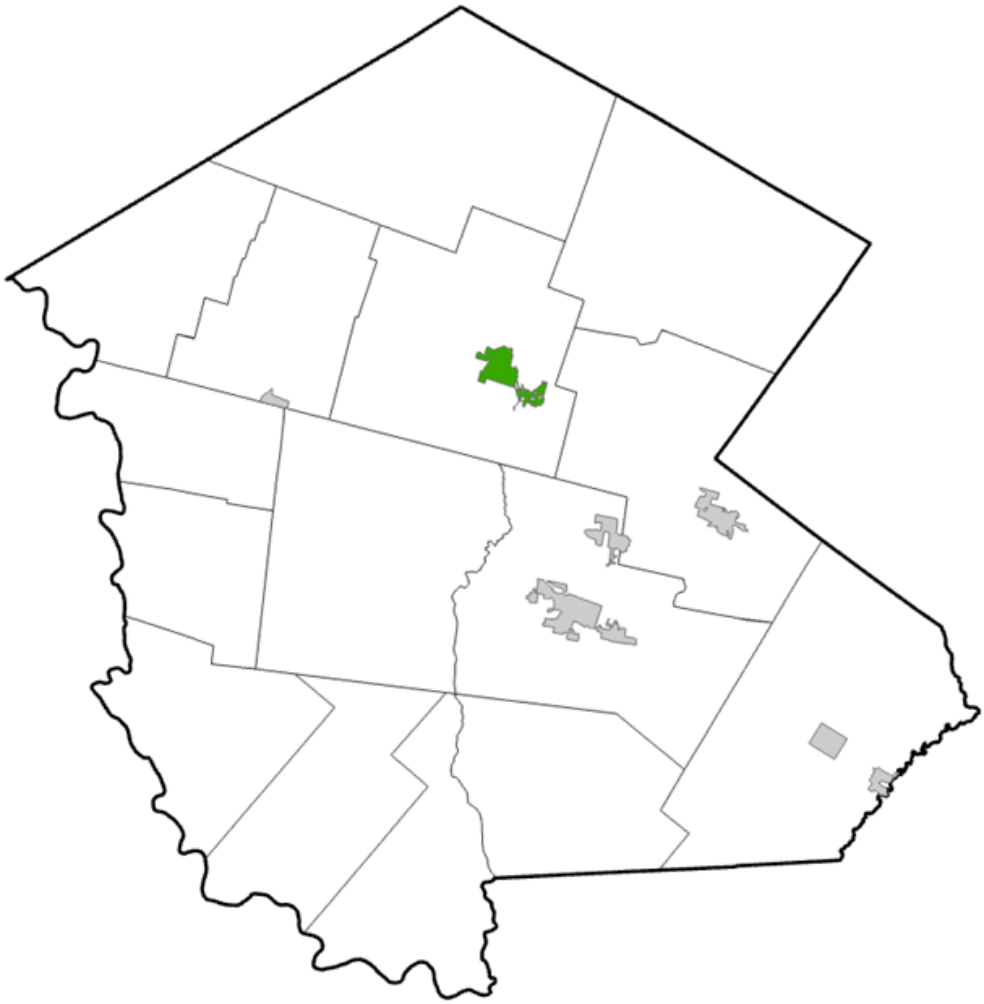
Sullivan County Assessment of Potable & Wastewater Infrastructure

VOLUME II

Village of Liberty



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Volumes I and II are part of a larger report.
The full Sullivan County Assessment of Potable and
Wastewater Infrastructure Report may be requested from the
Sullivan County Division of Planning, Community Development and Environmental Management

1. ABOUT THIS DOCUMENT

In 2025, the Sullivan County Division of Planning, Community Development, and Environmental Management (DPEM) undertook, with the support of Delaware Engineering, DPC, a project to assess water supply and wastewater management infrastructure throughout the County.

As part of that project, known as the Countywide Assessment of Potable and Wastewater Infrastructure (CAPWI), water and sewer infrastructure serving residents and businesses in each of the County's twenty-two municipalities was surveyed, inventoried, and evaluated. This document details the results of this effort and presents the information in a series of Community Reports. The CAPWI Volume 1 Report reflects the information developed within this Volume 2 Report through a series of recommended actions aimed at supporting water and sewer service county-wide, and advanced by the County.

1.1 Using this Document

The information is structured around inventory and evaluation of each community's water supply and wastewater management infrastructure. While emphasis is placed on municipally owned systems, the report surveys and documents other centralized and regulated decentralized water and sewer systems in the Community. Individual on-site facilities are beyond the scope of this report, though it is noted where in the County these systems are exclusively relied on. Mapping showing service areas and other key information accompanies the report. Sources and methods are also described.

The information in this volume is, in general, not at a level of detail or intended to provide analysis of system or component capacity, be used in the design of specific capital projects, provide detailed system mapping, assess or recommend specific operational techniques or strategies, or other similar activities requiring development of precise technical information and detailed engineering assessment. Instead, this volume provides an inventory and planning-level evaluation of these systems in support of policy and programmatic needs and decision making.

