reach out to the state elected officials and state regulatory agencies with concerns.

- Support implementation of plans and legislation that are protective of drinking water at all levels of government. Urge NYS to clarify that the NYS Department of Health has full and clear authority over Watershed Rules and Regulations for drinking water sources.
- Support implementation of the Total Maximum Daily Load for Phosphorus[9] (TMDL), Watershed Rules and Regulations[10], Cayuga Lake HAB Action Plan[11], Cayuga Lake Restoration and Protection Plan[12]

[9]https://dec.ny.gov/sites/default/files/2024-08/tmdl_phos_cayuga.pdf
[10]https://hudsonvalleyregionalcouncil.org/wp-content/uploads/2015/11/Watershed-Rules-and-Regs-for-Protecting-Drinking-Water-in-NY-Article.pdf
[11]https://extapps.dec.ny.gov/docs/water_pdf/cayugahabplan.pdf
[12]https://cwio.org/wp-content/uploads/2022/06/CLWRPP-2017-Final.pdf

4. Plan Implementation Strategy Timeline

An implementation timeline allows the town to organize protection efforts, develop reasonable expectations, and encourage completion of the work. The following table is to be used to organize a timeline of protection and implementation efforts.

Table 9: Implementation Strategy Timeline

Identify Protection and Management Methods and Develop an Implementation Strategy Timeline				
Section	Protection Method/ Management Method	Goal	**Project Leader** / Partnerships	Implementation Timing
3.1	Public Education and Outreach	Increase the awareness of local landowners, resident, and official of the importance of protecting and preserving drinking water sources	PD **DWSP2-MT** NYRWA SWCD TC DOH CSAC Other entities	Continuous
3.2	Highway/DPW	Implement water quality protective strategies.	DWSP2-MT Other entities	Outreach in short term. Implementation as funding/budget allows.
3.3.1	Zoning Code Changes	Create an environmental protection area as outlined in the 2009 Comprehensive Plan	**PD** TB, DWSP2-MT NYRWA PB	Include code amendments in conjunction with recommendations from the revised Comprehensive Plan expected in 2025
3.3.1	Zoning Code Changes	Modify site plan review to include water quality impacts	**PD** TB DWSP2-MT NYRWA PB	Coordinate with Comprehensive Plan
3.3.1	Zoning Code Changes	Designate Critical Environmental Areas (CEAs)	**PD** TB DWSP2-MT NYRWA PB CSAC	Coordinate with Comprehensive Plan
3.3.1	Other Local Laws	Explore adoption of a local drainage law.	PD **TB** DWSP2-MT NYRWA	Long term
3.4	Monitoring and Enforcement	Work with the state, other municipalities and NGOs	CE **TB** DWSP2-MT NYRWA Other entities	Long term

Identify Protection and Management Methods and Develop an Implementation Strategy Timeline				
Section	Protection Method/ Management Method	Goal	**Project Leader** / Partnerships	Implementation Timing
3.5	Extension of Public Water and Sewer	Consider and develop potential new water or sewer districts in accordance with Town, County, and NYS guidance documents; Work with neighboring munis and the county to determine feasibility	**TB** DWSP2-MT NYRWA Other entities	Long term
3.6	Other (Manure Management, Land Protection, Salt Mine monitoring, Water Protection Partnerships)	Review recommendations annually and designate an individual or group to work on and move forward foremost actions.	**TB** DWSP2-MT NYRWA Other entities	Long Term

PD-Planning Department, DWSP2-MT-Plan Management Team, NYRWA-NY Rural Water Authority, SWCD-Soil and Water Conservation District, TB-Town Board, TCDOH – Tompkins County Department of Health, CE-Code Enforcement, CSAC - Conservation and Sustainability Advisory Council

5. Plan Progression and Maintenance

This plan should be adopted by the Town of Ulysses and then periodically reviewed by a Water Advisory Committee to the Ulysses Town Board, focused on water quality protection. This committee will serve as the DWSP2 Management Team.

Upon adoption of the plan by both the town and the DEC, a DWSP2 Management Team will work to implement this plan. New York State recommends that a progress report be produced and shared with interested agencies/individuals no less than once a year.

The DWSP2 should be included as an appendix in the town's Comprehensive Plan that is currently being updated. There are many benefits to a water source protection plan that are integral to comprehensive planning, including contributing to the conservation of natural resources and public health as well as contributing to savings in costs of providing and treating drinking water, maintaining real estate values, and increasing climate change resiliency. In the future, New York State recommends that the DWSP2 Plan be reviewed at the same frequency that the municipality has set for updating its comprehensive plan. The plan should also be amended due to any changes such as new municipal drinking water sources, new threats to drinking water, proposed land use changes, water quality trends, etc. to remain effective and relevant.

The town and the DWSP2 Management Team should work closely with other entities in the area developing DWSP2s, especially Bolton Point which provides the drinking water for Ulysses Drinking Water Districts 3 and 4, and the Village of Trumansburg should they decide to develop a DWSP2.

6. Resources

Resources in addition to those included in the appendices:

- Local organizations working and educating about preserving water quality:
    - The Cayuga Lake Watershed Network - https://www.cayugalake.org/
    - The Stormwater Coalition of Tompkins County through the Tompkins County Soil and Water Conservation District - https://tcstormwater.org/
    - The Cayuga Lake Watershed Intermunicipal Organization https://cwio.org/
    - The Community Science Institute - http://www.communityscience.org
    - Tompkins County Environmental Management Council - https://tompkinscountyny.gov/emc
    - Tompkins County Water Resources Council - https://www.tompkinscountyny.gov/All-Departments/Planning-and-Sustainability/Advisory-Boards/Water-Resources-Council
    - Discover Cayuga Lake - https://discovercayugalake.org
    - Cayuga Lake Environmental Action Now - https://cleancayugalake.org/
- Benefits of Riparian Areas and Stream Buffers - https://www.tompkinscountyny.gov/files/assets/county/v/1/planning-amp-sustainability/documents/enhancingwaterresources_0.pdf
- Tompkins County Stream Corridor Protection and Management - https://www.tompkinscountyny.gov/planning/water-resources-stream-buffers
- Natural Resources Inventory - https://townofulyssesny.gov/__cms/docs/2018-06-NRI-Ulysses.pdf
- Wetlands Maps of Tompkins County (2012) - https://townofulyssesny.gov/__cms/docs/2018-06-NRI-Ulysses.pdf
- Town of Ulysses Comprehensive Plan (2009) - https://townofulyssesny.gov/__cms/docs/2018-06-NRI-Ulysses.pdf
- Town of Ulysses Zoning Map (2019) - https://townofulyssesny.gov/__cms/docs/2018-06-NRI-Ulysses.pdf
- Agriculture and Farmland Protection Plan - https://townofulyssesny.gov/__cms/docs/AFPP-FINAL_ADOPTED_02-26-13-with_MAPS.pdf
- Tompkins County Comprehensive Plan- https://www.tompkinscountyny.gov/All-Departments/Planning-and-Sustainability/Comprehensive-Plan
- Tompkins County Natural Resources Inventory. - https://tcdata-tompkinscounty.opendata.arcgis.com/maps/2a81810c773c4d08a5421810dcaf4e5f/about
- Estimated Nitrate Concentrations in Groundwater Used for Drinking - https://www.epa.gov/nutrientpollution/estimated-nitrate-concentrations-groundwater-used-drinking
- Sources of Lead in Drinking Water - https://www.epa.gov/sites/default/files/2017-08/documents/epa_lead_in_drinking_water_final_8.21.17.pdf
- Tompkins County Water Quality Strategy 2025-2027. - https://www.tompkinscountyny.gov/files/assets/county/v/1/planning-amp-sustainability/documents/advisory-boards/water-resources-council/wqs_2025-2027_final_12-16-2024.pdf
- NYS DEC Harmful Algal Bloom Program Guide. https://extapps.dec.ny.gov/docs/water_pdf/habsprogramguide.pdf
- Cayuga Lake Watershed Restoration and Protection Plan - https://www.cayugalake.org/the-watershed/restoration-protection-plan/

Town of Ulysses

Drinking Water Source Protection Plan

Appendix

Appendix A

Arsenic Fact Sheet

ARSENIC IN YOUR WELL WATER?

Inside This Circular

Arsenic concentrations exceeded the U.S. Environmental Protection Agency's drinking-water maximum contaminant level of 10 micrograms per liter (µg/L) in 8 percent of groundwater sample sites in Tompkins County during 2000—2012.

Photo of a typical home well

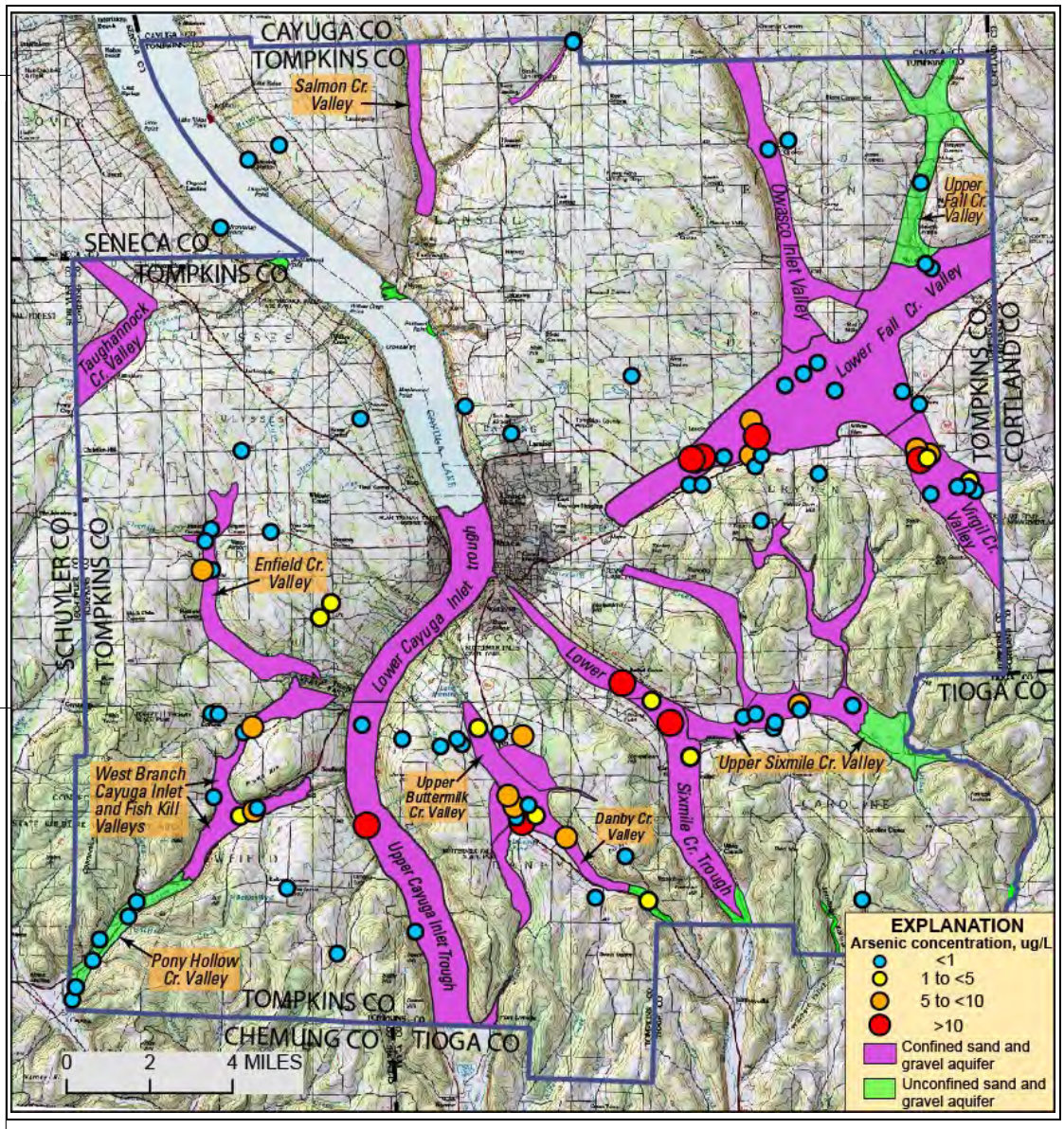


Figure 1.– Map showing groundwater sample sites in Tompkins County where arsenic was analyzed.

INTRODUCTION

Arsenic is a toxic element that occurs in some well water in Tompkins County at concentrations above the drinking water standard of 10 micrograms per liter (µg/L). Arsenic in water is colorless, odorless, and tasteless. Arsenic is relatively abundant in nature. Most instances of arsenic contamination in groundwater are found from naturally occurring minerals. The most important sources of elevated arsenic in groundwater are from iron oxides, which occur as coatings on mineral grains, and from pyrite.

GLOSSARY

Aquifer: An underground body of porous materials such as sand, gravel, or fractured rock, filled with water and capable of supplying useful quantities of water to a well.

Confined or artesian aquifer: Groundwater in these aquifers is confined under pressure between layers of poorly permeable sediments or rock, such as clay or shale.

Unconfined aquifer: An aquifer in which the water table is exposed to the atmosphere through openings in overlying material; the water is not confined under pressure.

Water table: The top of the water surface where all void spaces in the unconsolidated sediments and in the fractured bedrock are filled with groundwater (saturated zone) in an unconfined aquifer.

Potentiometric surface: A surface representing the altitude to which water will rise in a well that taps an confined aquifer.

Of the samples collected from confined sand and gravel aquifers, 19% (almost 1 out of 5 wells) had elevated arsenic concentrations equal to or greater than 10 µg/L.

ARSENIC IS A HEALTH RISK

Table 1.--Lifetime risks of dying of cancer from arsenic in tap water, based on the National Academy of Sciences' 1999 risk assessment[1].

Arsenic level in tap water (in micrograms per liter, µg/L)	Approximate total cancer risk assuming two liters (2.1 quarts) consumed per day
0.5 µg/L	1 in 10,000
1 µg/L	1 in 5,000
3 µg/L	1 in 1,667
4 µg/L	1 in 1,250
5 µg/L	1 in 1,000
10 µg/L	1 in 500
20 µg/L	1 in 250
25 µg/L	1 in 200
50 µg/L	1 in 100

[1]National Research Council, 1999, Arsenic in Drinking Water; National Academies Press, Washington D.C. 330p.

Arsenic is a known human carcinogen that causes cancer of the skin, bladder, lung, kidney, and liver. It also causes increased risk of cardiovascular disease, peripheral neuropathy, skin discoloration, skin growths, and diabetes. The major exposure pathway for arsenic in residential well water is drinking and cooking with the untreated water.

DOES ARSENIC OCCUR OFTEN?

At 100 sites, groundwater from wells that tap the glacial aquifers and the Devonian-age fractured-bedrock aquifers in Tompkins County were sampled by the Tompkins County Health Department (TCHD) and the U.S. Geological Survey (USGS) and analyzed for arsenic during 2000–2012. Elevated arsenic concentrations (greater than or equal to 10 µg/L) were detected in 8 percent of sample sites; moderate concentrations (5 to <10 µg/L) were found in 13 percent; low-to-moderate concentrations (1 to <5 µg/L) were found in 13 percent; and low concentrations (<1 µg/L) were found in 66 percent of sample sites. The state and federal drinking-water standard is 10 µg/L.

WHERE ARE ELEVATED ARSENIC CONCENTRATIONS FOUND?

Elevated arsenic concentrations (> 10 µg/L) were associated with strongly reducing conditions which are prevalent in confined sand and gravel aquifers (also known as artesian aquifers) such as those found in Virgil Creek, lower Sixmile Creek, and Fall Creek valleys (see fig. 2 for types of aquifers and fig. 1 for where these aquifers are located). Of the samples collected from the confined sand and gravel aquifers, 19% (almost 1 out of 5 wells) had elevated concentrations of arsenic equal to or greater than 10 µg/L. Moderate arsenic concentrations (5 to 10 µg/L) were found in some confined sand and gravel aquifers and sometimes in the shallow (upper) zones of shale/siltstone (bedrock) aquifers. Low arsenic concentrations were associated with oxygen-rich conditions that are present in unconfined aquifers, such as that found in Pony Hollow Creek Valley, and with wells finished in deep zones of bedrock. Arsenic concentrations were <1 µg/L in all 12 sample sites from unconfined aquifers.

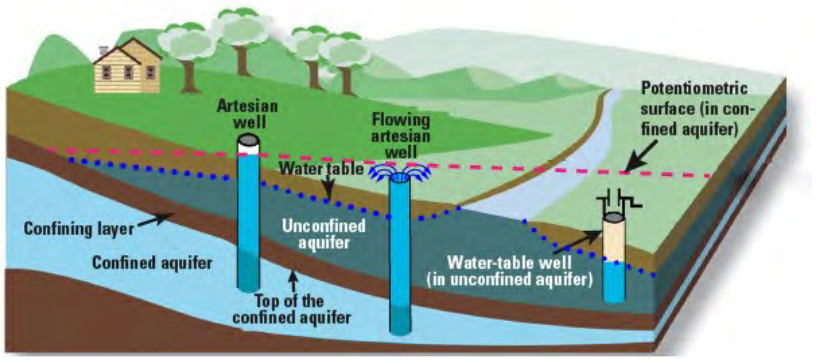


Figure 2.—Types of aquifers and wells

Source: Modified from Environment Canada

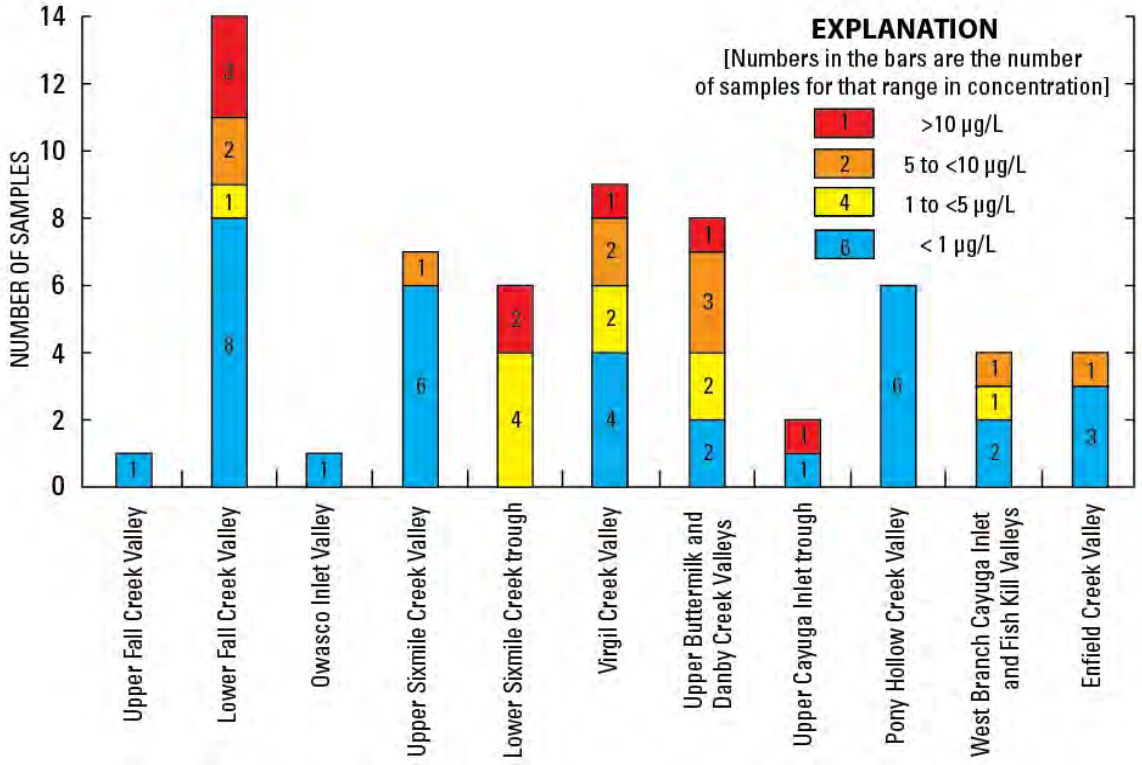


Figure 3.—Distribution of arsenic concentrations from groundwater samples in the major valley-fill aquifers in Tompkins County, New York. Location of valleys shown in figure 1.