The Countywide Water and Sewer Evaluation and Recommendations report can be viewed by visiting the following website from DPEM.
https://www.sullivanny.gov/Departments/PlanningEnvironmental/PlansandStudies/CAPWI

Individual Community Profile reports have also been prepared as part of the CAPWI project and are intended to be standalone documents that can be used by a variety of audiences,

including municipal leaders and officials, residents, and businesses, seeking basic information about water and sewer service in the municipality.

Finally, many of the terms used have specific meanings and are further elaborated upon in a Glossary attached to this report. Terms appearing in the Glossary are denoted in underline throughout the document, and in the electronic version, you may click these terms to be taken directly to where that term appears in the Glossary.

1.2 Understanding the Data: Public vs. Private Infrastructure

As stated previously, the primary focus of this report is inventorying municipally owned water and sewer systems in Sullivan County. However, the community profile reports also provide limited information on privately-owned systems where relevant and publicly available. In order to understand the data presented, the reader must first have a basic understanding of the regulatory framework governing the operation of different types of water and sewer systems in New York State.

Regardless of ownership, there are two regulatory agencies that are primarily responsible for issuing permits and approvals for drinking water and wastewater systems – the New York State Department of Health (NYSDOH) and the New York State Department of Environmental Conservation (NYSDEC).

1.2.1 Public Water Systems (NYSDOH)

In Sullivan County, the NYSDOH is the agency responsible for regulating public water systems. This includes water systems owned and operated by a municipality, as well as privately-owned water supply companies, and even hospitals, gas stations, and other facilities with private wells. When it comes to water systems, public means that these systems serve the public at large – not the form of ownership.

In general, water systems regulated by NYSDOH as public water systems are classified as either community water systems or non-community water systems (see Glossary for more information). The data contained in this report is limited to community water systems**,** whether publicly or privately owned. Information about non-community water systems (including those that service transient seasonal populations like camps and bungalow colonies) is included, where available, but is not further detailed.

1.2.2 Wastewater Treatment Facilities (NYSDEC)

New York State's wastewater discharge regulations are administered by the NYSDEC through the State Pollutant Discharge Elimination System (SPDES) program, which requires

permits for any facility that is designed to treat and discharge wastewater. That includes sewage treatment plants that discharge effluent directly to a surface waterbody (like a nearby lake or stream) as well as facilities that discharge wastewater into the ground (like septic systems and sand filters).

No SPDES permit is required for a facility designed to treat less than 1,000 GPD, and Minor SPDES projects (those with wastewater discharges of less than 10,000 GPD) are typically covered by a NYSDEC General Permit (GP-0-25-002). Only wastewater treatment facilities that don't fall into one of those two categories (Major SPDES projects) are detailed in this report. Those include centralized systems (e.g., Publicly Owned Treatment Works), regulated decentralized systems (e.g., "package plants"), and commercial-sized septic systems that discharge to groundwater. Like water systems, wastewater treatment facilities can be publicly or privately owned.

Although the SPDES program is involved in the centralized wastewater systems with which the CAPWI effort is primarily concerned, the City of New York and DRBC each regulate in parallel wastewater facilities within their respective geographies. Of further note is that residential systems handling less than 1,000 GPD are regulated by NYSDOH.

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2. GLOSSARY OF TERMS

2.1 Action Level (AL)

The concentration of a contaminant that, if exceeded, triggers treatment or other requirements that a water system must follow.

2.2 Annual Water Quality Report (AWQR)

The Annual Water Quality Report is required by federal law and NYS regulation and is designed to provide consumers with information on the quality of the water delivered by their public water system. Systems serving fewer than 1,000 service connections are required to report information on the water source and water treatment, the levels of any detected contaminants, and compliance with drinking water rules, plus general educational information. The report also includes an explanation of the size of the population served by the system, which also typically includes the number of service connections. These reports are available at municipal offices and on municipal websites for public consumption.

2.3 Centralized System (Water or Sewer)

Centralized systems, which can be water supply or wastewater management, refer to infrastructure that is, typically but not exclusively, municipally owned and which is characterized by extensive distribution and conveyance networks serving large areas. Water supply and wastewater management are provided at typically larger-scale facilities. These systems are highly regulated. This infrastructure consists of both collection and conveyance, as well as treatment.

2.4 Decentralized System (Water or Sewer)

These systems are characterized by smaller numbers of connections and with water supply and wastewater treatment works provided closer to the users or source of demand. This term includes individual on-site water supply wells and septic systems serving single users, but also encompasses systems serving multiple connections that are regulated similarly to centralized systems.

2.5 Collection and Conveyance System

The sanitary sewer collection and conveyance system refers to the elements of the sewer system that enable wastewater to flow from points where it's generated to the point(s) where it's treated. In this report, the system begins at the point of connection to individual users and consists, generally, of pipes, manholes, pump stations, forcemains, and upstream wastewater storage (flow attenuation).

2.6 Community Water System (CWS)

A public water system (i.e., one that serves 15 or more service connections used by year-round residents or regularly serves at least 25 year-round residents - see definition in this document) that supplies water to the same population year-round. Examples of community water systems include municipally owned (cities, towns, or villages) public water supplies, public water authorities, or privately-owned water suppliers such as homeowner associations, apartment complexes, and mobile home parks that maintain their own drinking water system. See also the discussion in this Glossary of non-community water systems.

Community water system information, where available, is presented in tabular format. The following table provides an explanation of the meaning of the various values contained in each of the fields.

Water System	Service Area	SDWA #	Population	Connections
[Name of water system]	*[The Primary type of area that is served by the* public water system*: MHP =* mobile *home park]; HOA = Home-owners association;* Residential = Residential area; etc.]	*[Safe Drinking Water Information System (SDWIS) ID number]*	*[The reported population that is served by the system in SDWIS reporting.]*	*[The reported number of service connections within a system in SDWIS reporting.]*

2.7 Deferred Maintenance

In this report, deferred maintenance refers to the postponement of essential upkeep, repairs, or replacements for public facilities, infrastructure, or equipment. These typically minor items will become delayed to the point where they end up impacting performance and reliability, becoming far more costly to rectify. Small maintenance over many years is

more sustainable than waiting for an issue to happen, such as a water main break due to an unrepaired detected leak, or continuing to operate with undersized or obsolete equipment instead of upgrading to something that will save time and money over the long run.

2.8 Delaware River Basin (DRB) and Delaware River Basin Boundary

The area of drainage into the Delaware River and its tributaries, including Delaware Bay, is regulated by the DRBC. Its size is approximately 13,500 sq. miles and includes land in four states.

2.9 Delaware River Basin Commission (DRBC)

The Delaware River Basin Commission is the regional body created in 1961 by the Delaware River Basin Compact signed among the states of Delaware, New Jersey, Pennsylvania, and New York with the force of law to oversee managing the Delaware River system across state boundaries. Among other regulatory programs, DRBC addresses projects in the basin that withdraw from or discharge to the basin's waters over certain thresholds. The threshold for water withdrawals is taking water from ground or surface water, or diversion, or transfer in or out of the Basin, when the daily average gross withdrawal during any 30 consecutive-day period exceeds 100,000 gallons. The threshold for discharges is those over 50,000 GPD during any consecutive 30-day period from wastewater treatment facilities or the importation or exportation of wastewater.

2.10 Delaware River Basin Commission (DRBC) Docket

The record of decision made by DRBC, pursuant to its authority under the 1961 Compact, relating to an application for a permit, including those relating to regulated water withdrawals and discharges. Dockets contain information about water and sewer systems and permitted withdrawal and discharge thresholds.

2.11 Distressed Communities

As per the Empire State Development Corporation and NYS Climate Act, distressed or disadvantaged communities are those that bear the burden of negative public health effects, environmental pollution, and climate change impacts that possess population decline, economic hardships, high unemployment, and high concentrations of low to moderate-income households.

2.12 Disinfection Byproducts (DBPs)

DBPs are substances produced when chlorine, used for disinfection of water, reacts with organic materials in the water. The formation of DBPs is usually a greater concern for water systems that use surface water, such as rivers, lakes, and streams, as their source, as these sources are more likely to contain organic materials necessary for these reactions.

Total trihalomethanes (TTHM) are volatile regulated disinfection DBPs that can pose significant cancer, organ, and reproductive risks. They include chloroform, bromodichloromethane, dibromochloromethane, and bromoform.

Total haloacetic acids (THAA) are regulated disinfection DBPs that can pose cancer and developmental health risks. They include monochloroacetic, dichloroacetic, trichloroacetic, monobromoacetic, and dibromoacetic acids.

2.13 Equivalent Dwelling Unit (EDU)

An EDU is a measurement for water usage that standardizes all users into units based on the demand of one single-family dwelling unit. EDUs are used by utility providers to calculate service charges associated with the probable demand for each user.

2.14 New York State Environmental Facilities Corporation (EFC)

EFC is a NYS public benefit corporation that assists communities and certain businesses throughout New York State to undertake critical water quality infrastructure projects by providing access to low-cost capital, grants, and expert technical assistance. As such, EFC plays a significant role in capital projects undertaken by NYS municipalities. A primary goal is to ensure that these projects remain affordable while safeguarding essential water resources. EFC develops and advances financing strategies to maximize the funding that can be made available, aiding compliance with Federal and State requirements, and promoting green infrastructure practices. In implementing these programs, EFC partners with NYSDEC and NYSDOH on wastewater and drinking water supply projects, respectively.

EFC allocates state and federal funds to participating entities in the form of grants and loans. Major programs include the Clean Water State Revolving Fund (CWSRF), which is oriented toward sanitary sewer and wastewater infrastructure projects, and the Drinking Water State Revolving Fund (DWSRF), which is oriented toward water supply infrastructure projects. These funds “revolve” as borrowers pay their loans back, with payments in turn used to finance new projects; EFC also uses revenue bonds to increase available capital.

Other programs include the engineering planning grants (EPG) program, which provides support to fund the engineering reports required to apply to EFC for financial assistance. EFC provides financial assistance in the form of subsidized loans and grants, such as through the WIIA program created under the 2015 Water Infrastructure Improvement Act.