CAN WE PREDICT WHERE ELEVATED ARSENIC CONCENTRATIONS ARE TO BE EXPECTED?

Arsenic concentrations in groundwater in Tompkins County have considerable spatial variability and are difficult to predict on a well-by-well basis; however, the risk of having high concentrations is greater in some areas than in others. High concentrations of arsenic are more likely to be found in confined sand and gravel aquifers (figs. 1 and 3). Conversely, we can predict with a fair amount of certainty where arsenic is not found in elevated concentrations such as in unconfined aquifers and in deep zones of bedrock (200-400 feet deep).

WHO SHOULD HAVE THEIR WATER TESTED?

If you are getting your water from a private groundwater well, it is up to you to make sure that your water is safe to drink.

It is especially important to have the water tested for arsenic if your well is finished in a confined sand and gravel aquifer. To design an arsenic treatment system, additional testing will be needed.

The U.S. Environmental Protection Agency (USEPA) recommends that you test your well once each year for total coliform and E. coli bacteria, nitrate, total dissolved solids, and pH levels; and test for common ions and trace metals every two years.

NYS certified water testing labs can usually be found in the telephone book under "Laboratories-Testing" or "Water Analysis."

For people who are supplied by public water systems, the USEPA and the NYS Department of Health set standards and regulations for the presence and levels of arsenic and of over 90 other contaminants in drinking water. The public can view the chemical test results of their water on the Annual Water Quality Report which can be obtained from the water purveyor.

It is especially important to have the water tested for arsenic if your well is finished in a confined sand and gravel aquifer.

Treatment Options

Arsenic removal requires special considerations. Water softeners and granular activated carbon filters do not remove arsenic. Although arsenic can occur in two species, commonly referred to as As3(III) and As5(V), the tests for these species are not widely available. Instead of testing for individual species of arsenic, most commercial labs test for total arsenic. For this reason, if your well requires arsenic treatment, it is important to choose a treatment system that removes both arsenic species.

The preferred treatment technology for arsenic removal of both species, As3(III) and As5(V), is a whole-house granular ferric adsorption system (see table below). It effectively removes both arsenic species from all water in the home, is easy to operate and maintain, and the arsenic is not returned to the environment via regeneration.

For water treatment at a single tap in the home, a granular ferric adsorption point-of-use system can be installed. This system uses under-sink cartridges (fig. 4). These systems typically produce only two quarts per minute and are used to provide treated water for drinking and cooking only. Cartridges are typically changed once per year.

In order to prevent fouling of an arsenic treatment system, pretreatment of the water may be needed where water contains iron at greater than 500 µg/L, manganese at greater than 50 µg/L, sulfate at greater than 1 milligram per liter (mg/L) and/or a hardness greater than 300 mg/L.

Figure 4.—Photographs of a ferric adsorption point-of-use filtration system installed beneath a kitchen sink.

Arsenic Treatment Option Summary[1]

Treatment type	Preferred	Process and maintenance	Chemical use	Waste generated	Arsenic species removed	Typical media life	Average installation cost[2]	Average maintenance cost[2]
Granular ferric adsorption whole house	First choice	Simple	None	Low	As(III) and As(V)	2-3 years	$2,740	$0.67-1.00/day
Granular ferric single tap cartridges	Second choice	Simple	None	Low	As(III) and As(V)	1 year	$365	$0.32/day
Anion exchange whole house	No	Complex	Salt	High	As(V) only	10 years	$2,000	$0.27/day
Reverse osmosis single tap	No	Moderate	Disinfectant	Low	As(V) only	3 years	$700	$0.33/day

[1] New Jersey Geological Survey, 2007, Arsenic water treament for wells in New Jersey, New Jersey Geological Survey Information Circular

[2] Costs are approximate, contact water treatment purveyor for current costs

Prepared in 2014 by the Aquifer Committee of the Tompkins County Water-Resources Council

Aquifer Committee members
Todd Miller
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John Andersson
Marjory Rinaldo
Elizebeth Cameron
Barry Goodrich
Dooley Kiefer

The Tompkins County Water Resources Council (WRC) advises the Tompkins County Legislature on matters related to water resources management and planning, and is charged with identifying problems, proposing priorities, and promoting the coordination of activities in the management and protection of the County's water resources. For more information about the Water Resources Council, contact the Tompkins County Planning Department at 274-5560 or visit website http://www.tompkins-co.org/planning/committees/WRC/index.htm

Appendix B:

Town of Ulysses Drinking Water Survey

2023 Ulysses Drinking Water Survey

The Town of Ulysses Water Source Protection Plan Committee (WSPPC) is working to develop a drinking water source protection plan (DWSP2). The plan will help the Town to protect the quality and quantity of source water for residents and businesses, and to plan for future needs and funding opportunities. A key initial step is to collect information on our water resources and how they are used. **We want to hear from all residents to ensure that a final plan best reflects the needs of our entire community.**

The survey is **for Ulysses residents living outside the Village of Trumansburg** and should take less than 15 minutes to complete. **Please fill out online if you can, at https://townofulyssesny.gov** or use the QR code to the right. Paper copies may be obtained from, and returned to, the Town Clerk at town hall, 10 Elm St. Trumansburg, 14886. For more information, contact ulysses.clerk@gmail.com or 607-387-5767 ext 221, or visit https://townofulyssesny.gov/boards/wsppc-source-water-protection-committee/

Please return by November 22, 2023

We sincerely appreciate your participation in this important community effort!

Physical address of your property_____

Providing your address (not P.O. Box) is important for determining conditions, trends, and concerns throughout the town. All individual responses will remain confidential. The data will only be presented in summary form.

HOUSEHOLD INFORMATION

1. Do you rent or own the property? Rent ____ Own____
2. How many people living at the property are:
   18 years or more_____, under 18 years_____
3. Is the property occupied:
   year-round____ seasonally (less than 6 mo./yr) _____

WATER SOURCE

4. What is the source of your **DRINKING** water? (Check all that apply)
   - ☐ Well
   - ☐ Spring
   - ☐ Rainwater
   - ☐ Pond
   - ☐ Stream
   - ☐ Direct from Cayuga Lake
   - ☐ Delivered
   - ☐ Municipal water
   - ☐ Bottled Water
   - ☐ Don't know

5. What is the water source for the rest of your **HOUSEHOLD WATER** (e.g. bathing, cleaning)?
   - ☐ Well
   - ☐ Spring
   - ☐ Rainwater
   - ☐ Pond
   - ☐ Stream
   - ☐ Direct from Cayuga Lake
   - ☐ Delivered
   - ☐ Municipal water
   - ☐ Bottled Water
   - ☐ Don't know

6. If you have any wells, how many of each do you have?
   Dug_____ Drilled_____ No well_____

7. If you have a well and know the following information, please provide actuals or approximates:
   a) What is the depth of the well (feet):_____
   b) What is the depth to water in the well (feet):_____
   c) Depth of well casing (feet): _____
   d) When was the well dug/drilled in (year): _____

8. How far is your well from the nearest septic system?
   - ☐ Less than 50 ft
   - ☐ 50-99 ft
   - ☐ 100 – 200 ft
   - ☐ Greater than 200 ft
   - ☐ Don't know

DRINKING WATER QUANTITY

9. Do you always have enough water?
   ☐ Yes ☐ No

10. If not, the source runs dry:
    - ☐ Some years
    - ☐ Every summer
    - ☐ Often during the summer
    - ☐ Throughout the year

11. Has the QUANTITY of your water changed?
    - ☐ Has remained the same
    - ☐ Increased
    - ☐ Decreased
    - ☐ Don't know

12. If the quantity has changed, how many years ago? _____

DRINKING WATER QUALITY

13. Does your untreated water have any of the following problems? (Check all that apply)
    - ☐ Iron
    - ☐ Salt (chloride)
    - ☐ Discoloration
    - ☐ Sulfur
    - ☐ Hardness
    - ☐ Bacteria
    - ☐ Sediment
    - ☐ Radon
    - ☐ Bad taste
    - ☐ Odor
    - ☐ Zebra mussels
    - ☐ Nitrates
    - ☐ Methane
    - ☐ Other (feel free to add details)
    - ☐ N/A

14. If you have seasonal problems with water QUALITY, in which season do they occur? (Check all that apply)
    - ☐ Winter
    - ☐ Spring
    - ☐ Summer
    - ☐ Fall
    - ☐ N/A

15. How would you rate the QUALITY of your untreated water?
    - ☐ Very poor
    - ☐ Poor
    - ☐ Fair
    - ☐ Good
    - ☐ Excellent

16. Has the QUALITY of your water:
    - ☐ Remained the same
    - ☐ Improved
    - ☐ Worsened

17. If the QUALITY has changed, approximately how many years ago?_____

WATER TREATMENTS AND EXPENSE

18. Have you ever had your water tested?
☐ Yes ☐ No

19. Do you treat your drinking water?
☐ Yes ☐ No

20. Do you treat your household water?
☐ Yes ☐ No

21. Does your water system include any of the following treatments for your primary drinking water source? (Check all that apply)
- ☐ Water softener
- ☐ Carbon filter
- ☐ Chlorine
- ☐ UV
- ☐ Sediment filter
- ☐ Reverse osmosis
- ☐ Zebra mussel protection
- ☐ Not sure
- ☐ No treatment system
- ☐ Other

22. What is the approximate annual cost of maintaining your water supply (treatment, maintenance, water delivery)? $_____

23. Have you made any major investments in your water infrastructure in the past 10 years (for example, digging a well, rehabilitating a well, installing water lines, purchasing a pump)? If so, what was the approximate cost? $_____

WATER USAGE

24. Your normal water usage includes (check all that apply):
- ☐ Household use
- ☐ Drinking
- ☐ Watering garden and / or lawn
- ☐ Pool
- ☐ Other outdoor uses
- ☐ Agricultural
- ☐ Commercial use
- ☐ Other _____

INTEREST IN MUNICIPAL WATER

25. How interested are you in changing your water source to a municipal water system if available?
- ☐ Very interested
- ☐ Somewhat interested
- ☐ Neutral
- ☐ Uninterested

26. How much would you be willing to pay for municipal water service per year?
- ☐ <$500
- ☐ $500-$1000
- ☐ $1000-1500
- ☐ >$1500
- ☐ Unwilling to pay
- ☐ Unable to pay

CONCERNS ABOUT WATER

27. Please indicate if you are concerned with any of the following issues affecting your water supply (check all that apply):
- ☐ Oil or gas wells
- ☐ Chemicals or petroleum contamination
- ☐ Manure and fertilizer storage or applications
- ☐ Contamination from septic systems
- ☐ Pesticide storage or application
- ☐ Salt storage or application
- ☐ Drought and / or flood
- ☐ Lack of water supply due to pumping of adjacent wells
- ☐ Harmful Algal Blooms
- ☐ Other Issues:

_____

_____

28. OPTIONAL: Any additional information related to your water that you'd like to share?

THANK YOU FOR YOUR TIME!

Sign me up to learn more about local activities, actions, and services through the weekly Town of Ulysses Newsletter.

Name and Email address: _____

Please note:

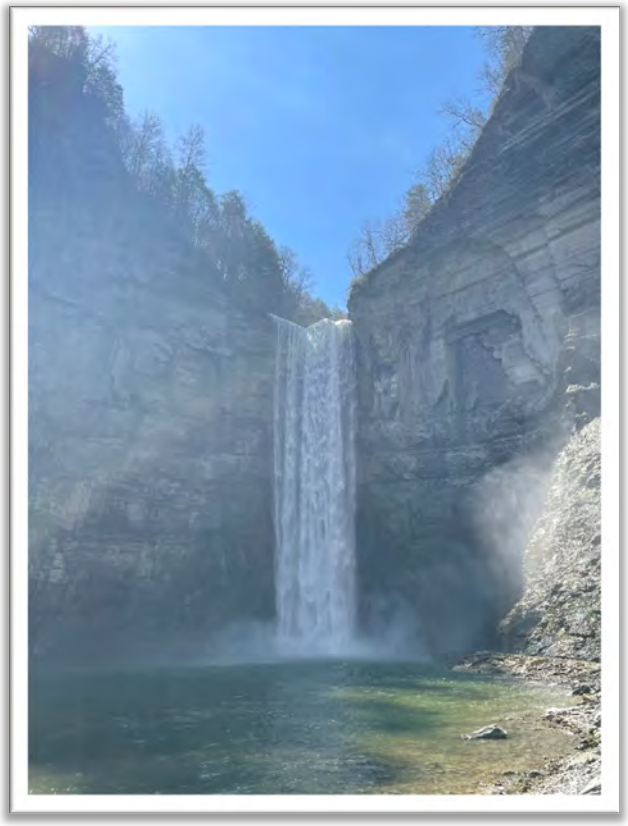
Your input will help the Town, with assistance from the advisory Water Source Protection Committee, on determining how best to address water quality issues within the Town. Your answers may be used to produce reports, contribute to the Town's Comprehensive Plan update, and other Town water-related activities.

You are asked for your property location which is considered confidential information. While sanctioned by the Town of Ulysses, this survey is being conducted by a third party—the Rural Communities Assistance Partnership (RCAP Solutions) -- that is bound by contract to keep information confidential, to the extent permissible by law. Likewise, the Town and the Water Source Protection Plan Committee are committed to keeping property location information confidential. While all entities involved in this survey will make every effort to keep property location information confidential, there is always some risk of inadvertent disclosure. By taking this survey, you consent to (a) the risk your property location information may accidentally be disclosed by the Town, the Water Source Protection Committee, and/or the third party assisting with the survey, (b) your answers being subject to the disclosure requirements of the New York State Freedom of Information Law if an exception does not otherwise allow the Town to keep your answers confidential, and (c) your answers being subject to disclosure if ordered by a court of law. You further agree to hold the Town of Ulysses harmless for any disclosure of your property location information that was not caused by the Town's gross negligence.

Appendix C:

Ulysses Drinking Water Survey Results By RCAP Solutions

Ulysses Drinking Water Survey Results



March 25, 2024; Updated April 17, 2024

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Table of Contents

Acknowledgements

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Executive Summary

The water survey notification was sent to 1,334 property owners in October 2023; 348 surveys were completed for a response rate of 26%. Responses were well distributed geographically across the Town (Figure 1). Despite good distribution, the results herein are not reflective of all Town residents, specifically the 74% of property owners who did not respond. Most homes rely on well water for drinking and/or household water needs. Most water is used for domestic purposes.

Survey results indicated that 13 % of the respondents (46 property owners) do not always have enough water, highlighting water availability as an area of concern. More than 60% of respondents reported at least one water quality problem and 51% reported three or more problems. Similar numbers of respondents (60%) report using water treatment in the home, with about a third spending $500 or more annually on water system maintenance. A majority of respondents (60%, 188 property owners) said they are somewhat or very interested in changing to a municipal water source, though fewer (47%,145 property owners) indicated a willingness to pay more than $500 annually for municipal service. Nearly half of respondents have concerns about impacts to their water supply from manure and fertilizer use (47%, 149 property owners), or weather extremes like drought and flood (46%, 145 property owners).

Background

The Town of Ulysses is in Tompkins County, New York, along the western shore of Cayuga Lake. The Town, outside of the village of Trumansburg, has approximately 1,400 households, of which about 300 are served by public drinking water. The remaining households rely on drinking water from individual sources including private wells, springs, and Cayuga Lake itself. The Town has an interest in prioritizing the protection of water resources. The Town's Water Source Protection Plan Committee (WSPPC) is currently in the process of drafting a Drinking Water Source Protection Plan (DWSP2). As part of the DWSP2 process, and to inform other Town plans related to land use and municipal infrastructure, a survey of residents was conducted by the WSPPC with technical assistance from RCAP Solutions. The survey topics include water source, quantity, quality, treatment, expense, and concerns. The results of the survey are presented here.

The information presented in this report is not intended to be and is not representative of the entire Town or all residents. Additional geospatial analysis can be conducted using location points and data collected in this survey to identify trends, areas of concern, priority for public infrastructure, and more.

Methods

The WSPPC developed the survey questions in part based on a previous 2009 Townwide survey of residents' drinking water quality. Additional questions related to household information, existing conditions and concerns were included, for a total of 28 questions. The only required questions on the survey were the street address of the respondent and the source of drinking water. All other questions were optional. The survey form was hosted in the online platform Survey123 (Appendix A). Paper surveys were held at the Town Hall and made available to residents upon request (Appendix B). To notify residents of the survey, a postcard mailing with information about the survey, providing a QR code and website URL was prepared by the WSPPC and mailed to owners of 1334 residential properties in Ulysses, outside of the Village of Trumansburg (Appendix C). The Town and WSPPC used electronic outreach lists to spread the word about the survey among residents beginning on October 31, 2023. After nearly 12 weeks the survey was closed on January 21, 2024. Surveys containing an invalid address or address outside of the survey boundaries were removed from the analysis. Results were analyzed by RCAP Solutions using ArcGIS Online and Microsoft Excel.

Results

Section 1. Household Information

1. **What is your Street address?**

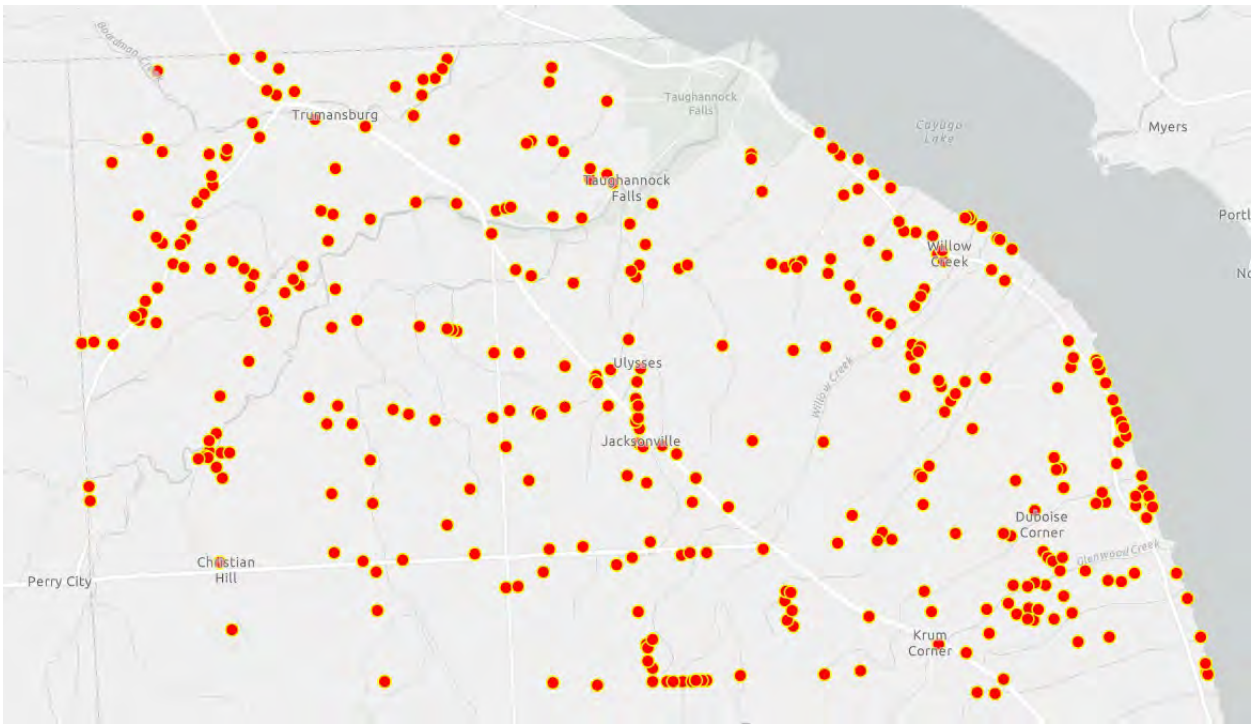


Figure 1. Survey respondents by location

A total of 348 responses were received from individual households within the Town of Ulysses and outside of the Village of Trumansburg. Responses were included if a valid street address and at least one question was answered.