2.15 Environmental Protection Agency (EPA)

The Environmental Protection Agency (EPA) protects human health and the environment by developing and enforcing regulations, conducting research, providing education, and issuing grants. EPA sets and enforces national standards and federal environmental laws, and cleans up contaminated sites. EPA is ultimately responsible for oversight of key laws affecting both water supply and wastewater management, including the National Pollutant Discharge Elimination System (NPDES); oversight of states, local governments, and water suppliers to enforce the standards under the Safe Drinking Water Act; and regulation of solid and hazardous waste. Importantly, EPA also administers critical funding sources supporting investment in drinking water and clean water (wastewater management) infrastructure.

2.16 Gallons per Day (GPD)

Gallons per day is a unit of measurement that defines the rate of volume flow, or use, for a liquid, such as water, over a 24-hour period. GPD is often used as a measurement of, e.g., the quantity of water consumed by a user or the amount of wastewater generated over the course of a day.

2.17 Gallons per Minute (GPM)

Gallons per minute is a unit of measurement for flow rate, indicating the volume of a liquid that passes a specific point in one minute. GPM is often used to indicate, e.g., the capacity of a water well.

2.18 Individual On-Site Facilities or Systems (Water or Sewer)

As used in this report, individual facilities (or systems) are a subtype of decentralized infrastructure serving a single user, most commonly via on-site water supply wells and septic systems. These wells and septic systems are mainly regulated under building codes, the NYS sanitary code (administered by NYSDOH), and NYSDEC (i.e., with respect to water well drilling and licensing of well drillers). However, these systems may also be regulated

similarly to centralized systems, depending on capacities and types of uses or users served (see Regulated Decentralized Systems).

2.19 Inflow and Infiltration (I&I)

Inflow is when storm water enters the sanitary sewer system (e.g., from a sump pump or roof leader), while infiltration is when groundwater seeps into the system (e.g., due to high groundwater and defects or cracks in pipes and manholes). Both are problems for wastewater treatment, as this "clean" water adds unnecessary volume to the system, which can overload treatment plants or reduce capacity in elements of the conveyance system, such as pipes or pump stations.

2.20 Influent (WWTP)

Influent flow refers to the incoming wastewater that enters a wastewater treatment plant. It is measured at a point prior to the wastewater entering any portion of the treatment process.

2.21 Maximum Contaminant Level (MCL)

MCL is the highest level of a contaminant that is allowed in drinking water. MCLs are set as close to the Maximum Contaminant Level Goal (MCLG) as possible. MCLG is the level of a contaminant in drinking water below which there is no known or expected risk to health. MCLGs allow for a margin of safety. MCLs are required to be reported on a water system's AWQR.

2.22 Methyl Tert-Butyl Ether (MTBE)

Methyl tert-butyl ether is a chemical historically used as a gasoline additive. It is a type of volatile organic compound (VOC) that can contaminate groundwater by evaporating easily and dissolving in water.

2.23 Million Gallons per Day (MGPD)

Million gallons per day is a unit of measurement that defines the rate of volume flow, or use, for a liquid, such as water, over a 24-hour period, reported in increments of 1 million gallons. MGPD is often used as a measurement of water produced by a source or wastewater treated at a WWTP over the course of a day.

2.24 Municipal System (water or sewer)

This is the term used throughout the report to denote ownership by a municipal corporation, such as a village or town, of a centralized water supply or wastewater management system.

2.25 New York State Department of Health (NYSDOH)

NYSDOH is responsible for administering the rules and regulations governing both water supply and wastewater management. Under regulatory power delegated by USEPA, NYSDOH regulates public water systems, including community water systems, in NYS. NYSDOH also regulates certain wastewater management systems under an agreement with the New York State Department of Environmental Conservation (NYSDEC); NYSDOH-regulated systems typically include residential septic systems and other wastewater facilities with a flow of less than 1,000 GPD.

2.26 Non-Community Water System

According to NYSDOH, a non-community water system is a public water system (i.e., a water system with 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) that serves the public but does not generally serve the same people year-round. There are two types of non-community water systems: transient and non-transient non-community water systems.

- Transient Non-community Water System – A transient non-community water system is a non-community water system that serves different people for more than six months out of the year. Rest stops, parks, convenience stores, and restaurants with their own water supplies are examples of transient non-community water systems. In Sullivan County, summer camps that maintain their own water systems are also examples of transient non-community water systems.
- Non-transient Non-community Water System – A non-transient non-community water system is a non-community water system that serves the same people more than six months per year, but not year-round. Schools, colleges, hospitals, and factories with their own water supplies are examples of non-transient non-community water systems.

Non-community water systems are regulated by NYSDOH as public water systems (see public water system discussion in this Glossary). For purposes of this report, these systems are discussed where information is available.

2.27 NYC Watershed Boundary

The NYC Watershed Boundary encompasses the NYC watershed, defined as the land area contributing surface water to the New York City water supply. Activities within the NYC watershed are subject to the City of New York's Rules and Regulations for the Protection of Contamination, Degradation, and Pollution of the New York City Water Supply and its Sources. This includes wastewater management systems, such as individual on-site septic systems and wastewater treatment plants.

2.28 NYSDEC Water Withdrawal Permit

Any water withdrawal system with the capacity to withdraw 100,000 gallons per day (GPD) (also referred to as "threshold volume") or more of surface water, groundwater, or a combination thereof requires registration with, permitting from, and reporting to NYSDEC, pursuant to Part 601 of the New York Compilation of Codes, Rules, and Regulations (NYCRR).

2.29 Other System (water or sewer)

This is the term used throughout the report to denote ownership by a non-municipal entity, such as a mobile home park, industrial campus, or homeowner’s association, of a centralized water supply or wastewater management system.

2.30 Per- and polyfluoroalkyl substances (PFAS)

According to the EPA, PFAS are widely used, long-lasting chemicals, components of which break down very slowly over time. Because of their widespread use and persistence in the environment, many PFAS are found in the blood of people and animals all over the world and are present at low levels in a variety of food products and in the environment. PFAS are found in water, air, fish, and soil at locations across the nation and the globe. Scientific studies have shown that exposure to some PFAS in the environment may be linked to harmful health effects in humans and animals. There are thousands of PFAS chemicals, of which are found in many different consumer, commercial, and industrial products. Questions remain in terms of how to better detect these compounds, the extent of human exposure, the magnitude of human and environmental harm, and how to manage these chemicals. Under recent rulemaking, the EPA will regulate five PFAS individually. They are PFOA, PFOS, PFNA, PFHxS, and HFPO-DA. EPA will regulate four PFAS as a mixture: PFHxS, PFNA, HFPO-DA, and PFBS.

2.31 Public Service Commission (PSC) Docket

A PSC docket is a file for a specific case or proceeding containing official documents, hearing transcripts, and public comments related to the regulation of utility companies, such as those for electric, gas, and water services. Certain privately owned centralized sewer systems and water supply systems are regulated by PSC pursuant to the NYS Transportation Corporations law. In general, sanitary conveyance and treatment systems serving more than one service connection (NYSDEC SPDES Permit regulations (6 NYCRR 750-1.6(f)) and water supply systems -- except municipally-owned systems - selling, furnishing, and distributing water for domestic, commercial and public purposes (Art. 4-B of the NYS Public Service Law) are regulated by PSC with respect to rates, charges, and other aspects of utility operations.

2.32 Public Water System

Pursuant to federal and NYS regulations, a public water system is defined as one that provides water for human consumption through pipes or other constructed conveyances to at least 15 service connections or serves an average of at least 25 people for at least 60 days a year. A public water system may be publicly or privately owned.

2.33 Ragging

As used in this report, "ragging" refers to the accumulation and entanglement of fibrous, non-biodegradable debris in and around the impellers of wastewater treatment pumps, including, but not limited to, wet wipes, rags, hair, and plastics. This phenomenon creates rope-like bundles that obstruct flow, reduce efficiency, and cause costly maintenance issues.

2.34 Regulated Decentralized System (Water Supply or Wastewater Management)

A regulated decentralized system is a subcategory of decentralized infrastructure that is regulated similarly to centralized systems. Regarding water supply, this term includes a public water system, as defined by NYSDOH in regulation, that typically is privately owned but may also include systems owned by municipalities. It encompasses centralized and certain decentralized water supply systems, but also other public water systems, such as those serving restaurants. In addition to NYSDOH, these systems may also be regulated by NYSDEC and DRBC (for water withdrawals). Regarding wastewater management, these systems may discharge to surface water or groundwater and require SPDES permits (i.e.,

capacity to discharge 1,000 gpd or more). Depending on their location, these systems may also be regulated by DRBC and/or NYCDEP.

2.35 Rotating Biological Contactors (RBC)

An RBC is a fixed-film treatment process used in the secondary treatment of wastewater. It consists of a series of closely spaced, parallel discs mounted on a rotating shaft, which is supported just above the surface of the wastewater. Microorganisms grow on the surface of the discs, where biological degradation of pollutants takes place prior to discharge into the environment.

2.36 Service Area

As used in the report, service area refers to the geography within which users may be served by centralized water or sewer systems.

2.37 Special District (e.g., water district or sewer district)

A special district refers to the special-purpose government vehicle that towns and counties in NYS are authorized to create for the purpose of providing a service. In this report, special district generally refers to the authority for NYS towns to create water districts and sewer districts pursuant to NYS Town Law Article 12 and Article 12-a. A special district has three discrete elements: The legal requirements governing formation and operation, the taxation and administration by which a town provides water or sewer service, and the engineering and design of the infrastructure supporting the provision of these services. NYS General Municipal Law Art. 17-a also provides for the consolidation of water and sewer districts. In NYS, villages do not have the authority to create special districts and instead provide water and sewer service pursuant to Articles 11 and 14 of the NYS Village Law, respectively.

2.38 State Pollutant Discharge Elimination System (SPDES)

SPDES is the permit program in NYS that addresses water pollution by regulating point sources that discharge pollutants to waters of the United States. NYSDEC administers the program under authority created in 1972 by the Clean Water Act, known as the NPDES permit program. Under NPDES, state governments are authorized by the EPA to perform many permitting, administrative, and enforcement aspects of the program. In this report, SPDES and associated NYSDEC permitting refer to the outlet or discharge pipe (referred to as a "point source") that discharges sanitary wastewater into the surface waters or ground

waters of the state, and constructing or operating a disposal system such as a sewage treatment plant.