1. Do you own or rent?

Own	99.7% (343)
Rent	0.3% (1)
(N=344; No response = 4)	

3. Is the property occupied year round?

Response	**Percentage of Responses (#)**
Seasonally (5 months or less)	5% (17)
Year-round (6 months or more)	95% (331)
(N = 348)	

2a. How many people in your household are over 18?

Response	Percentage of Responses (#)
1 person	19% (66)
2 people	67% (230)
3 people	10% (34)
4 people	4% (13)
5 people	<1% (2)
(N = 345; No response = 3	

The survey respondents represent households containing 690 individuals over 18.

Responding households range in size from 1-8, an **average of 2.3 people**.

2b. How many people in your household are under 18?

Response	Percentage of Responses (#)
0 persons	81% (267)
1 person	8% (27)
2 people	9% (30)
3 people	<1% (1)
4 people	1% (3)
5 people	<1% (2)
(N = 330; No response = 18)	

The survey respondents represent households containing 112 individuals under 18.

More than 80% of responding households do not have any people under age 18.

Section 2. Water Source Information

4. What the source of Drinking Water?

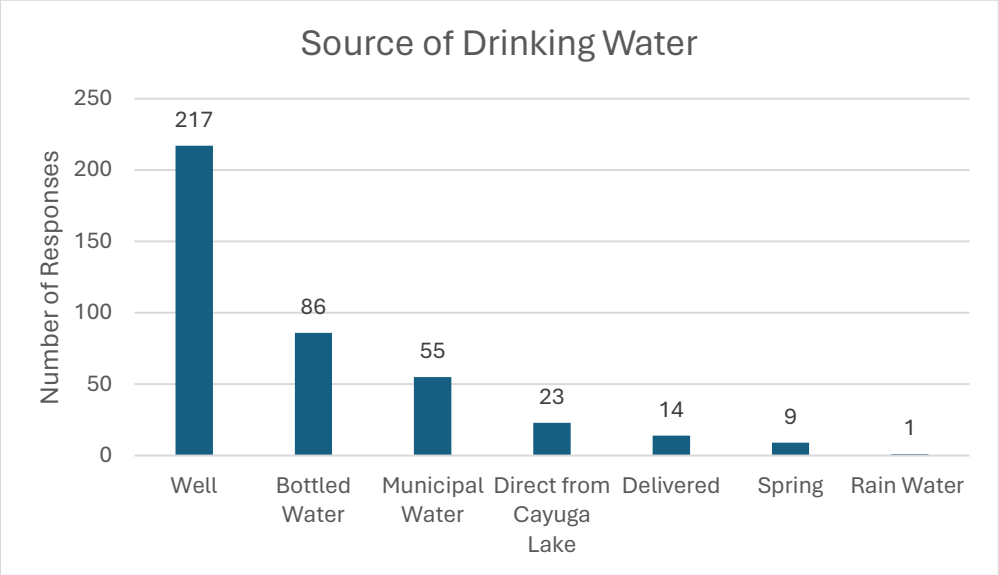


Figure 2. Sources of drinking water

Response	Percentage of Responses (#)
Well	62% (217)
Spring	3% (9)
Rain Water	0% (1)
Direct from Cayuga Lake	7% (23)
Delivered	4% (14)
Municipal Water	16% (55)
Bottled Water	25% (86)
(N = 348)	

Note: More than one response could be selected for this question

While 86% of respondents rely on a single source of water for drinking, four (4) respondents indicated using three sources of water for drinking; Fifty (50) respondents indicated using two sources of water for drinking; nearly half of these (24) use well water and bottled water for drinking water.

Just over half of respondents (N = 182) use **well water only** for drinking water.

5. What is the source of your Household water?

Response	Percentage of Responses (#)
Well	71% (260)
Spring	2% (7)
Municipal Water	15% (55)
Direct from Cayuga Lake	8% (30)
Rainwater	1% (2)
Delivered	1% (3)
Two or more sources	2% (9)
(N = 348)	

Note: More than one response could be selected for this question

A greater number of survey respondents use well water for household water than for drinking water. A few respondents reported delivered water for household use; none reported using bottled water for household water.

24. Your normal water usage includes:

Response	Percentage of Responses (#)
Household Use	99% (346)
Drinking	81% (283)
Water garden and/or lawn	69% (240)
Other outdoor use	20% (71)
Pool/hot tub/spa	7% (25)
Agricultural use	3% (11)
Commercial use	1% (4)
Washing vehicles	1% (3)
Other	2% (7)
(N=347; No response =1)	

Note: More than one response could be selected for this question

Section 3. About the well

6. How many of the following wells do you have:

Response	Drilled Wells	Dug Wells
0	13% (44)	14% (48)
1	68% (237)	54% (187)
2	7% (23)	6% (21)
3	1% (4)	1% (2)
5+	1% (3)	1% (2)
No response	11% (37)	25% (88)

New York State **first began** requiring well drilling completion reports in **April 2000.**

7a. What is the depth of the well casing?

Response	Percentage of Responses (#)
0-19 feet	6% (17)
20-49 feet	9% (26)
50-99 feet	8% (23)
More than 99 feet	5% (13)
Unknown	73% (208)
(N=286; No response = 62)	

7b. What is the depth of your well?

Response	Percentage of Responses (#)
10 feet or less	3% (10)
11-49 feet	10% (28)
50-99 feet	15% (43)
100-199 feet	16% (47)
More than 200 feet	9% (27)
Unknown	47% (136)
(N=289; No response = 59)	

7c. What is the depth to water in your well?

Response	Percentage of Responses (#)
0-9 feet	6% (19)
10-19 feet	3% (8)
20-49 feet	5% (14)
50-99 feet	3% (9)
More than 100 feet	2% (7)
Unknown	80% (230)
(N=286; No response = 62)	

7d. What year was the well construction?

Response	Percentage of Responses (#)
1900 or earlier	1% (4)
1901-1949	2% (6)
1950-1969	7% (19)
1970-1989	16% (47)
1990-1999	13% (36)
After 2000	18% (52)
Unknown	44% (126)
(N=287; No response = 61)	

8. How far is your well from the nearest septic system?

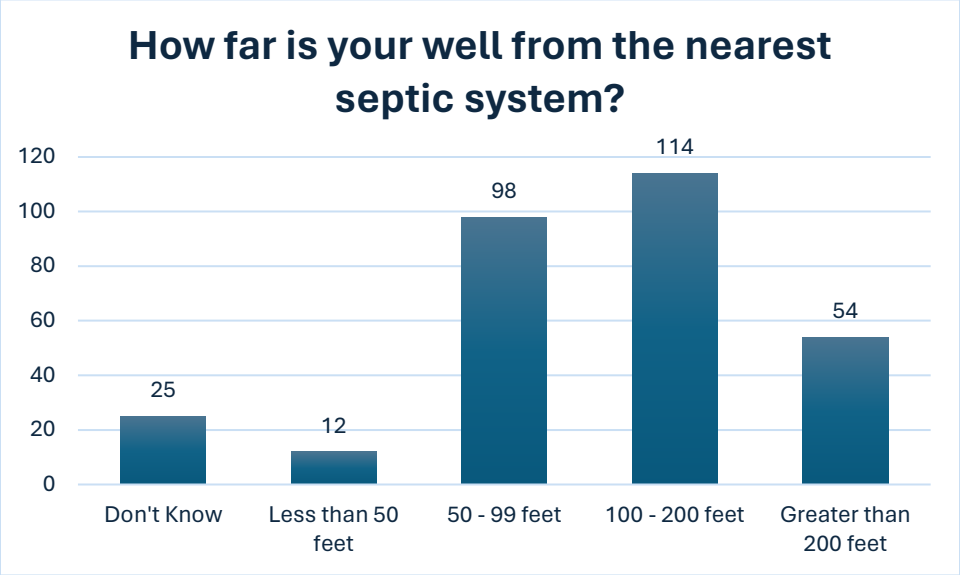


Figure 3. Distance between well and septic system

Response	Percentage of Responses (#)
Don't Know	8% (25)
Less than 50 feet	4% (12)
50 - 99 feet	32% (98)
100 - 200 feet	38% (114)
Greater than 200 feet	18% (54)
(N =303; No response = 45)	

The required separation distance under current New York State Public Health Law section 75-A[1], which applies to residential onsite wastewater treatment systems, a minimum separation distance of 50 feet is required between a concrete septic tank and a private well; and 100 feet between any absorption area (tile field, sand filter, seepage pit, etc.) and a private well; this distance is doubled when the septic system is upstream of and in the direct drainage path of a private well.

[1] New York State Title 10 Chapter II Part 75. Standards for Individual Water Supply and Individual Sewage Systems. 3 February 2010. https://www.health.ny.gov/environmental/water/drinking/docs/appendix_75a.pdf

Section 4. Drinking Water Quantity

9. Do you always have enough drinking water?

Response	Percentage of Responses (#)
Yes	87% (297)
No	13% (46)
(N=343; No response = 5)	

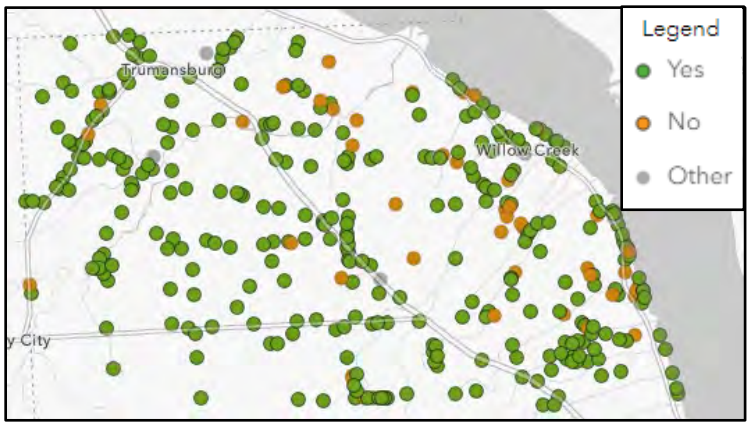


Figure 4. Responses showing constant availability of drinking water

10. If not, when does the source run dry?

Response	Percentage of Responses (#)
Every summer	10% (4)
Often during the summer	13% (5)
Some years	46% (18)
Throughout the year	31% (12)
(N=39; No response = 309)	

Nearly one in seven respondents report **not always having enough** drinking water.

11. Has the quantity of your water changed?

Response	Percentage of Responses (#)
Increased	1% (4)
Decreased	9% (32)
Has remained the same	76% (261)
Don't know	13% (45)
(N=342; No response = 6)	

12. If the quantity has changed, how many years ago?

Response	Percentage of Responses (#)
0-1 years ago	12% (4)
2-4 years ago	27% (9)
5-9 years ago	27% (9)
10-15 years ago	27% (9)
16+ years ago	6% (2)
(N=33; No response = 315)	

Section 5. Drinking Water Quality

13. Does your untreated water have any of the following problems?

Response	Percentage of Responses	Number of Responses
Hardness	61%	201
Iron	48%	160
Sulfur	47%	156
Odor	33%	110
Bad taste	28%	93
Sediment	27%	90
Discoloration	19%	64
Bacteria	16%	52
Other	10%	32
N/A No problems	9%	31
Salt (chloride)	7%	23
Methane	4%	12
Nitrates	3%	10
Zebra mussels	3%	9
Radon	2%	7
(N = 332; No response = 16) **Note: More than one response could be selected for this question.**		

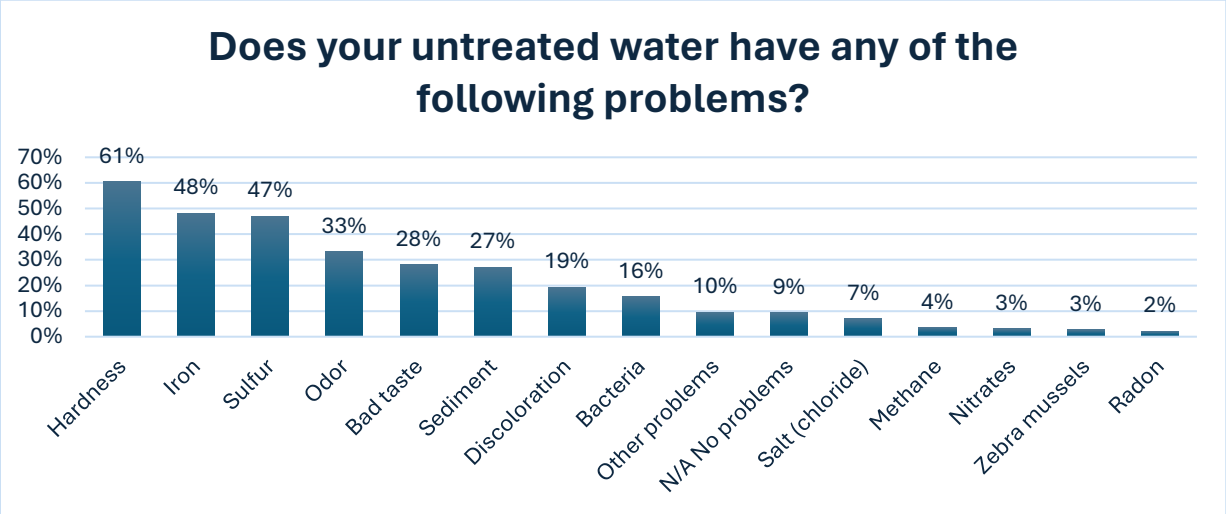


Figure 5. Untreated water problems

51% of respondents reported **three or more** problems with untreated water.

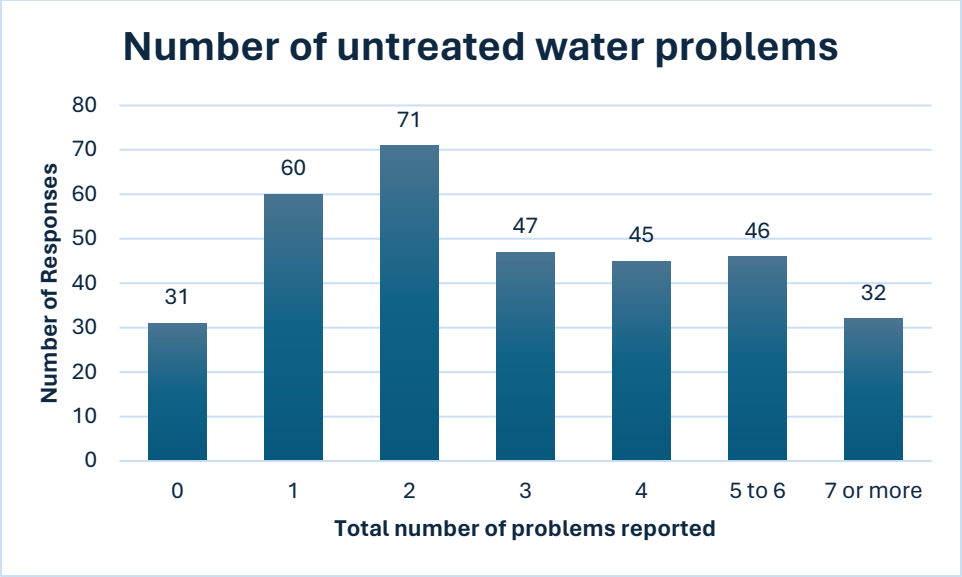


Figure 6. Number of untreated water problems reported

14. If you have seasonal problems with water quality in which season do they occur?

Response	Percentage of Responses (#)
N/A No seasonal problems	73% (230)
Summer	13% (42)
All Seasons	6% (18)
Spring	2% (7)
Summer and Fall	2% (5)
Spring and Summer	2% (5)
Other	3% (8)
(N=315; No response = 33)	

15. How would you rate the Quality of your untreated water?

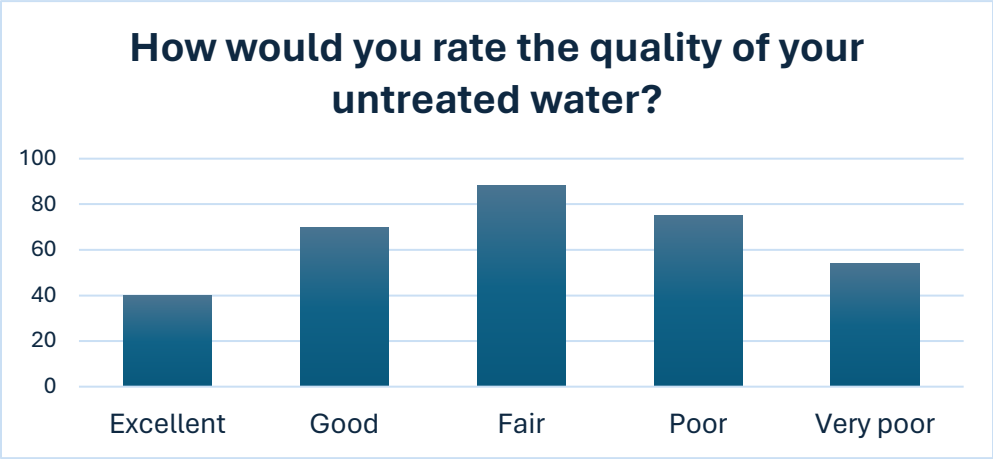


Figure 7. Overall water quality rating

Response	Percentage of Responses (#)
Excellent	12% (40)
Good	21% (70)
Fair	27% (88)
Poor	23% (75)
Very poor	17% (54)
(N=327; No response = 21)	

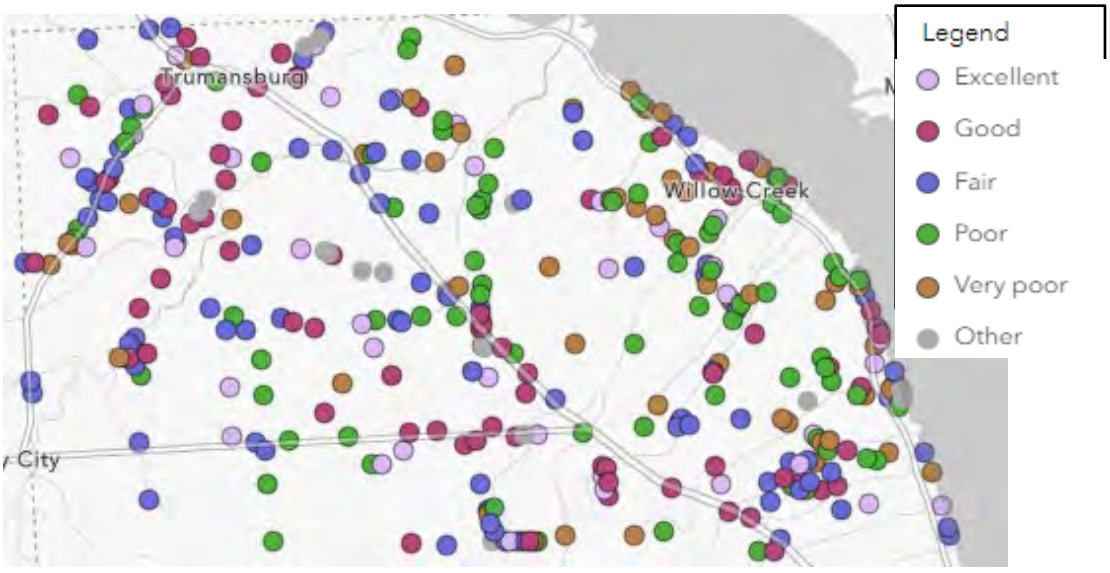


Figure 8. Responses showing overall water quality rating

16.Has the quality of your water changed?