2.39 State Pollutant Discharge Elimination System (SPDES) Permit "Administrative" or "SAPA" Renewal

SAPA renewal (or continuation; also called "administrative renewal") is the process by which certain SPDES permits may be issued without a full technical review by NYSDEC. It typically occurs on a 5-year cycle, based on the date of permit issuance. Authority for SAPA renewals lies in NYS's State Administrative Review Act (SAPA). Provided a SPDES permittee makes a timely application to NYSDEC for renewal of an existing SPDES permit, NYSDEC may authorize, administratively, that permittee to continue to operate their regulated discharge. This continuation is typically permitted under the terms and conditions of the prior SPDES permit. It is important to note that SAPA renewal can result in situations where a SPDES permit, after several SAPA renewal cycles, may get out of alignment with applicable standards, and compliance with contemporary standards can ultimately require capital investment.

2.40 State Pollutant Discharge Elimination System (SPDES) Environmental Benefit Permit Strategy (EBPS)

"Also known in NYS regulation as a Modification Priority Ranking System, EBPS is the system that establishes procedures to manage State Pollutant Discharge Elimination System (SPDES) permit renewal applications in a manner that prioritizes permits based upon their potential or actual impact to the environment. Under this system, SPDES permit holders are assigned a score and rank that then determines the order in which NYSDEC staff carry out a full technical review to determine whether a permit needs modification. Facilities are assigned a score for applicable priority ranking factors, each of which is then multiplied by a value according to assessed potential impacts to water quality. A longevity factor is applied based on the permit type and time since full technical review (long form permit application). These scores are added together, and a rank is assigned. The higher the EBPS Permit Priority Score, the higher the priority that permit has for full technical review and modification initiated by NYSDEC."

2.41 State Pollutant Discharge Elimination System (SPDES) Permit Full Technical Review

Full technical review is the process by which NYSDEC reviews applications for SPDES permits. It is in contrast to SAPA renewal. Full technical review may be initiated by NYSDEC or may be initiated due to a permittee's request to modify their existing permit (e.g., to

increase the flow of a WWTP). Reviews are performed based upon potential water quality impact or major changes to the facility's flow and wastewater treatment system. The process involves determining whether new effluent limits and other permit requirements, such as best management practices or a compliance schedule, are needed.

2.42 Submersible Chopper Pumps

This type of pump is a centrifugal pump designed for liquid submersion, which is equipped with a cutting system that "chops" up all incoming solids prior to pumping to minimize clogging within a wastewater system.

2.43 Sullivan County Partnership

Officially "The Sullivan County Partnership for Economic Development", is a private not-for-profit corporation that serves as the one-stop resource for business development in the County. The Partnership is a team that works to find the most advantageous and cost-effective locations for the expansion of industry and supports small business development by providing guidance and technical assistance through a variety of financing options.

2.44 Trickling Filters

A trickling filter is a step in pollutant removal at a wastewater treatment facility that uses microorganisms to remove organic matter by distributing it over a fixed bed of porous sediment.

2.45 Variable Frequency Drive (VFD)

A variable frequency drive (VFD) is an electronic device that controls the speed of an AC motor by adjusting the frequency and voltage of the power supplied to it. VFDs are energy efficient when demand on a motor or system varies, as VFD output can be varied based on demand or load. This is in contrast to across-the-line drives, which operate at full voltage and cannot be varied.

2.46 Wastewater Treatment Plant (WWTP)

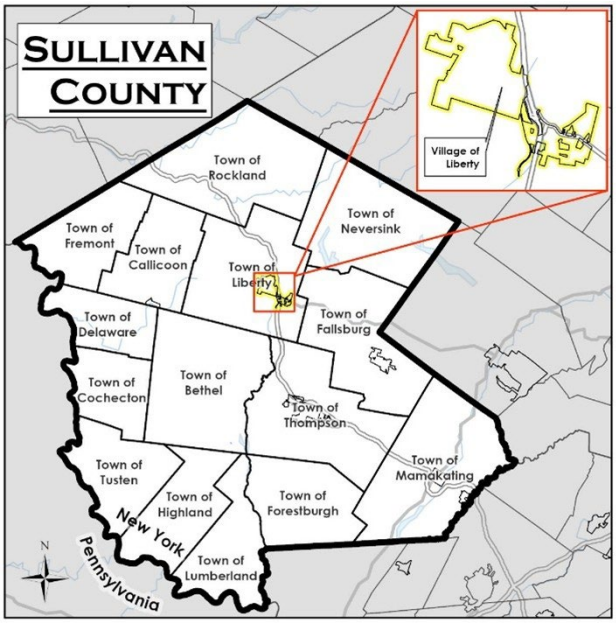
A wastewater treatment plant is the location at which pollutants are removed from wastewater collected, and is a critical element of a wastewater management system. WWTPs typically involve several processes. Preliminary treatment is the measurement, screening, and removal of inorganic material (grit). Primary treatment is a physical settling process that removes larger solids (e.g., in a settling tank or clarifier). Secondary treatment

is a biological process in which dissolved solids are converted by microorganisms into a cellular or biological mass that can be later removed (e.g., in a secondary clarifier). Tertiary or advanced treatment involves disinfection (e.g., chlorine or UV light) as well as nutrient, additional solids, or biochemical oxygen demand (BOD) removal.