Response	Percentage of Responses (#)
Remained the same	72% (243)
Don't know	14% (47)
Worsened	11% (36)
Improved	3% (11)
(N=337; No response =11)	

17. If the quality has changed approximately how many years ago?

Response	Percentage of Responses (#)
0-1 years ago	16% (7)
2-4 years ago	23% (10)
5-9 years ago	26% (11)
10-15 years ago	26% (11)
16+ years ago	9% (4)
(N=43; No response = 305)	

Section 6. Water Treatment and Expense

18. Have you ever had your water tested?

Response	Percentage of Responses (#)
Yes	73% (251)
No	27% (92)
(N=343; No response =5)	

NYSDOH recommends **annual testing** for total coliform/E.coli bacteria in private wells.

19. Do you treat your drinking water?

Response	Percentage of Responses (#)
Yes	60% (207)
No	40% (136)
(N=343; No response =5)	

20. Do you treat your household water?

Response	Percentage of Responses (#)
Yes	69% (235)
No	31% (108)
(N=343; No response =5)	

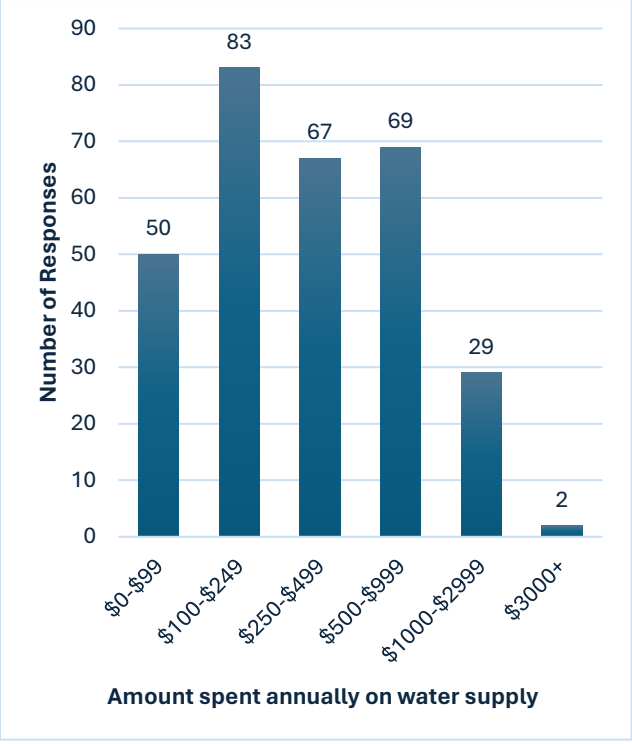
More respondents treat household water (69%) than treat drinking water (60%)

21. Does your water treatment system include any of the following treatments for your primary drinking water source?

Response	Percentage of Responses (#)
Water Softener	49% (166)
Carbon filter	32% (109)
Sediment Filter	29% (97)
UV disinfection	21% (72)
Chlorine	17% (59)
No Treatment System	17% (59)
Reverse Osmosis	12% (42)
Other	12% (42)
Not sure	4% (15)
Zebra mussel protection	4% (12)
(N =338; No response =10)	

1 in 3 responses report spending **$500 or more** each year on their water supply

22. What is the approximate annual cost of maintaining your water supply (treatment, maintenance, water delivery)?



Response	Percentage of Responses (#)
$0-$99	17% (50)
$100-$249	28% (83)
$250-$499	22% (67)
$500-$999	23% (69)
$1000-$2999	10% (29)
$3000+	1% (2)
(N=300; No response =48)	

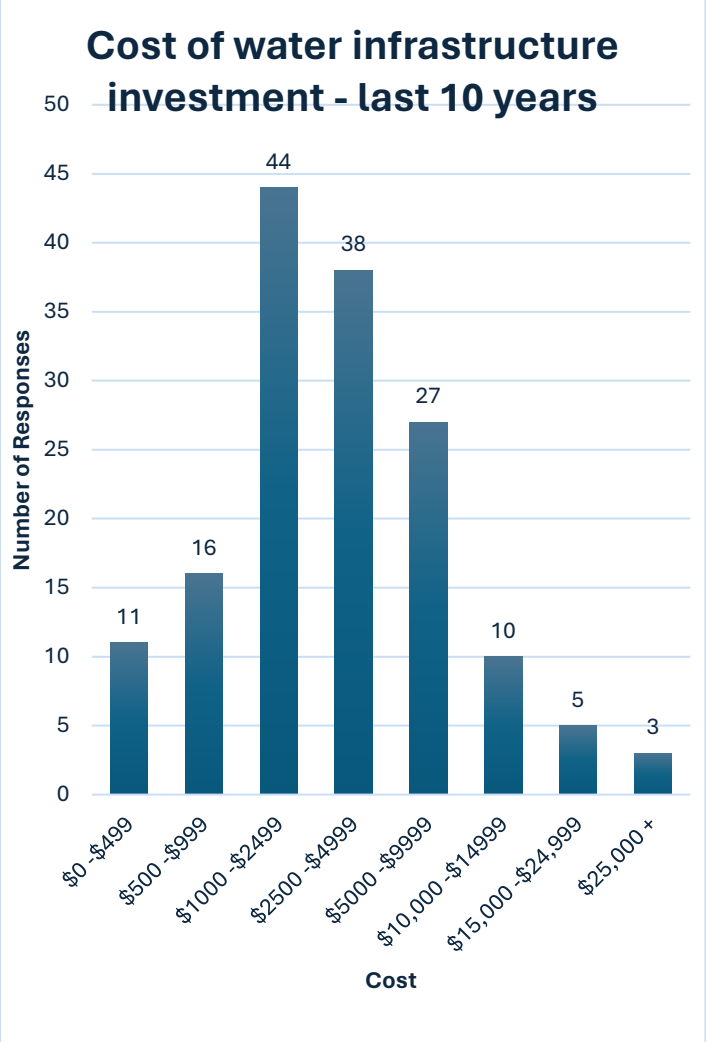
Mean	$404
Median	$300
Min	$0
Max	$3,600

Figure 9. Annual cost of water supply

23. Have you made any major investments in your water infrastructure in the past 10 years?

Response	Percentage of Responses (#)
Yes	48% (161)
No	52% (176)
(N=337; No response = 11)	

23b. If yes, what was the approximate cost?



Response	Percentage of Responses (#)
$0 -$499	7% (11)
$500 -$999	10% (16)
$1000 -$2499	29% (44)
$2500 -$4999	25% (38)
$5000 -$9999	18% (27)
$10,000 -$14999	6% (10)
$15,000 -$24,999	3% (5)
$25,000 +	2% (3)
(N=154; No response = 194)	

Mean Cost	$4,445
Median Cost	$2,500
Minimum Cost	$200
Maximum Cost	$50,000

Figure 10. Cost of major investment in water supply

Section 7. Additional Information

25. How interested are you in changing your water source to a municipal water system, if available?

Response	Percentage of Responses (#)
Uninterested	23% (72)
Neutral	17% (53)
Somewhat interested	21% (65)
Very interested	39% (123)
(N=313; No response = 35)	

60% of respondents are somewhat or very interested in changing to a **municipal water system**

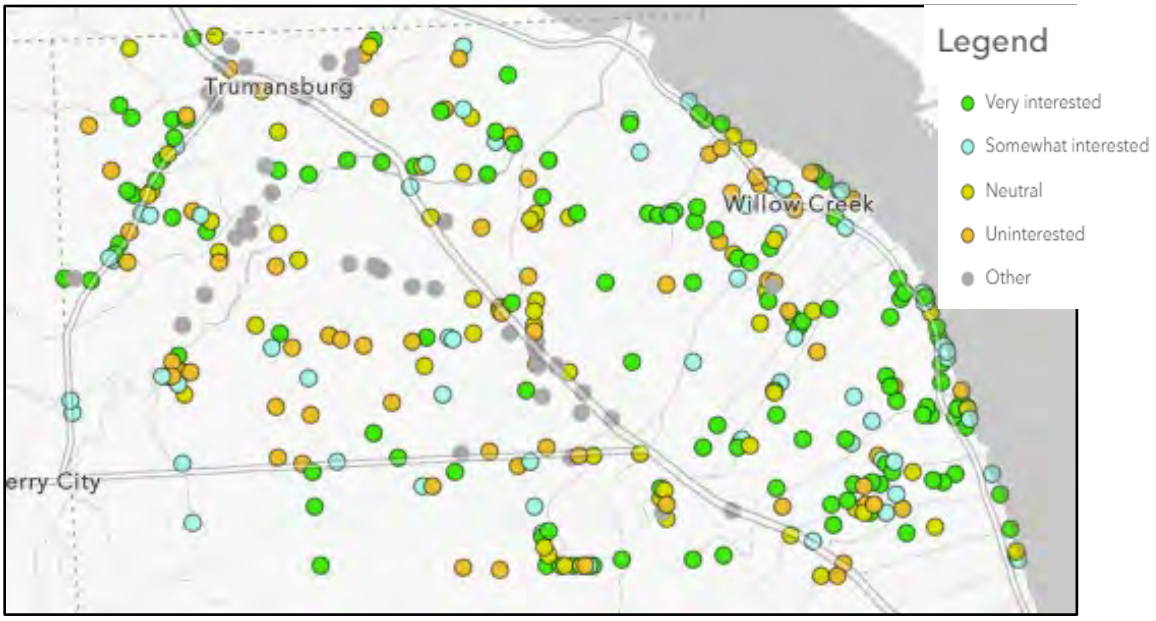


Figure 11. Responses showing interest level in municipal water source

26. How much would you be willing to pay for municipal water service per year?

Response	Percentage of Responses (#)
Less than $500	34% (105)
$500 - $1,000	33% (101)
$1,000 - $1,500	6% (19)
More than $1,500	8% (25)
Unable to pay	3% (9)
Unwilling to pay	15% (47)
(N=306; No response =42)	

27. Please indicate if you are concerned with any of the following issues affecting your water supply:

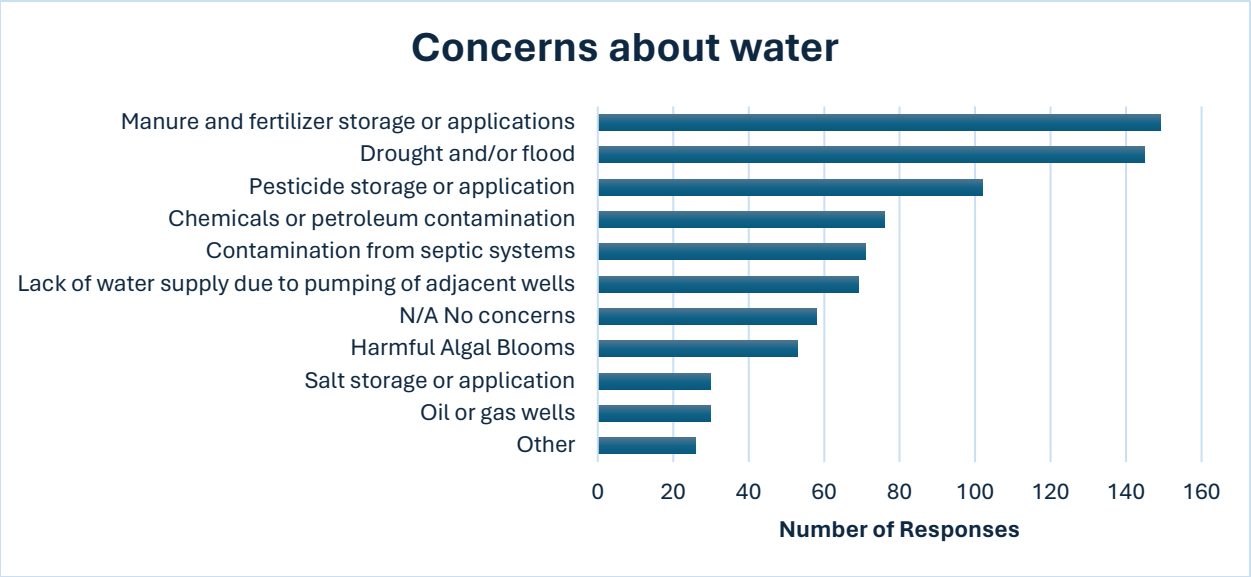


Figure 9. Concerns about issues affecting water supply

Response	Percentage of Responses (#)
Manure and fertilizer storage or applications	47% (149)
Drought and/or flood	46% (145)
Pesticide storage or application	32% (102)
Chemicals or petroleum contamination	24% (76)
Contamination from septic systems	23% (71)
Lack of water supply due to pumping of adjacent wells	22% (69)
N/A No concerns	18% (58)
Harmful Algal Blooms	17% (53)
Oil or gas wells	10% (30)
Salt storage or application	10% (30)
Other	8% (26)
(N=314; No response =34)	

Note: More than one response could be selected for this question

28. Any additional information that you'd like to share?

This open-ended question yielded responses from 123 survey respondents who shared additional detail on water topics in the survey. Tim Martinson, WSPPC member, reviewed these responses and is summarized here:

Fifty-three (53) responses mentioned municipal water, either currently having a connection, having interest, or being uninterested. The existing or potential cost of municipal water service was reported as a source of concern.

Level of satisfaction with one's water supply was mentioned, with 27 responses expressing satisfaction with water quality and quantity, and 15 responses detailing problems with water quality or quantity.

"Farming fields close to my home spread liquid manure a few times a year and I am concerned about how it is impacting my well."

"We have been here for over 40 years and have never had any problems."

Respondents also commented on the challenges of at home water treatment, especially those that rely on beach wells. Specific concerns about contamination from manure spreading were mentioned by 10 respondents.

"We were only able to use our well for 1 year. Now we must have all of our water delivered."

"Water treatment is a constant battle -- getting the chemicals right, cleaning cycles, maintaining equipment. Every couple of months we need a technician."

"We are concerned about long-term sustainability of our water supply as we have run low or out of water in our well occasionally and experience some sediment in the water. We would be interested in learning more about options to expand Municipal water system to our area."

Discussion

It is noted that while the response rate of 26% provides a useful and informative set of data, the results of this survey should not be interpreted as entirely representative of the Town. Survey responses show that most residents use a private well for drinking or household water and most of these wells provide an adequate supply of water. However, an area of concern is that 13% of responses report not having enough drinking water during at least part of the year.

When it comes to water quality, 39% of respondents rated their untreated water quality as Very poor or Poor, and another 27% as Fair. More than half of respondents reported three or more problems with their untreated water. Consequently, a majority of respondents are treating household and/or drinking water, with water softeners and carbon or sediment filters as the most common form of treatment.

The cost of maintaining one's water supply varies widely, with a median cost reported as $300 per year. Nearly half (48%) of respondents reported a major investment in the water system in the last decade and these costs averaged around $4,400 with three reports of spending more than $25,000. Interest in municipal water availability is strong and can be analyzed geospatially for viability of possible public water extensions, though concerns about potential cost and willingness to pay should be further evaluated. Concerns exist among nearly half of respondents about impacts to water from agricultural activities, specifically manure spreading and applications of pesticides and fertilizers. Similar levels of concern are reported for climate related events like drought or flood. Many unknowns remain for residents with private wells, from construction type, year constructed, depth, or distance to septic systems.

Additional resources for best practices of managing private water and wastewater supplies are in the following section and Appendices.

Additional Resources

Private Well Class Online: https://privatewellclass.org/

National Onsite Wastewater Recycling Association, Onsite Wastewater Treatment System User Guide: https://www.nowra.org/library/homeowner-training-materials/users-guide/

Local Water Quality Resources

Community Science Institute (Certified Testing Lab): http://www.communityscience.org/

Cayuga Lake Watershed Intermunicipal Organization: https://cwio.org/

Tompkins County Stormwater Coalition: https://tcstormwater.org/

Cayuga Lake Watershed Network: https://www.cayugalake.org/

Appendix D

Summary of Written Survey Comments

Ulysses Water Source Survey Summary of Written Comments

Tim Martinson

DWSPP2 Committee

Q 28. Any additional information related to your water that you'd like to share?

122 Written Comments:

Interest in connection to municipal water

Currently have Municipal Water	18
Not interested in Municipal	11
Interested in Municipal	24
No comment	68

Cost/Possibility of getting municipal water a concern: 7 cited cost as an issue. 4 in favor, 2 opposed, 1 neutral

> *"municipal water is becoming more expensive. allocation of surcharge is unfair"*
>
> *"Have had leaks from tanks, lines (inside) etc., over the years, and a municipal system might rid me of some of those concerns. Also, if municipal water supply ever became available, would I be able to use the well for watering, etc.? And if so, I would probably have to revamp the piping and eliminate chlorinator, etc.?? I have a boiler system for heating - how would that affect my heating system?"*
>
> *"I am on the village water system. While the water is not an issue, the cost of it is. We pay 1 and 1/2 more than the village charges village residents. We are not in a water district and have no bargaining power to reduce our water bill. We need to be in a water district."*
>
> *""Pretty sure that due to our location, municipal water won't be available in any foreseeable future."*

Water Quality: 27 expressed satisfaction with the quality and quantity of their well water:

> *"… our family has continuously resided on the subject land since 1803, and that the water is FINE"*
>
> *"Pretty sure that due to our location, municipal water won't be available in any foreseeable future."*
>
> *"We have the best well in the neighborhood"*
>
> *"Our treated water is outstanding. Other than occasionally running the well down when we do too much laundry and take too many showers, we have adequate supply."*

"Stand-alone shallow well is currently suitable for our requirements."

"We get our drinking water from Texas hollow spring and filter it through a Berkey filter. As much as it would be great to have drinking water flow from the tap we are satisfied with our current situation. Thank you for address water needs and looking ahead on this."

Quality and supply: 15 mentioned water quality issues; 9 mentioned quality AND supply; 9 mentioned water supply issues.

"We are concerned about the quality of our drinking water. We drink bottled water. Also, my wife is concerned about washing her hair."

"I don't drink my water or cook with it. It's yucky. I buy bottled water for that"

"The lack of rain we keep experiencing, especially in late summer, means my household's water is coming from deeper and deeper down the well, which means sediment, sulphur, and other contaminants. My well is deeper than most, so it has never run dry, but my family uses water carefully. The water smells so bad these past several months that I'm starting to use chlorine bleach in the washer, and we use bottled water for all cooking, coffee, tooth brushing, etc."
"Municipal water is usually horribly expensive, with the cost to "connect" pushed onto individual homeowners. Please don't let that happen. I can afford ~$1K/year for clean water, but I don't have $15K upfront to connect to municipal service--and never will."

"We we only able to use our well for 1 year. Now we must have all of our water delivered."

"We're downhill from neighbors and not always aware of what is being put on lawns or gardens."

"Worst water in my 71 years"

"Wells are deep and sulfury around here, most that we have heard of have low flow. We were told we have 1/2 gal. Per minute."

"We are concerned about the odor from our water at times—a metallic odor that we wonder if it is bacterial. We have attempted to get it tested and the process has not been user friendly enough… We don't have enough water on demand to take a bath or other daily household tasks. We have so much sediment in our water that is constantly building up on and destroying cooking pots."

"My household water is a drilled well that is contaminated with salt. It is not drinkable. We have a rain water system for drinkable water. The well is dry many months of the year (when not raining). If it doesn't rain, there is no drinkable and no water in the well (household). We have water delivered very frequently at considerable cost. We do not have enough water to meet our needs. We are told drilling another well will not yield good results and no driller is interested in doing the job because of that."

Need for and cost of treatment 11 comments**:**

"Chlorine has gotten extremely expensive. It would be great to have clean drinking water out of the tap!"

"Water treatment is a constant battle -- getting the chemicals right, cleaning cycles, maintaining equipment. Every couple of months we need a technician to diagnose and get things running properly."

"Well water is 22 grains hard. Salt brine softener system is used to reduce hardness. Silt filter and odor filter are in line to improve water quality"

Concerns about contamination (manure spreading, runoff) 10 comments**:**

"Farming fields close to my home spread liquid manure a few times a year and I am concerned about how it is impacting my well."

"Spreading of cow manure has increased dramatically over the past 3 years in our neighborhood. Manure is applied at least 3 times per year, which seems excessive! We observe it washing into the ditches and into Taughannock Creek."

"We thought that local farmers were supposed to notify neighbors of the timing of chemical applications and what they are putting on the field since the drainage runs in our direction. This doesn't happen currently."

"I would be very concerned about nitrate in our well, except that our water is highly reducing (so no nitrate). I suspect for many homes in Ulysses, nitrate is an issue that should be addressed (particularly near ag lands, but our soils are also naturally nitrogen rich). The EPA drinking water standard is set at 10 ppm nitrate-N, but is based on decades-old science. Concentrations higher than 0.25 ppm are of concern for cancer risk."

Beach well comments: (3)

""I have a beach well that is about 15 ft deep. The water flows in from the bottom of the 15 inch plastic culvert used to form the well. My well has a flow rate of about 20 gallons per minute."

"We draw lake water from a beach well. Early on we detected a variety of problems, not all of which could easily be corrected with filtration and purification. As a result, we have never considered the water fit for drinking or cooking. We have a real concern that some potential problems (e.g., algal toxins) would make the water unfit for bathing and washing hands. We are very eager to shift to municipal water."

"We use a beach well and generally are using lake supplied water but when the lake is low we get more ground water infiltration giving us occasional sulfur and iron."

"No issues" in comments: 27 Responses

"We have Village water, which we filter for sediment as it enters the house, with a carbon filter at the kitchen sink. Water quality is great."

"Stand-alone shallow well is currently suitable for our requirements."

"Thank you for looking at this issue!"

"There are two wells on the property--only one is in use. I do not know if they were dug or drilled, so i left those questions unanswered."

"This spring cistern system services two additional households on adjacent properties."

"We are in a good area for quantity and lack of contamination due to the manure spreading. So other than the 'normal' well issues sediment, hardness, iron and corrosivity, we are fine."

Municipal water responses: (18, 4 comments on 'quality/cost')

"Municipal water was the biggest selling point for my decision to buy this house."

"We have municipal water but still have a well, which we use occasionally for watering and washing the car. (Don't know anything about it, other than outside taps draw from it.):

"Water bill Town of Ulysses approximately $400/year. Bolton Point? Use the well for outdoor watering only."

"We are outside the village but on village water. no complaints except for the high cost."

"We are totally "city" water. Would like to have the carcinogens removed further so we don't have to buy bottled water.:

"The municipal water that we use has an unpleasant, strong chemical taste from July to October. Otherwise there is no problem."

Appendix E:

Test Your Well--Protect Your Family's Water

Tips to Protect Your Water

- Test your well water at least once a year for bacteria and for other contaminants every 3-5 years.
- Test your water for *E. coli* and coliform bacteria after you disinfect and flush your well, or perform maintenance on your system to make sure problems are addressed.
- Regularly check and maintain the well, system components and area surrounding the well.
- Test your water if you notice changes in how your water looks, smells or tastes, after floods, changes in land use or concerns about local contaminants.
- If you suspect your well could be contaminated by gasoline, heating oil or chemicals, contact your health department and the DEC Spill Hotline at (800) 457-7362.
- Keep records of maintenance activities and water testing.
- Contact your health department for advice on maintaining, testing, disinfecting and flushing your well.
- Take steps to get connected to a public water system, if you have the opportunity. Public water is the best option for household water because it is regularly monitored and managed by a certified water operator.

Find your area health department:
www.health.ny.gov/EnvironmentalContacts

www.health.ny.gov/PrivateWells
(518) 402-7650
bpwsp@health.ny.gov

6628 NEW YORK STATE Department of Health 3/18

Test Your Well

Protect Your Family's Water

Tips for People on Private Wells

Take steps to make sure the water from your private well is suitable for drinking, preparing food and all household uses.

Germs and chemicals can enter your drinking water from runoff and natural changes in the water that serves your well.

The use of contaminated water for drinking, preparing food and making ice can make you, your family and your pets sick. Babies, children, pregnant women, older adults and people with health conditions are most at risk of health effects from consuming contaminated water.

Regularly Test Your Water

Testing your drinking water is the only way to make sure that your water remains suitable for household uses. Test your water at the tap at least once a year for bacteria and every 3-5 years for the other contaminants listed to the right. The best time to test your water is in the late spring or early summer.

Your lab will provide instructions and bottles. Find a certified lab at www.wadsworth.org/labcert/elap/comm.html.

Also Consider Testing If ...

- You notice changes in how your water looks, smells or tastes.
- There are changes in your household/family, such as pregnancy, new babies or changes in someone's overall health.
- You or your health care provider suspect your drinking water could be causing symptoms such as diarrhea or vomiting.
- You have made repairs to your well, pipes or home structure or have changed your drinking water system.
- You notice changes in land use, such as construction or farming, that could cause runoff to enter your well.
- You have concerns about local contaminants, such as radon or those from nearby industrial or waste sites.
- Your well was recently flooded or damaged by extreme weather.
- The well runs dry or the amount of water flowing from your fixtures changes.

Contact your area health department for advice. Look up your health department by county at www.health.ny.gov/EnvironmentalContacts.

Test Your Well EACH YEAR for

E. coli & coliform bacteria- indicate fecal contamination that can cause symptoms such as diarrhea and vomiting

Test Your Well EVERY 3 - 5 YEARS for

Lead- harmful to many organs and systems in the body and most harmful to developing babies and young children

Nitrate & Nitrite- most harmful to babies; associated with infant blood problems

Arsenic- long-term exposure is associated with nerve and liver damage, cancer, high blood pressure and damage to blood vessels of the heart and brain

Sodium- concern for individuals on restricted sodium diets due to high blood pressure or other medical issues

Iron & Manganese- cause rust or black staining of fixtures or clothes

Turbidity- (cloudy water) interferes with chlorine and UV-light disinfection

pH- causes lead and copper pipe corrosion and metallic-bitter taste

Hardness- causes mineral and soap deposits on fixtures; reduces detergent efficiency

Alkalinity- interferes with chlorine disinfection and causes metallic-bitter taste

Your water could come from a private well if...

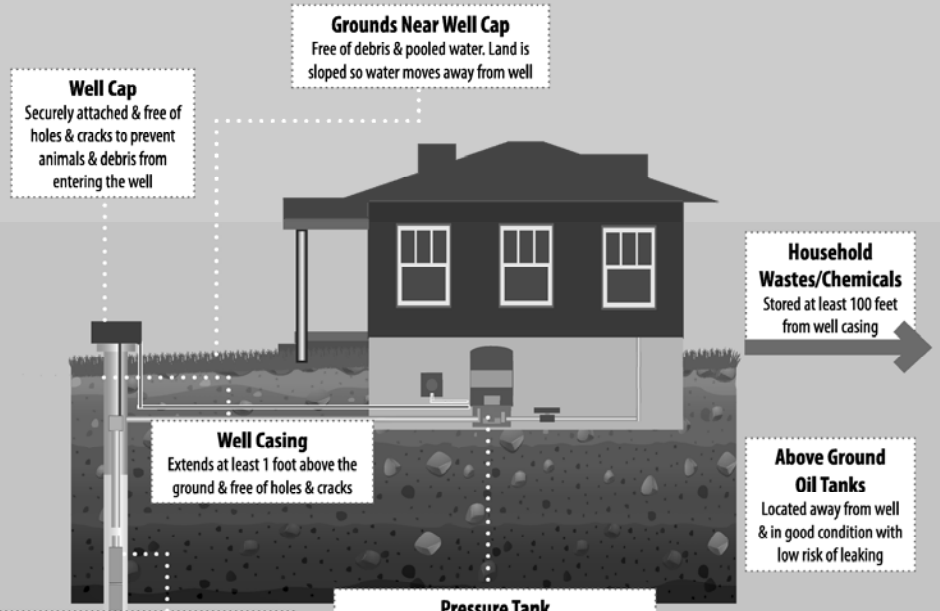
- **You do not receive a water bill.**
- **You live in a rural area.**
- **You have a septic system.**
- **You have a water pump in your home for your drinking water system.**

Questions? Contact Your Area Health Department
www.health.ny.gov/EnvironmentalContacts

Inspect & Maintain Your Well and Water System

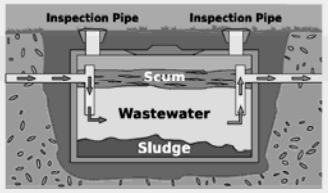
Have a well contractor inspect your well at least once a year to stay ahead of maintenance issues. Regular inspections help prevent contaminants from getting into your tap water from a poorly maintained well. The NYS Department of Environmental Conservation (DEC) has a list of registered well contractors at www.dec.ny.gov/lands/33317.html.

Use this diagram to keep an eye out for problems. If you suspect issues and need help, contact a professional. Stop using your tap water for drinking, preparing food and making ice, and switch to bottled until your water is tested and the problem is addressed.



This diagram shows a drilled well. If you have a dug well, your well cap and casing may look different. Learn more about **Standards for Water Wells** at www.health.ny.gov/regulations/nycrr/title_10/part_5/appendix_5b.htm.

Inspect & Pump Out Your Septic System



Have a DEC-permitted waste transporter inspect and pump out your septic system every 2 to 3 years to avoid potential well contamination from a failing septic system. Learn more at ***Septic System Operation and Maintenance*** www.health.ny.gov/publications/3208.

Maintain Water Treatment Equipment

If you have water treatment systems, follow manufacturer recommendations for maintenance and testing and work with a water treatment professional to develop a plan to evaluate and maintain you system. Systems that are not regularly maintained can result in failure of water treatment and loss of water pressure.

Avoid Electric Shock Risk

Before making any repairs:

- Shut off power to the pump and water system.
- Examine for broken wire insulation or missing wire nuts and repair as necessary.
- Wear waterproof, rubber soled shoes or boots.

Contaminants in Your Water?

Stop using your water and use bottled water for drinking, preparing food or making ice if water tests show contaminants in your well water or if you suspect your well could be contaminated.

Follow these steps from **Restoring and Testing Your Private Well** (www.health.ny.gov/PrivateWells):

- Check the well and area around the well for damage.
- Repair and flush your well.
- Disinfect your well water to address biological contamination.
- Test your water to assure suitable quality for all household uses.
- Contact your area health department for help if you need it. Look them up at www.health.ny.gov/EnvironmentalContacts.

If you suspect your well could be contaminated by gasoline, heating oil or chemicals, stop using your water and immediately contact your area health department and the DEC Spill Hotline at (800) 457-7362.

Resume using your water after contamination is addressed and water tests confirm your water is suitable for household uses.

Appendix F

NYS Department of Health Fact Sheet #5 Individual Water Supply Wells

INDIVIDUAL WATER SUPPLY WELLS - FACT SHEET #5

SUSCEPTIBLE WATER SOURCES

(Well Points, Dug Wells, Springs and Shore Wells)

Individual (residential) water supplies (IWS) need to provide adequate quantities of water fit for consumption and intended uses. A drilled well, located and constructed in accordance with 10NYCRR Appendix 5-B "Standards for Water Wells", should routinely be the water supply option selected. Well points, dug wells, springs and shore wells are susceptible to contamination from pathogens, spills, etc. and the effects from drought. These water sources may be considered only as a last resort with proper protective measures and, in most cases, will require approval by County or State health department officials through issuance of a specific waiver pursuant to Part 75 of the State Health Department's Administrative Rules and Regulations or via a county sanitary code waiver provision.

SPECIFIC INFORMATION FOR SUSCEPTIBLE WATER SOURCE TYPES

The following types of water sources typically utilize surface water bodies or shallow groundwater sources. Surface waters can contain bacteria, parasites, viruses and possibly other contaminants and shallow groundwater sources are also at significant risk of contamination. These water sources typically have distinguishing construction characteristics which do not comply with Appendix 5-B requirements and would therefore require a specific waiver or other county approval if utilized.

Well Points

A well point (or "driven point") is a special type of well installed using a drive point with a built-in screen fastened to the end of a small diameter pipe (usually 1-1/4 to 2 inches) and without a protective outer casing. Well points are installed by pounding, driving or excavating down to the water table. These wells are usually constructed in shallow aquifers with sandy soils, within 10 to 30 feet of the ground surface and use a suction pump to draw water. Single pipe driven point wells under suction are not in compliance with Appendix 5-B and should be avoided.

Dug Wells

A dug well is constructed by making a large diameter excavation into a shallow aquifer, by hand digging or backhoe and shoring the excavation with large diameter concrete rings. (Shoring constructed with stone or brick are not in compliance with Appendix 5-B and should be avoided.) Dug wells are typically less than 15 feet deep and usually use a suction pump to draw water.

Springs

Springs occur where an aquifer discharges naturally at or near the ground surface, and are broadly classified as either rock or earth springs. It is often difficult to determine the true source of a spring (that is, whether it truly has the natural protection against contamination that a groundwater aquifer typically has.) Even if the source is a good aquifer, it is difficult to develop a collection device (e.g., "spring box") that reliably protects against entry of contaminants under all weather conditions. (The term "spring box" varies, and, depending on its construction, would be equivalent to, and treated the same, as either a spring, well point or shore well.) Increased yield and turbidity during rain events are indications of the source being under the direct influence of surface water.

Shore Wells

"Shore wells" (also known as "infiltration galleries" or "cassion wells") are shallow wells influenced by surface water and are installed near a waterbody in a shallow aquifer that is directly connected to surface water. Shore wells can also be shallow subsurface devices adjacent to a water body, installed to collect water through a covered stone-filled trench or similar arrangement that drains surface water to a "storage" well or tank. Soils surrounding shore wells provide minimal filtration. The risk of contamination of these water sources can be similar to those of surface water sources.

ADDITIONAL CONSIDERATIONS AND RECOMMENDATIONS

The use of susceptible sources as described above is discouraged. A properly installed drilled well should be considered first before considering the use of a susceptible source. As a last resort, when the use of a susceptible source is considered, the following is recommended:

Well Points, Dug Wells and Springs

Where shallow ground water aquifers exist, well points, dug wells and springs can be allowed if they are installed by a certified New York State Department of Environmental Conservation (NYS DEC) registered water well contractor and, in most cases, require issuance of a specific waiver by the LHD or county sanitary code approval as needed. For these sources, installation of appropriate treatment should be considered (e.g., continuous disinfection). For springs, an engineering report, which may include a hydrogeologic study, should also be provided to assure that the water source is satisfactory.

Shore Wells

In cases where satisfactory groundwater cannot be developed according to Appendix 5-B standards, a specific waiver or approvals via county sanitary code can be requested for development of a shore well. All such requests should demonstrate unsatisfactory availability of groundwater via an engineering report or other evidence (such as a hydrogeologic study) deemed acceptable by the approval authority. Since shore wells provide minimal natural filtration of surface water, all requests should include proposed design, treatment (including filtration and continuous disinfection) and an operation, maintenance and monitoring plan developed by a professional engineer. After health department approval, the shore well needs to be installed by a certified NYS DEC registered water well contractor. Inclusion of a deed amendment as a condition on the specific waiver approval should also be considered. A professional engineer should certify that the construction and installation of treatment has been provided according to plans.

WATER QUALITY TESTING

Water quality testing is important for all drinking water wells to identify water characteristics and determine treatment needs. See NYS DOH Fact Sheet #3, "Recommended Residential Water Quality Testing" for a recommended minimum list of parameters to test for. It is recommended to test for coliform bacteria every year and to periodically re-test water quality; this is particularly important for water supplies susceptible to contamination.

COUNTY OR STATE HEALTH DEPARTMENT APPROVAL PROCESS REQUIRING A SPECIFIC WAIVER FROM PART 75 OR A COUNTY SANITARY CODE PROVISION

The local health official (see below) for the geographic area where the property that will utilize the water source is located should be contacted for information about how to apply for a specific waiver or other county sanitary code approval. **It is recommended that, before an application for a waiver or other approval is submitted, the local health official be contacted regarding conceptual acceptability of the proposal.**
A specific waiver or other approval IS NOT intended as a device for routinely approving individual water sources that do not meet state standards. It is intended to provide administrative flexibility to address rare cases when hardships exist and/or other circumstances that make it impractical to meet Appendix 5-B standards.

ADDITIONAL INFORMATION:

Appendix 5-B can be found at:
http://www.health.state.ny.us/environmental/water/drinking/part5/appendix5b.htm

NYSDEC registered well drillers can be found at: http://www.dec.ny.gov/cfmx/extapps/WaterWell/index.cfm

For a copy of Appendix 5-B or other Fact Sheets or questions concerning this Fact Sheet:

Contact Your Local Health Department:
https://www.health.ny.gov/environmental/water/drinking/doh_pub_contacts_map.htm

or

Residential Sanitation Section
Bureau of Water Supply Protection
New York State Department of Health
(518) 402-7650 or FAX (518) 402-7599
E-mail: bpwsp@health.ny.gov

Appendix G:
NYS Department of Health Fact Sheet #7

Individual Water Well Supplies - Testing, Operation and Maintenance of Residential Wells

INDIVIDUAL WATER SUPPLY WELLS - FACT SHEET #7

Testing, Operation, and Maintenance of Residential Wells

Background

Over one million homes (and several million residents and visitors) throughout New York State are served by individual (residential) water supply (IWS) wells. While public water supplies are regularly tested for a variety of contaminants, inspected, and maintained, these same activities are left to the homeowner in the case of an IWS. To protect the safety and health of residents and visitors, it is *recommended* that IWS owners:

- Regularly test the well water for contaminants;
- Know how the well system operates and be familiar with the function of each system component; and
- Perform regular maintenance on the well, well system components, and the area surrounding the well.