2.47 Water Distribution System

Water distribution system refers to the system elements that convey water from the source of supply to individual user connections. It includes infrastructure like pipes (water mains), valves, treatment facilities, storage tanks, and booster stations. Hydrants may be connected to the distribution system and serve water supply functions, such as flushing of mains, but hydrants also serve as part of fire suppression systems.

3. MUNICIPAL OVERVIEW



The Village of Liberty is located in the central and eastern portion of the Town of Liberty and is situated amongst the various intersections of NYS Routes 17, 52, and 55. The Village is a commercial and cultural hub of Sullivan County and is made up of a wide array of buildings and housing types. The Village's 1,660 acres contain a population of 4,700, as estimated by the 2020 Decennial Census. The Village's population somewhat increases during the summer from seasonal uses, like summer camps; in addition, there are seasonal demands on the centralized utility system and other public infrastructure due to the operation of thirteen (13) additional summer camps throughout the Town of Liberty.

The Village owns and operates both a public water and wastewater system. The largest users within the Village include Liberty High School, Liberty Elementary School, and the (recently closed) Frito-Lay manufacturing facility. Portions of the Village's municipal water and sewer systems are interconnected with those of the Town of Liberty.

The Village lies entirely within the DRBC boundary but entirely outside the NYC watershed boundary.

4. WATER SUPPLY AND DISTRIBUTION INVENTORY & EVALUATION

4.1 Municipal Systems

The Village provides municipal water service within the Village boundaries as well as to portions of the Town of Liberty. There are approximately 1,700 water connections to the Village system, including a small portion of the Town along Cold Spring Road and the Parksville area. Conversely, the Town supplies water to portions of the Village west of I-86. Notably, the Town and Village water systems are connected in three (3) locations, though these interconnections are not regularly activated. One connection, located in the Town along Main Street, is an emergency interconnection that can supply 150,000 GPD. This booster station was installed during the early 1990's in order to provide another source of

Village of Liberty Water Facilities Map

Sullivan County, New York

Prepared by: Delaware Engineering, DPC
Date: January 2026
Source: Sullivan County, NYSDEC, ESRI World Terrain

0 0.25 0.5 1 1.5 2 Miles

N

- Village Water Service Area
- Municipal Water Service Areas
- Centralized or Regulated Decentralized Service
- Individual On-Site Systems
- Delaware River Basin (Entire Village)
- NYC Watershed (Entirely Outside)
- Village Boundary
- Stream
- Waterbody

supply when MTBE contamination at the Elm Street well was discovered; it is not currently in use.

Table 1. Village of Liberty water withdrawal permit information (all figures in GPD)

Water System	Component	Max Rate (GPD)	Average Daily w/d*	Peak Day w/d*	NYSDEC Permitted w/d	DRBC Permitted w/d
Village of Liberty	Lily Pond WTP	1,500,000	517,000	702,800	1,450,000	803,226
	Elm Street Well	1,080,000				

*Average of prior five (5) years as reported to NYSDEC

4.1.1 System Components Inventory and Overview

As noted, the Village obtains raw water from both surface and groundwater sources. The Village lies entirely within the Delaware River Basin boundary, and water withdrawals by the Village water supply system are regulated by DRBC. The most recent DRBC docket dates to December 2013 and affords maximum withdrawals of 252,000 GPD from the Elm Street well and 750,000 GPD from Lily Pond, yielding a total of about 1,002,000 GPD. Periodic required testing (the most recent being in September 2023) has found elevated levels of treatment byproducts (HAA5). Most of the year, the Town uses approximately 5,000-10,000 GPD, but in the summer, usage can be up to 100,000-120,000 GPD in Parksville.

4.1.1.1 Lily Pond Water Treatment Plant

Lily Pond is an impoundment located on an unnamed tributary to the Little Beaver Kill, approximately 7 miles north of the Village of Liberty, on the Town of Liberty's border with the Town of Rockland. Lily Pond is a 90-acre reservoir that consists of a larger upper reservoir and a smaller lower impoundment separated by a 200-foot-long, 7-foot-high earthen dam with a concrete spillway constructed in 1923. Water is pumped, using a system of three lift pumps, from the upper reservoir through an intake and a 12-inch diameter pipe to the WTP. The intake is positioned so that only the upper four feet of the reservoir's total volume is used for water supply. A water withdrawal permit originally approved in 1923 limits the withdrawal amounts of the reservoir to 750,000 GPD.

To address surface water treatment requirements, the Lily Pond WTP uses flocculation, sedimentation, and filtration processes to produce potable water. Three single-media filters are using crushed anthracite coal. Each treatment train is rated at 500,000 GPD. The equipment at the plant consists of a package system, whereby the system components are procured and assembled off-site, and then delivered and installed at the site. The package

system vendor recently inspected the system, and, with certain refurbishment of the treatment trains, the plant's lifespan may be increased by 15 to 20 years. The building itself will also need maintenance performed, such as replacement of the exposed fastener metal roof and various other minor items.