To help ensure a potable and adequate water supply, this fact sheet and the Individual Water Supply Wells – Fact Sheet #7 Checklist describe when to perform recommended testing, the components of an IWS, and how an IWS should be maintained. Homeowners should keep records of all maintenance and testing performed on their wells.

This Fact Sheet focuses on testing, operation, and maintenance of a drilled well, which, when properly located and constructed, is the well type recommended for an IWS (see Appendix 5-B "Standards for Water Wells"). Other types of wells including well points, dug wells, springs and shore wells are more susceptible to drought and contamination from pathogens and chemical spills (see Fact Sheet 5). Surface water supplies (lakes, streams, etc.) should not be used for residential water use because they are more likely to be contaminated (see Surface Water Fact Sheet).

Well Water Testing

- **Homeowners should have their water tested whenever a change in color, taste, or odor occurs. Water from a public water supply or NYS certified bottler should be used until test results are obtained.**
- **Recommended testing schedule:** Test for coliform bacteria at least annually. Also test for coliform bacteria whenever a well modification or repair occurs, when any change in gastrointestinal health occurs, or when an aesthetic change in the water occurs. Test for other contaminants every three to five years (see p. 2 of the Individual Water Supply Wells – Fact Sheet #7 Checklist and Fact Sheet 3 for a list of contaminants). Homeowners should contact their Local Health Department (LHD) to determine whether or not the LHD has its own required testing schedule. LHD contact information can be found at the following link: LHD contacts.
- **Steps to take when contaminants are found:** If test results confirm the presence of a contaminant above the applicable standard, homeowners should contact their LHD for further guidance. Corrective actions and/or treatment may be necessary.
- **How to collect and test samples:** Testing of well water should be conducted at a laboratory certified for testing potable water by the Environmental Laboratory Approval Program (ELAP). A list of labs can be found at: www.wadsworth.org/labcert/elap/comm.html or by contacting your LHD. Sample collection procedures will be outlined by the laboratory. It is recommended not to rely on in-home tests performed by water treatment vendors or test kits purchased at stores because these tests do not meet ELAP standards.

Well Operation

How a well system operates: Typical well systems consist of a well, pump, pressure tank, pressure switch, piping, and sometimes a storage tank containing a few hundred gallons of water. When a water fixture is opened, compressed air in the pressure tank forces water from the tank into the piping to the fixture. When the pressure in the tank drops due to the lowered water level, the pressure switch (located on or near the pressure tank) turns the pump on. The pump forces water from the well through the piping to the pressure tank. When the water level in the tank reaches a pre - set level, the pressure switch shuts the pump off.

Well Maintenance

Do not exceed your experience or knowledge when performing well maintenance tasks. If you are unsure about how to perform a task, contact a well driller, plumber, or electrician.

- **Maintenance of well:** Homeowners should inspect the well casing, well cap, and well area at least annually to make sure that the well is protected from potential sources of contamination (see Figures 1 and 2 and the Individual Water Supply Wells – Fact Sheet #7 Checklist for descriptions of which items to inspect). Unacceptable well caps should be replaced with an acceptable cap (see Figure 2 below).
- **Maintenance of wellhead area:** Homeowners should avoid mixing, using, storing and disposing of pesticides, fertilizers, manure, herbicides, cleaners, degreasers, fuels and other pollutants near the well. These substances should be stored at least 100 feet from the well casing in original, sealed, labeled containers on an impervious surface such as concrete. Dispose of these substances properly and NEVER dispose of them down a well, or into a sink or toilet leading to the septic system.
- **Maintenance of Well Components:**
  - **Well pump -** submersible pumps require very little maintenance. Jet pumps and suction pumps should be kept in a dry area free from flooding. They also may occasionally have to be primed.
  - **Pressure tank –** pressure tanks maintain pressure inside the household plumbing and prevent the well pump from running every time water is needed. This leads to prolonged pump life. Symptoms of an improperly operating pressure tank include the water pump running more frequently, surging water pressure, and taste and odor issues. If you suspect pressure tank problems contact a plumber or well driller. Keep the area around the tank clear for maintenance.
  - **Pressure switch –** pressure switches ensure that the pressure in the tank remains in a specified range, typically 30 – 50 psi or 40 - 60 psi. Pressure switches normally operate on higher than normal electrical voltage. Contact a well driller or electrician for switch maintenance to avoid the risk of electrical shock.
  - **Pressure gauge** - check to make sure the gauge is operating properly and replace if needed. Normal operating pressure should be between 30 and 60 psi.
  - **Electric shutoff box** – keep dry and keep the surrounding area clear for maintenance.
  - **Additional Treatment Devices –** maintenance should be performed according to the manufacturer.
  - **Shock chlorination of well -** If the well has been flooded or well maintenance has been performed, follow the instructions found at: www.health.ny.gov/environmental/water/drinking/boilwater/. Select the tab, "Disinfecting Water at Home," and then follow all instructions under "Well Contamination".

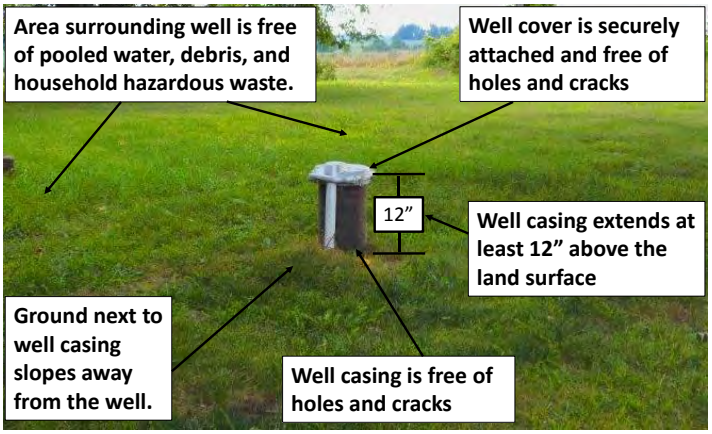


Figure 1: Photo of a properly constructed well.

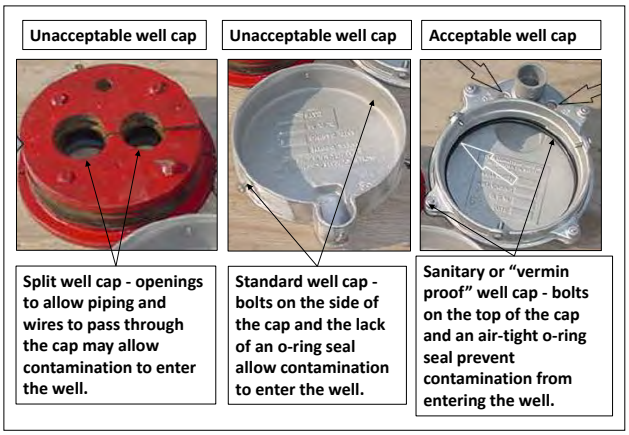


Figure 2: Photos of acceptable and unacceptable well caps

Copies of this Fact Sheet, Appendix 5-B, and other Fact Sheets can be found at: http://www.health.ny.gov/environmental/water/drinking/regulations/. A list of DEC registered well drillers can be found at: http://www.dec.ny.gov/lands/33317.html. For questions contact:

Your Local Health Department
(http://www.health.ny.gov/environmental/water/drinking/doh_pub_contacts_map.htm)

or

Residential Sanitation Section
Bureau of Water Supply Protection
New York State Department of Health
(518) 402-7650
E-mail: bpwsp@health.state.ny.us

INDIVIDUAL WATER SUPPLY WELLS - FACT SHEET #7: CHECKLIST

Checklist for Testing, Operation, and Maintenance of Residential Wells

Click on the following link to open Fact Sheet 7: Fact Sheet 7

The following are *recommended* items that should be checked regularly to ensure that your private well is adequately protected against contamination and is operating properly. Completed checklists should be kept with other well maintenance and testing records. **Do not exceed your experience or knowledge when performing well maintenance tasks. If you are unsure about how to perform a task, contact a well driller, plumber, or electrician.** Please note that the checklist is continued on the reverse side of this sheet.

Item to Check	Check Annually	Date Checked/By Whom	Notes
Water Quality	Test water sample for coliform bacteria; sample sent to ELAP certified lab: www.wadsworth.org/labcert/elap/comm.html (or contact your LHD)		
Well Casing	Well casing is free of holes and cracks		
	Well casing extends at least 12" above the surrounding land surface		
Well Cap	Well cap is free of holes and cracks		
	Well cap is securely attached, is bolted on top of the cap, and the vent is screened (use a mirror to check for screened vent under the cap)		
	The next time the well cap is removed or replaced, check to ensure the cap is sealed with an O-ring or gasket. Do NOT remove the well cap unless performing maintenance activities (such as shock chlorination of well)		
Pressure Tanks	Pressure gauges checked to ensure they are operating properly, showing pressure in the tank remains in a specified range (typically between 30 – 60 psi)		
	Pressure tank has been flushed (if necessary)		
	Valves have been exercised to ensure they are operating properly and can be fully opened and closed		
Surrounding Ground	Ground surrounding well casing slopes away from the casing		
	Ground surrounding well casing is free of pooled water and debris (leaves, branches, etc.)		
Property	No household hazardous materials or animal wastes located/stored within 100 feet of well casing		
	Any household hazardous materials present on property are stored in original, sealed, labeled containers and on an impervious surface (not on the lawn)		
	Aboveground oil tanks on property are in good condition and at low risk for leakage. When refilling oil tanks, someone watches to ensure overflow does not occur		
Septic	Septic system visually inspected to check for breakouts, failures, etc.		

Item to Check	Check – Every Three to Five Years	Date Checked/By Whom	Notes
Water Quality	Well water tested for lead, nitrates/nitrites, turbidity, arsenic, iron, manganese, iron plus manganese, hardness, alkalinity, pH, and sodium (see Fact Sheet 3)		
Septic	Septic tank pumped out/inspected every 2-3 years by a NYSDEC permitted Waste Transporter to avoid failure of septic system and potential contamination of well		
Item to Check	**Check - As Specified for Your Equipment**	**Date Checked/By Whom**	**Notes**
Water Softener	If water softener present, exhausted resin has been replaced or regenerated (if needed)		
Filter	Cartridge filter (if present) checked and replaced if necessary		
Tank	Aeration system storage tank (if present) has been flushed and cleaned		
UV	Lamp in the UV disinfection system (if present) has been replaced (if needed)		
	Housing and lamp in the UV disinfection system (if present) have been cleaned		
Other	Other treatment units maintained on schedule		

Appendix H:

Tompkins County Department of Health: Private Well Use During Drought

TOMPKINS COUNTY HEALTH DEPARTMENT
Your Partner for a Healthy Community

Frank Kruppa
Public Health Director
55 Brown Road
Ithaca, NY 14850-1247

ENVIRONMENTAL HEALTH DIVISION
www.tompkinscountyny.gov/health/eh

Ph: (607) 274-6688
Fx: (607) 274-6695

PRIVATE WATER WELL USE DURING DROUGHT CONDITIONS GUIDANCE

Some private wells run dry every summer, while others, which may be right next-door, flow without a problem even during a drought. Geographical or physical conditions of the soil or rock and well construction may cause these differences.

Groundwater levels all across Tomkins County are low this year due to a very dry winter, spring and summer. If weather trends persist we anticipate an increase in the number of private wells that will run dry this year. This guidance has been prepared to help people cope with the situation.

Do I have a Problem?

If you hear your pump going on more frequently than normal or experience water outages, or if air bubbles come out of your faucet, you well may be having trouble keeping up with your demand for water. If you have a well in this situation, a thermal protection control device should be considered to avoid damaging your well pump and help control the flow of water into your pressure tank.

Where is My Well?

Where is it? How deep is it? These are some basic questions. If you do not know the answers, call a registered well driller *(see Certified Well Driller list).* The well driller who installed your well may also be a useful source of information. The DEC has well logs available for all wells drilled starting in 2000.

Why Conserve Water?

Cutting back on water use by refraining from outdoor use or doing laundry and limiting toilet flushing and bathing can significantly reduce your demand for water. Timing water use to spread out your water demand over the entire day may also help. See the attached tips for reducing water demands and lessening water demand.

How Do I Increase My Available Water?

A NYSDEC registered plumber or well driller can inspect your well and may be able to lower the pump. This may increase the useable storage in the well and increase the extent of the aquifer from which the well can get water if the well is already deep. Deepening your well is another possibility.

Increasing the amount of water storage through the installation of an atmospheric storage tank and/or transfer pump by a registered plumber or well driller may help. Water in storage will be available for use as needed, for longer periods. This allows well water to flow into the well (recover) for a longer period of time before recharging the tank. *(Please reference the NYSDOH Individual Water Supply Wells Water Storage Fact Sheet #2 for details)*

What Happens if I Run Out of Water?

If the groundwater level drops below the bottom of your well you are out of water. Deepening your well or drilling a new well may be a solution. If that is not feasible, it may be possible to connect a tank to your home and have water delivered by a bulk water hauler *(see NYSDOH Certified Bulk Water Hauler list*), although this may require the installation of an atmospheric storage tank and transfer pump.

What About Safety?

Any time work is done on your well, or you add water storage, or change delivery, your system should be disinfected to kill any bacteria that may have entered the system during the work procedure. *(Shock disinfection of water supply systems)* Also private well owners should test their water annually for bacteria and other indicators, and whenever there is an evident change in quality contact our department for advice. *(The local NYS certified lab list can be found here)*

For smaller volumes of water, details of Emergency Disinfection of Drinking Water Supplies can be found here https://www.epa.gov/ground-water-and-drinking-water/emergency-disinfection-drinking-water

When Will Things Get Better?

This is largely governed by precipitation and is thus unpredictable. However, if conditions have not improved, relief can be expected normally around mid-October when evaporation and transpiration by plants declines.

Things to Remember

Do not fill your well from other water sources. The water will disperse into the aquifer. Your well is not a storage tank. *(Click for details)*

Ideas for optimizing your water consumption: https://www.epa.gov/watersense

When in doubt, utilize local and state resources for information.

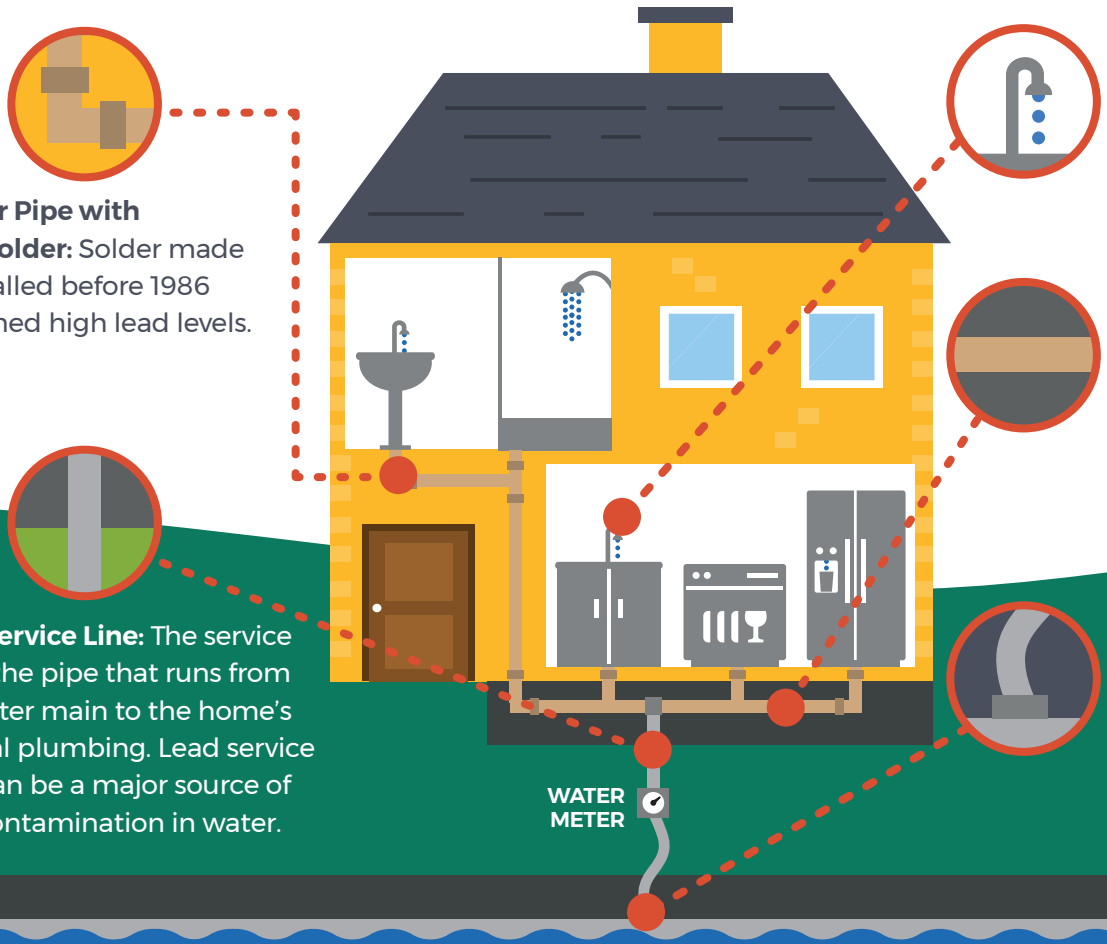
Appendix I

Sources of Lead in Drinking Water

EPA

CONCERNED ABOUT LEAD IN YOUR DRINKING WATER?

Sources of **LEAD** in Drinking Water



Copper Pipe with Lead Solder: Solder made or installed before 1986 contained high lead levels.

Faucets: Fixtures inside your home may contain lead.

Galvanized Pipe: Lead particles can attach to the surface of galvanized pipes. Over time, the particles can enter your drinking water, causing elevated lead levels.

Lead Service Line: The service line is the pipe that runs from the water main to the home's internal plumbing. Lead service lines can be a major source of lead contamination in water.

Lead Goose Necks: Goose necks and pigtails are shorter pipes that connect the lead service line to the main.

Reduce Your Exposure To Lead

Use only cold water for drinking, cooking and making baby formula. *Boiling water does not remove lead from water.*

Regularly clean your faucet's screen (also known as an aerator).

Consider using a water filter certified to remove lead and know when it's time to replace the filter.

Before drinking, flush your pipes by running your tap, taking a shower, doing laundry or a load of dishes.

To find out for certain if you have lead in drinking water, **have your water tested.**

Replace Your Lead Service Line

Water systems are required to replace lead service lines if a water system cannot meet EPA's Lead Action Level through optimized corrosion control treatment.

Replacement of the lead service line is often the responsibility of both the utility and homeowner.

Homeowners can contact their water system to learn about how to remove the lead service line.

Identify Other Lead Sources In Your Home

Lead in homes can also come from sources other than water. If you live in a home built before 1978, you may want to have your paint tested for lead. **Consider contacting your doctor to have your children tested if you are concerned about lead exposure.**

For more information, visit: **epa.gov/safewater**

Appendix J

NYS Department of Health Fact Sheet #6

Individual Water Supply Guidance for Code Enforcement Officials

NEW YORK STATE OF OPPORTUNITY. Department of Health

NEW YORK STATE DEPARTMENT OF HEALTH
Bureau of Water Supply Protection

INDIVIDUAL WATER SUPPLY WELLS - FACT SHEET #6
GUIDANCE FOR CODE ENFORCEMENT OFFICIALS

Code Enforcement Officials (CEO) provide a critical role in reviewing the location and construction of individual (residential) potable water supply (IWS) wells prior to issuing building permits and certificates of occupancy. The New York State Residential Code subsection P2602.1.1 requires IWS wells be located and constructed according to New York State Department of Health (DOH) 10NYCRR Appendix 5-B standards to reduce the risk of contamination and maintain a long term water supply for homeowners. Improperly constructed or located wells can pose a significant risk for contamination of a well.

COMPLIANCE WITH WATER WELL CONSTRUCTION REGULATIONS AND WELL CONTRACTOR REQUIREMENTS

New and replacement IWS are required to be in compliance with the NYS Residential Code (which references Appendix 5-**B "Standards for Water Wells"**), installed by a certified NYS Department of Environmental Conservation (DEC) registered water well contractor (driller) and have groundwater as the water source. Some counties may have their own requirement for approvals of new and replacement wells. Check with the local health department (LHD) using the contact information available at:
www.health.ny.gov/environmental/water/drinking/doh_pub_contacts_map.htm

Residential Code: Subsection P2602.1.1: "Individual water supplies. Individual water supplies (private wells) shall be installed by a well driller registered with the DEC and be in compliance with the provisions of Appendix 5-B of the New York State Department of Health regulations (10NYCRR Appendix 5-**B).**"

Well Construction: Appendix 5-B, "Standards for Water Wells": This Appendix serves as the reference standard for construction of all new and replacement IWS. **Approvals for deviations (e.g., "specific waivers")** from the standards can only be granted by the LHD having jurisdiction. Appendix 5-B can be found at:
www.health.state.ny.us/nysdoh/water/part5/appendix5b.htm.

Water Well Contractor Registration: Environmental Conservation Law §15-1525: This law requires persons engaged in the business of water well contracting to be registered with the DEC (see below). Water well contracting includes any excavation for the purpose of obtaining groundwater, which includes drilled wells, dug **wells, springs, "driven points" and shore wells. The water well contracting supervisor needs to be "certified" (i.e.** passed an exam by the National Ground Water Association) and onsite during water well construction activities.

KEY ITEMS TO CHECK

It is recommended that the following key items be checked prior to issuing a building permit or certificate of occupancy. A checklist CEOs may use that includes the following items is attached.

Well Contractor Requirements: The following DEC Well Contractor Law requirements should be verified:

1. **DEC registration:** Check that the well contractor is presently ***registered*** with DEC. A list of registered well contractors can be found at **www.dec.ny.gov/cfmx/extapps/WaterWell/index.cfm**
2. **Well Completion Report**: This report is required to be submitted by the water well contractor to DEC and the water well owner. CEOs, however, have authority to ask for a copy (e.g., from the well owner) to review before approving the well. (These reports may not be available until the well has been paid for.)

Contact the DEC Water Well Program at 877-472-2619 or 518-402-8291 for questions on water well contractor registration or check online at www.dec.ny.gov/lands/33317.html. Well contractors that are not registered can be referred to DEC.

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Well Location and Separation Distances: Appendix 5-B requires that wells be located an appropriate distance from known sources of contamination and not subject to flooding or surface water contamination. The table below lists required separation distances from wells to commonly encountered contaminant sources. For a full list of separation distances see Table 1 in Appendix 5-B. Proposed separation distances need to meet Appendix 5-B requirements and should be verified. Deviations from these separation distances need approval from the LHD.

Contaminant Source	Distance (Feet)*
Land application or storage of manure	200
Seepage pit	150
Absorption (leach or tile) field or bed	100
Septic tank, enhanced treatment unit, watertight effluent line to distribution box	50
Sanitary (public) or combined sewer	50
Stream, lake, watercourse, drainage ditch, or wetland	25

*Note: Separation distances from contaminant sources need to be significantly increased if the contaminant source is located upgradient from a well or if aquifer water enters the well (i.e., at the bottom of the casing) at less than 50-feet below grade. Refer to Table 1 of Appendix 5-B or contact your LHD for questions on this Note.

ADDITIONAL WATER WELL CONSTRUCTION CONSIDERATIONS

Well Construction: The following details should be verified during site inspection and/or upon review of the **NYSDEC Well Completion Report**:

1. ***Well depth*** and ***well casing length***. The well depth needs to be shown. The casing needs to extend at least 1-foot above grade and 19-feet below grade.
2. ***Well cap*** tightly secured to the casing; also watertight and vermin-proof. Split caps are not allowed.
3. ***Grout***, if needed (not necessarily needed in sand or gravel; see Table 2, Appendix 5-B), is placed to fill the annular space around the casing to establish a watertight seal.
4. ***Grading*** of the area surrounding the well helps to eliminate ponding and direct surface water away from the top of the well casing; the well also needs to be located in an area not subject to flooding.
5. ***Well yield*** (if determined by the well contractor) is recorded before the well is placed into use.
6. ***Pump*** (if installed by the well contractor) or ***well screen*** (if needed) are recorded.

Well Points, Dug Wells, Springs and Shore Wells: A drilled well, located and constructed according to these criteria, should routinely be the water supply option selected. Well points, dug wells, springs and shore wells may need approval by the LHD. (Dug wells constructed with stone or brick shoring and single pipe driven point wells under suction are not in compliance with Appendix 5-B and should be avoided.) For more information on these **types of sources refer to NYS DOH Fact Sheet #5, "Susceptible Water Sources."**

Abandoned Wells: It is recommended to check the site for previously constructed wells that have been abandoned due to inadequate production. These abandoned wells should be properly decommissioned as described in Fact Sheet #4, "Decommissioning Abandoned Wells."

IWS Fact Sheets: www.health.ny.gov/environmental/water/drinking/regulations/fact_sheets/
For copies and questions concerning this Fact Sheet, Appendix 5-B, or other Fact Sheets:

Contact Your Local Health Department Official:
www.health.ny.gov/environmental/water/drinking/doh_pub_contacts_map.htm

or

Residential Sanitation Section
Bureau of Water Supply Protection
New York State Department of Health
(518) 402-7650 or FAX (518) 402-7599
E-mail: bpwsp@health.ny.gov

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CHECKLIST

Attachment to NYSDOH Fact Sheet #6: "Guidance for Code Enforcement Officials"

This checklist is produced by the New York State Department of Health (NYSDOH) for CEOs who wish to use it when inspecting an individual water supply and issuing a building permit or a certificate of occupancy. This checklist is for personal use and does not need to be submitted to any agency.
The regulations governing water well standards for individual water supply are the Residential Code (Subsection P2602.1) and NYS DOH Appendix 5-B. A complete version of Appendix 5-B can be found at www.health.ny.gov/regulations/nycrr/title_10/part_5/appendix_5b.htm
Fact Sheet #6 should also be reviewed when using this checklist.

Name of well/property owner:	
Address:	
Phone:	**Date of Inspection:**
GPS or approx. well location:	
Local or Town Permit Number:	

MANDATORY FOR COMPLIANCE WITH THE RESIDENTIAL BUILDING CODE:
The following are key items CEOs should verify regarding the contractor and water well location/construction prior to issuing a building permit or certificate of occupancy:

❑ **NYS Department of Environmental Conservation (DEC) Registered Well Contractor:** A current registration sticker, like that shown, is to be located on the left front fender of the drill rig. The style and/or color of this sample sticker may change on a yearly basis. Contact the DEC Water Well Driller Program at 877-472-2619 for more information on the DEC registration program.

❑ **Well Completion Report:** The well completion report needs to be submitted to the DEC and the well owner. Details on the report need to include: well depth, casing length, depth and type of grout, screen type (if applicable), well yield (if performed by well contractor), pump type (if installed by well contractor), etc. See reverse side for an example of a well completion report and where each item can be found. CEOs may request a copy of the report to review from the well owner.

❑ **Well Location and Separation Distances:** The separation distances from the water well to potential contaminant sources need to be adhered to. The table below is a list of required separation distances from wells to the most commonly encountered contaminant sources. Refer to Appendix 5-B for a full list of separation distances. In addition, the well should not be prone to flooding or ponding of surface water.

Contaminant Source	Distance (Feet)
Land application or storage of manure	200
Seepage pit	150
Absorption (leach or tile) field or bed	100
Septic tank, enhanced treatment unit, watertight effluent line to distribution box	50
Sanitary (public) or combined sewer	50
Stream, lake, watercourse, drainage ditch, or wetland	25

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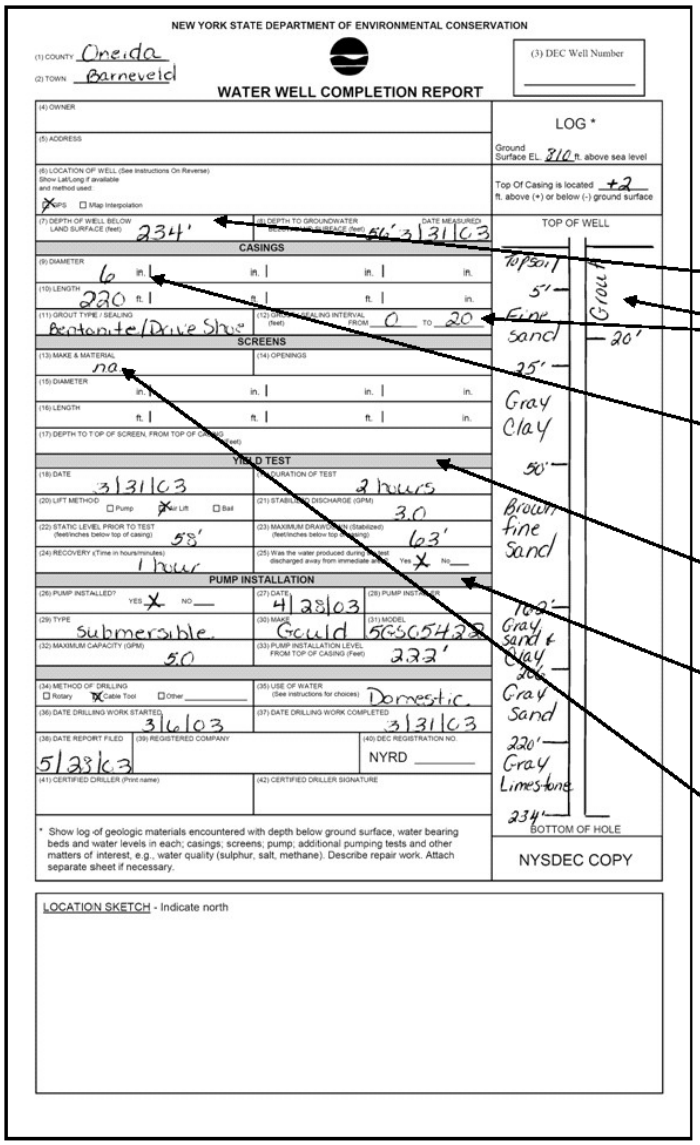
CHECKLIST (continued)

Attachment to NYSDOH Fact Sheet #6: "Guidance for Code Enforcement Officials"

ITEMS RECOMMENDED FOR VERIFICATION



NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

(1) COUNTY Oneida
(2) TOWN Barneveld
(3) DEC Well Number

WATER WELL COMPLETION REPORT

(4) OWNER
(5) ADDRESS
(6) LOCATION OF WELL (See Instructions On Reverse) Show Lat/Long if available and method used: X GPS ☐ Map Interpolation
(7) DEPTH OF WELL BELOW LAND SURFACE (feet) 234'
(8) DEPTH TO GROUNDWATER BELOW LAND SURFACE (feet) 56' DATE MEASURED 3/31/03

LOG *
Ground Surface El. 810 ft. above sea level
Top Of Casing is located +2 ft. above (+) or below (-) ground surface
TOP OF WELL

CASINGS
(9) DIAMETER 6 in.
(10) LENGTH 220 ft.
(11) GROUT TYPE / SEALING Bentonite/Drive Shoe
(12) GROUT / SEALING INTERVAL (feet) FROM 0 TO 20

SCREENS
(13) MAKE & MATERIAL na
(14) OPENINGS
(15) DIAMETER
(16) LENGTH
(17) DEPTH TO TOP OF SCREEN, FROM TOP OF CASING (feet)

YIELD TEST
(18) DATE 3/31/03
(19) DURATION OF TEST 2 hours
(20) LIFT METHOD ☐ Pump X Air Lift ☐ Bail
(21) STABILIZED DISCHARGE (GPM) 3.0
(22) STATIC LEVEL PRIOR TO TEST (feet/inches below top of casing) 58'
(23) MAXIMUM DRAWDOWN (Stabilized) (feet/inches below top of casing) 63'
(24) RECOVERY (Time in hours/minutes) 1 hour
(25) Was the water produced during test discharged away from immediate area? Yes X No

PUMP INSTALLATION
(26) PUMP INSTALLED? YES X NO
(27) DATE 4/28/03
(28) PUMP INSTALLER
(29) TYPE Submersible
(30) MAKE Gould
(31) MODEL 5GS05422
(32) MAXIMUM CAPACITY (GPM) 5.0
(33) PUMP INSTALLATION LEVEL FROM TOP OF CASING (Feet) 222'

(34) METHOD OF DRILLING ☐ Rotary X Cable Tool ☐ Other
(35) USE OF WATER (See instructions for choices) Domestic
(36) DATE DRILLING WORK STARTED 3/6/03
(37) DATE DRILLING WORK COMPLETED 3/31/03
(38) DATE REPORT FILED 5/28/03
(39) REGISTERED COMPANY
(40) DEC REGISTRATION NO. NYRD
(41) CERTIFIED DRILLER (Print name)
(42) CERTIFIED DRILLER SIGNATURE

* Show log of geologic materials encountered with depth below ground surface, water bearing beds and water levels in each; casings; screens; pump; additional pumping tests and other matters of interest, e.g., water quality (sulphur, salt, methane). Describe repair work. Attach separate sheet if necessary.

Topsoil 5'
Fine sand 20'
Gray Clay 50'
Brown fine Sand 100'
Gray sand & Clay 200'
Gray Sand 220'
Gray Limestone 234'
Grout
BOTTOM OF HOLE

NYSDEC COPY

LOCATION SKETCH - Indicate north

- ☐ **Well Cap**
  All wells need to have a properly vented, watertight, vermin proof well cap; Appendix 5-B.5(g)
- ☐ **Well depth**
- ☐ **Grout**
  Appendix 5-B.3(b) and Table 2 (if grout is needed)
- ☐ **Casing**
  - Appendix 5-B.3(b) and Table 2; shall extend at least one foot above finished grade
- ☐ **Yield**
  Appendix 5-B.4 (if yield determined by well driller)
- ☐ **Well Pump**
  Appendix 5-B.5 (if pump is installed by well driller)
- ☐ **Well Screen**
  Appendix 5-B.3(b)(19) and Table 2 (if screen is needed)

Electronic copies of this checklist and other Fact Sheets can be obtained at www.health.ny.gov/environmental/water/drinking/regulations/fact_sheets/ or by contacting your Local Health Department or the NYS DOH Bureau of Water Supply Protection at bpwsp@health.ny.gov

January 2018

Appendix K

NYS Department of Environmental Conservation

Septic System Operation and Maintenance

Maintain Your System

Regularly pump-out your septic tank when needed.

Keep a record of pumping, inspections, maintenance and repairs.

Map out septic tank and other system components. Either have a map or locate components with permanent stakes. This is useful for accessing the system and will prevent damaging system components when doing home maintenance or yard work.

Don't park or drive heavy vehicles or equipment over the septic system or any of its components.

Don't build structures, such as decks, patios or swimming pools, that would cover the absorption field or limit access to the septic tank and distribution box.

Don't flush or use strong chemicals and bacteria-destroying products, such as drain cleaners, solvents, paint, paint thinners, floor cleaners, sink cleaners, motor oil, antifreeze, pesticides, and photo chemicals. These may disrupt septic tank or absorption system operation. Household bleach, disinfectants, cleansers, antibacterial soaps, when used in normal household applications should not affect system operations.

Don't flush materials that don't easily degrade, such as paper towels, cotton swabs, personal hygiene products, condoms, medications, disposable diapers, coffee grounds, cat litter, cooking fats/oils, facial tissues, dental floss, cigarette butts, plastics, grease or bones.

Avoid septic tank additives. A septic tank that is properly sized and maintained will adequately manage household wastewater without the use of additives.

Avoid garbage disposals or grinders because these substantially increase the accumulation of solids in the septic tank and in the absorption field. If they are used, the septic tank size should be increased and pumped-out more often.

Direct water treatment system discharges to a separate soil absorption system, if possible, to minimize discharges to the septic system. However, as long as the system is well maintained and can accommodate the additional flow, water treatment system discharges can be directed to the septic tank in many cases.

Direct drainage away from the septic system from roof, cellar/footing (sump pump) and surface water run-off.

Plant grass and other shallow-rooted plants over the absorption field. Keep trees and long-rooted plants and shrubs away from the immediate area of the absorption area. Roots can grow into the pipes and clog the system.

Conserve water. Check for defective toilet tank valves, repair leaky fixtures, and install appliances and fixtures that use less water and avoid wasteful practices.

Regularly inspect and maintain any effluent pumps and alarms that may be part of your septic system.

Find Out More

Contact the New York State Department of Health
Ph: (518) 402-7650, E-mail: bpwsp@health.ny.gov
health.ny.gov/DrinkingWater

Contact Your Local Health Department
www.health.ny.gov/EnvironmentalContacts

NEW YORK STATE | Department of Health

3208 4/18

Septic System

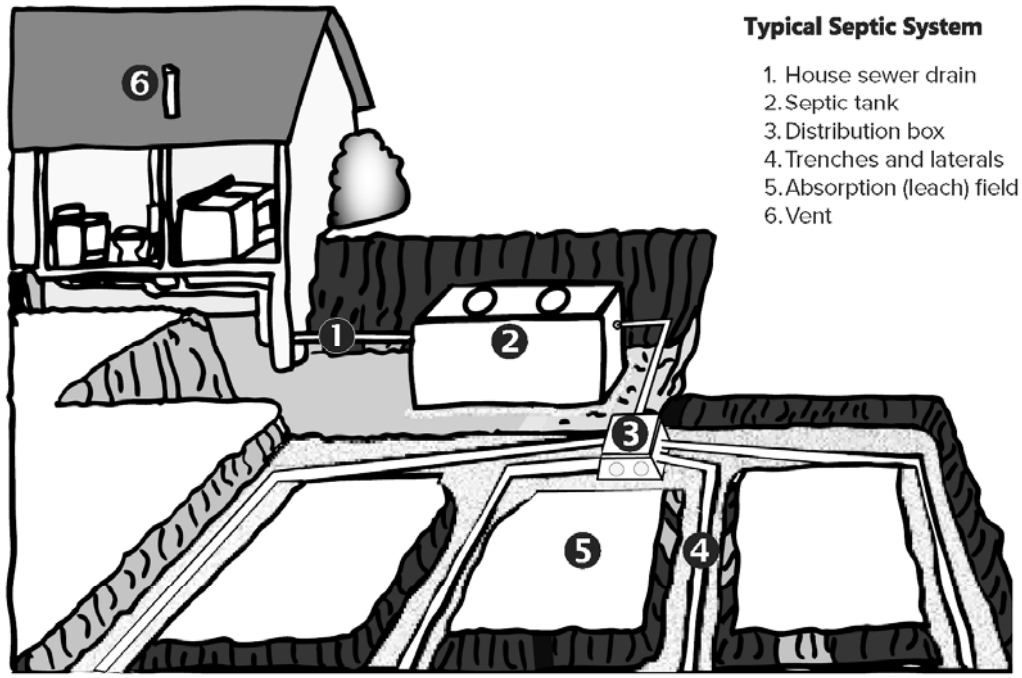
Operation and Maintenance

A septic system will serve a home for a long time if it is properly located, designed, constructed and maintained. However, even the best designed and installed septic system will eventually fail without periodic maintenance. This guide briefly describes septic system components and how they should be maintained.

Septic System Components

A septic system, also called an onsite wastewater treatment system (OWTS), is made up of a **house sewer drain, septic tank, distribution box** and **soil absorption (leach) field** *(see Typical Septic System diagram, right).*

1. **The house sewer drain** collects all the discharge from home fixtures, such as toilets, sinks, showers and laundry and connects to the septic tank.
2. **The septic tank** collects all the discharges from household plumbing and provides the needed time for wastes to settle or float. The heavy solids settle to the bottom of the tank where they are broken down by bacteria to form sludge. The lighter solids, fats and grease, partially decompose and rise to the surface to form a layer of scum. This process allows the partially treated wastewater to be released to the absorption field.
3. **The distribution box** evenly distributes wastewater from the septic tank to pipes in the trenches of the absorption field. It is important that each trench receives an equal amount of flow to prevent overloading to one part of the absorption field.
4. **Trenches** receive partially treated sewage.
5. **The absorption (leach) field** is a system of trenches and distribution pipes where wastewater is biologically treated by the surrounding soil. The system is partially filled with washed gravel, stone or a gravelless product. The absorption field must be properly sized, constructed and maintained to assure satisfactory operation and long life.
6. **The vent** permits gases that build up in the plumbing to exit the system.



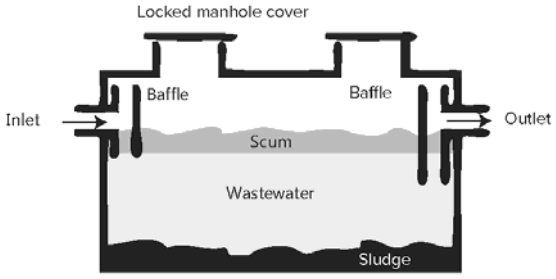
Typical Septic System

1. House sewer drain
2. Septic tank
3. Distribution box
4. Trenches and laterals
5. Absorption (leach) field
6. Vent

Septic Tank Maintenance

A septic tank should be pumped out every two to three years.

A septage waste transporter (septic tank pumper) that is licensed by the New York State Department of Environmental Conservation can inspect, measure tank layers and pump out the tank when necessary.



Typical Septic Tank

CAUTION! Never enter a septic tank because it contains toxic gases that can be deadly.

Appendix L:

Critical Environmental Areas
Tools for Conservation in Your Community

CRITICAL ENVIRONMENTAL AREAS

Tools for Conservation in Your Community

NEW YORK STATE | Hudson River Estuary Program

What are Critical Environmental Areas?

A Critical Environmental Area (CEA) is a geographic area with exceptional or unique character with respect to one or more of the following:

- a benefit or threat to **human health**;
- a **natural setting** such as fish and wildlife habitat, forest and vegetation, open space, and areas of important aesthetic or scenic quality;
- **agricultural, social, cultural, historic, archeological, recreational,** or **educational values**; or
- an inherent **ecological, geological, or hydrological sensitivity** that may be adversely affected by any change.

CEAs are defined under subdivision 6 NYCRR 617.14(g) of the State Environmental Quality Review (SEQR) regulations. Counties and municipalities may designate specific geographic areas within their boundaries as CEAs. State agencies may also designate specific geographic areas that they own, manage, or regulate as CEAs.

The Town of Pine Plains in Dutchess County designated Stissing Mountain CEA to raise and formalize awareness of this important ecosystem. Stissing Mountain is also a defining natural landmark and viewshed for Pine Plains that contains sensitive steep slopes and protects drinking water supplies. Photo: Daniel Case.

What are the benefits of CEA designation?

CEA designation alerts landowners, developers, and regulatory agencies to features of importance or concern contained within the CEA. When evaluating potential project impacts under SEQR, the lead agency (typically the Planning Board) must specifically consider how proposed projects might affect the qualities of the designated area. CEA designation thus ensures that exceptional or unique features are not overlooked during SEQR, and that any potentially harmful impacts to them are evaluated. CEA designation can encourage more proactive planning and design to conserve critical resources, avoid hazards, and keep track of “big picture” issues like habitat connectivity and watershed protection.

What are the limitations of CEA designation?

CEA Designation does not substitute for, nor does it provide, governmental protection afforded by land use controls such as zoning or land acquisition. It does not grant any agency permitting authority or other jurisdictions that did not already exist before the designation of the CEA. There are no automatic restrictions on any activities in a CEA. In making a determination of significance, the lead agency must evaluate potential impacts on attributes or resources that led to the designation of the area as a CEA. Targeted land use controls may be desirable to achieve specific protections within a CEA; however, CEA designation can be a valuable first step to achieve recognition and consideration during SEQR.

The Town of Wawarsing in Ulster County designated the Catskill-Shawangunk Greenway Corridor CEA to bring attention to a critical ecological corridor providing regional habitat connectivity between the Catskill Mountains and the Shawangunk Ridge. The corridor had previously been recognized as a high priority for conservation in the 2018 Town Open Space Plan and the 2016 New York State Open Space Conservation Plan. Photo: Laura Heady

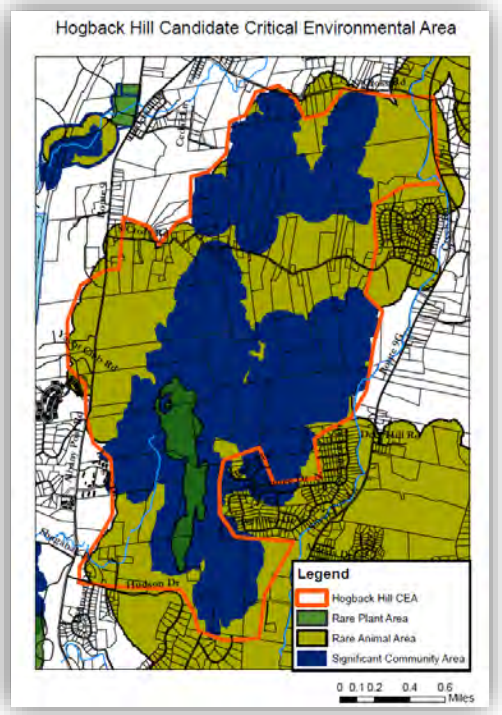
How do lead agencies evaluate potential impacts to CEAs during SEQR?

Consideration of CEAs only applies to Type I or Unlisted actions under SEQR. Type II actions such as construction of a single-family dwelling on an approved lot are not subject to such review. The short and full Environmental Assessment Forms (EAFs) identify whether proposed actions are within or adjacent to a designated CEA. If so, the lead agency must identify and evaluate the magnitude of potential adverse impacts to the qualities of the CEA. Evaluation should include the original purpose of the designated area, its characteristics, the proposed project goals, and the proximity and extent of the proposed action in relation to the CEA boundaries. Will the proposed action affect the quantity and quality of the resource or characteristics of the designated area? As for other questions during SEQR, the lead agency may request additional information to make an informed decision. If a moderate or large impact is identified, the lead agency must decide if the impact is significant, whether the impact will be avoided or substantially mitigated, and whether or not to require an environmental impact statement. DEC's SEQR Handbook and EAF Workbooks provide additional guidance.

It is also important to note that CEA designation does not affect the classification of actions under SEQR (i.e., it does not change actions from Unlisted to Type I or otherwise). Actions within a CEA likewise do not automatically trigger a declaration of a positive impact or automatically require preparation of an environmental impact statement.

What is the process for designating a CEA?

617.14(g) provides the specific procedures for designating a CEA. The regulations require preparation of a map at an appropriate scale to readily locate the CEA boundaries and a written justification supporting the designation. The municipal comprehensive plan, a natural resources inventory, or an open space plan may be valuable references in preparing materials for CEA designation. Though not required, an agency may consider first holding an informational meeting with affected landowners, other interested agencies, and the public to present and discuss the proposal. The designating agency must provide written public notice and hold a public hearing prior to the designation. The act of designating a CEA is a discretionary decision by the designating agency and is, therefore, subject to SEQR. After the agency approves the designation, the map, written justification, and proof of public hearing must be filed with the DEC Commissioner and others. The designation takes effect 30 days after these filings.



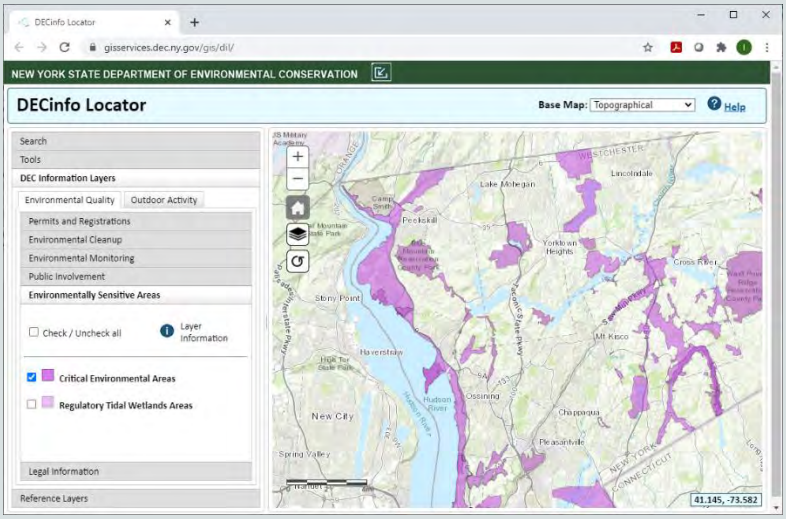
The Town of Hyde Park CAC used natural heritage data to delineate CEAs.

Where can I view designated CEAs?

- DEC Website
  https://www.dec.ny.gov/permits/6184.html
- DECinfo Locator
  (under Environmentally Sensitive Areas)
  https://www.dec.ny.gov/pubs/109457.html

Additional Resources

- DEC SEQR Handbook
  https://www.dec.ny.gov/permits/6188.html
- DEC EAF Workbooks
  https://www.dec.ny.gov/permits/90125.html
- Town of Wawarsing CEA video
  https://www.youtube.com/watch?v=PrB-0CvRNJM&feature=youtu.be



Current CEA boundaries are shown on the DECinfo Locator.

Appendix M:

Critical Environmental Areas
Steps for Designation and Adoption of CEAs

The steps in the CEA designation process are:

1. Submit a written public notice that identifies the CEA boundaries and the specific environmental characteristics of the area warranting CEA designation.

2. Conduct a public hearing regarding CEA designation.

3. Follow the SEQR process for the action of designating the CEA. Since this is an Unlisted Action, a Short Environmental Assessment Form (SEAF) would be filled out. In all likelihood, the act of designating the CEA only warrants a negative determination of significance. A negative declaration must contain:

    - A statement that it is a negative declaration for purposes of Article 8 of the Environmental Conservation Law.
    - The name and address of the lead agency.
    - The name, address and telephone number of a person who can provide further information.
    - The SEQR classification for the action.
    - A brief and precise description of the nature, extent, and location of the action; and
    - A brief statement of the reasoning that supports the determination.

4. Pass a resolution to designate the CEA.

5. File the notification of the CEA designation with the commissioner of the NYSDEC, the NYSDEC regional office, and any other agencies regularly involved in undertaking, funding, or approving actions in the area. The notification should include a suitably scaled map, written justification, along with proof of the public hearing. It may also be sensible to include a copy of the approved resolution, the public notice, the Short Environmental Assessment Form (SEAF), and the negative declaration.

Included is a draft public notice, a resolution for the public hearing, and a resolution for CEA designation that contains a written justification.

Written Public Notice

NOTICE OF PUBLIC HEARING ON THE DESIGNATION OF THE UNCONSOLIDATED AQUIFERS IN THE ENFIELD CREEK VALLEY, TOWN OF ENFIELD, TOMPKINS COUNTY, NEW YORK AS A CRITICAL ENVIRONMENTAL AREA

LEGAL NOTICE IS HEREBY GIVEN that pursuant to 6 NYCRR Part 617 (the State Environmental Quality Review Act), and pursuant to a resolution of the Town Board of the Town of Enfield adopted _____ ___, 202_, the said Board will hold a public hearing at the Enfield Town Courthouse, on the _____ day of _____, 202_ at _____ o'clock PM., to hear all interested parties and citizens regarding the designation of the Unconsolidated Aquifers in the Enfield Creek Valley within the boundaries of the Town of Enfield as a Critical Environmental Area (CEA).

The Unconsolidated Aquifers in the Enfield Creek Valley of the Town of Enfield that is proposed as a CEA was delineated by the United States Geological Survey (USGS). The Town of Enfield relies on groundwater as its sole source for drinking water and the unconsolidated aquifer areas identified by the USGS in its report, Scientific Investigations Report 2019–5136, has been estimated to supply700 individual well owners. Highest well yields in Town are reported in the unconsolidated aquifers areas of the Enfield Creek Valley and these deposits are estimated to produce a total of 28,300,000 gallons per year. Since the aquifer deposits supply a significant population (including at least three public water systems) and are highly permeable, the aquifer areas in the Enfield Creek Valley have exceptional or unique environmental characteristics under Section 6 NYCRR Part 617.14 (g) in that it is an area that represents a benefit or threat to human health and is an area of inherent geological or hydrological sensitivity to change.

Further information, including a map of the proposed Critical Environmental Area (CEA) in the Enfield Creek Valley, may be obtained at the Town of Enfield Clerk's Office, 168 Enfield Main Road, Ithaca, NY 14850.

TOWN BOARD OF THE TOWN OF ENFIELD.

By Mary Cornell, Town Clerk

Sample Resolution for Public Hearing

RESOLUTION FOR A PUBLIC HEARING ON DESIGNATION OF THE UNCONSOLIDATED AQUIFERS IN THE ENFIELD CREEK VALLEY, TOWN OF ENFIELD AS A CRITICAL ENVIRONMENTAL AREA PURSUANT TO 6 NYCRR Part 617

At a regular meeting of the Town Board of Town of Enfield, Tompkins County, New York, held at the Enfield Town Courthouse, in said Town of Enfield, on the ___ day of _____, 202_, at ____ o'clock, there were:

PRESENT:

ABSENT:

Mr./Ms. _____ offered the following resolution and moved its adoption:

WHEREAS, the Unconsolidated Aquifers in the Enfield Creek Valley form the most significant drinking water supply source in the Town of Enfield; and

WHEREAS, the boundaries of the Unconsolidated Aquifers in the Enfield Creek Valley are shown on the attached map titled "CEA: Unconsolidated Aquifers in the Enfield Creek Valley of the Town of Enfield"; and

WHEREAS, 6 NYCRR Part 617.14, the State Environmental Quality Review Act (SEQRA), allows a local agency to designate a specific geographical area within its boundaries as a critical environmental area (CEA); and

WHEREAS, the Town Board of the Town of Enfield believes that the Unconsolidated Aquifers in the Enfield Creek Valley have exceptional or unique environmental characteristics under Section 6 NYCRR Part 617.14 (g); and

WHEREAS, the Town Board of the Town of Enfield believes that the unique environmental characteristics of the Unconsolidated Aquifers in the Enfield Creek Valley merit designation as a CEA; and

WHEREAS, designation of a CEA must be preceded by a public hearing pursuant to 6 NYCRR Part 617.14 (g).

NOW, THEREFORE, BE IT RESOLVED, a public hearing on designation of the Unconsolidated Aquifers in the Enfield Creek Valley within the boundaries of the Town of Enfield shall be held on the _____ day of _____, 202_ at ___ o'clock PM, at Enfield Town Courthouse in the Town of Enfield, New York, and that notice of the time and place of such hearing along with the location and the specific environmental characteristics of the area, be published once on or before the ____ day of _____, 202_, in the _____, a newspaper circulating in said Town of Enfield.

Seconded by Mr./Ms. _____ and duly put to a vote, which resulted as follows:

_____ AYES _____ NAYS

Sample Resolution for CEA Designation

RESOLUTION FOR APPROVING DESIGNATION OF THE UNCONSOLIDATED AQUIFERS IN THE ENFIELD CREEK VALLEY, TOWN OF ENFIELD AS A CRITICAL ENVIRONMENTAL AREA
PURSUANT TO 6 NYCRR Part 617

At a regular meeting of the Town Board of the Town of Enfield, Tompkins County, New York, held at the Enfield Town Courthouse, in said Town of Enfield on the ___ day of _____, 202_, at ____ o'clock, there were:

PRESENT:

ABSENT:

Mr./Ms. _____ offered the following resolution and moved its adoption:

WHEREAS, it is within the responsibility of the Town of Enfield to protect the health and safety of its citizens; and

WHEREAS, it is desirable to preserve and protect the quantity and quality of our water resources to ensure a continued safe, adequate, and usable supply, now and in the future; and

WHEREAS, Unconsolidated Aquifers in the Enfield Creek Valley are susceptible to contamination from manmade and natural sources; and

WHEREAS, 6 NYCRR Part 617.14, the State Environmental Quality Review Act (SEQRA), allows a local agency such as the Town of Enfield to designate a specific geographical area within its boundaries as a Critical Environmental Area (CEA); and

WHEREAS, the Town Board of the Name of Municipality believes that the Unconsolidated Aquifers in the Enfield Creek Valley have exceptional or unique environmental characteristics under Section 6 NYCRR Part 617.14 (g); and

WHEREAS, the Town Board of the Town of Enfield believes that the unique environmental characteristics of the Unconsolidated Aquifers in the Enfield Creek Valley merit designation as a CEA; and

WHEREAS, the boundaries of the Unconsolidated Aquifers in the Enfield Creek Valley CEA are shown on the attached map titled "CEA: Unconsolidated Aquifers in the Enfield Creek Valley of the Town of Enfield"; and

WHEREAS, previously pursuant to 6 NYCRR Part 617.3 and 6 NYRCRR Part 617.14(g), the Town Board of the Town of Enfield as Lead Agency determined the proposed action of CEA designation would not have a significant adverse impact or effect on the environment such that a negative declaration was approved; and

WHEREAS, the Town Board of the Town of Enfield held a public hearing on _____ pursuant to the requirements of 6 NYCRR Part 617.14 and at such hearing, all members of the public were heard on the proposed action of designating the CEA.

NOW, THEREFORE, BE IT RESOLVED, the Town Board of the Town of Enfield hereby determines that it is appropriate and in the best interests of its citizens to designate the Unconsolidated Aquifers in the Enfield Creek Valley within the boundaries of the Town of Enfield as shown on the attached map as a Critical Environmental Area (CEA) pursuant to 6 NYRCRR Part 617.14; for the following reasons:

Reasons Supporting the Designation of CEA

1. Designation of the Unconsolidated Aquifers in the Enfield Creek Valley will assist in protecting and preserving this area that has inherent geologic and hydrological sensitivity to change; and

2. Designation of the Unconsolidated Aquifers in the Enfield Creek Valley as a CEA will benefit the health and safety of Enfield's citizens through increased awareness of critical water resources; and it is further

RESOLVED, that the Town Clerk is hereby directed to provide a copy of this determination to the New York State Department of Environmental Conservation and to file all necessary paperwork pursuant to 6 NYCRR Part 617.14 (g) in support of this action.

Seconded by Mr./Ms. _____ and duly put to a vote, which resulted as follows:

_____ AYES

_____ NAYS