4.1.1.2 Elm Street Well

The Elm Street Well is located in the valley of the Middle Mongaup River, adjacent to the southern side of the New York State Highway (Route 17/Future Interstate 86) and separated from the river by the highway right-of-way. The Elm Street Well is used to supplement the Village's primary water supply source at Lily Pond and to maintain adequate pressure in the water distribution system. The wellhead and associated infrastructure have been elevated above the 100-year flood elevation. The system consists of two caisson wells, installed in 1960, of approximately 6-8 feet in diameter, with a total depth of 40 feet, and connected by a siphon pipe. Currently, the Elm Street Well is equipped with two 125-horsepower vertical turbine pumps (rotated at least once a year). Permitting data indicates that the well has a maximum capacity of 700 GPM.

4.1.1.3 Water Distribution System

The system obtains pressure from two storage tanks located at Lily Pond WTP and off of Revonah Hill Road. From the Lily Pond Storage tank, about 37,000 LF of 12" water main runs south along Lily Pond Road to Parksville Road where it continues along Parksville Road to Young Hill Road where it enters the Thomas Avenue WTB. This 12" transmission main was installed in the in the mid-2000s and it, together with air release valves and other appurtenances, is reported to be in good condition. This main also supplies water to portions of the hamlet of Parksville. There are approximately 165 service connections between Lily Pond WTP and the Thomas Avenue WTB.

From the Thomas Avenue WTB, the main supply line continues as a 12" to Buckley St and then transitions to a combination of 8" and 6" size pipes, traverses through the Village to join the 8" main coming from the Revonah Hill Road storage tank, and ultimately to the intersection of Route 52 and South Main Street. Within the Village, distribution lines are mostly 6" and 4" in size. The main running from Revonah Hill along Lewis Street is 8" and allows the Revonah Hill water tank to recharge other portions of the system in this area.

To control water throughput in the system, the Village adjusts a manual valve located near the Thomas Avenue treatment building. Adjustments to this manual valve are made depending on various operational scenarios, such as when there is a need to add or take water away from the overflow at Revonah/Village Distribution System or after a switch to

pumps at Elm Street is made, due to small pumping rate differences between the different motors.

The Village owns the water meters installed at the point of end use. Replacement of the meter heads and other required system components serving the Village's roughly 1,700 metered users is planned.

There are several points of interconnection between the Village and Town water systems. A booster station is located at the Main Street interconnection with the Town's system. This station is needed in order to overcome pressure differences between the Village and Town systems. This emergency interconnection can supply 150,000 GPD and was installed during the early 1990s to provide a supplemental supply source when the Elm Street Well was taken offline; the station is not currently in use. At present, this interconnection permits unidirectional flow; however, a bypass allows water to flow from the Village to the town. There are several other interconnection points between the Village and Town of Liberty systems, generally along the southerly Village-Town of Liberty boundary.

According to the 2024 AWQR, the Village reported testing higher than the MCL for disinfection byproducts (both TTHM and THAA). The Village system relies on the surface water reservoir, Lily Pond, and these byproducts are formed when organic matter found in surface water reacts with disinfectants, which are used to control many microorganisms. According to the EPA, byproducts, if consumed in excess of these standards over many years, may, over these longer periods of time, increase health risks. DBPs, although studied with mixed results, are likely to be associated with certain cancers and reproductive issues.

4.1.2 Recent/Future Upgrades

As noted above, water meter maintenance and replacement are underway with a plan to replace all meter heads serving the roughly 1,700 service connections on the Village's system. The generator, SCADA system, and 0.5 mg storage tank at the Lily Pond WTP were installed in the mid-2000's. The storage tank, installed at the same time as the new 12" transmission main leading to the Village, was dived and cleaned in 2015. The Lily Pond WTP building itself is reported to be in good condition, with a metal roof (exposed fastener-type), gutter, and metal door replacement the main areas of need. Also, as noted, the Elm Street Well has undergone investments to elevate critical equipment out of the floodplain. According to Village officials, near-term investments in the well's electrical system, pumps, building, and chemical feed system are likely required.

4.1.3 Finances and Administration

As part of the data collection process, information about system finances and budgeting was requested and researched from publicly available sources; local codes governing system administration and use were also reviewed, where publicly available. This information, where available, was used in order to develop an understanding of key metrics, including revenues and trends, expenses and trends, rate structure, revenues versus expenditures, debt service, and reserves.

Analysis of available financial information against the following metrics is as follows.

- Revenues and trends – Based on the 2023/2024 budget, revenues are derived mainly from metered water sales. In that year, 9% were derived from appropriated fund balance.
- Expenses and trends – Expenditures overall increased slightly from 2022/2023 but are not detailed in the materials reviewed. Detailed budget information for the remaining portions of the Village budget was unavailable for review.
- Rate structure – Users are charged per 1,000 gallons of metered use for inside-the-Village and outside-the-Village users, respectively. Outside user rates are about 75% higher for water supplied by the Village than for inside users. There are 1,700 water connections, with about 75% of these connections being residential users.
- Revenue versus expenditures – As noted, in 2023/2024, about 9% of water revenues were derived from appropriated fund balance. Fund balance formed a similar share of the prior two budget cycles.
- Debt service – Debt service accounts for about 20% of expenditures.
- Reserves – Fund balance is about 60% of expenditures.
- Water use law – Chapter 84 of the Village code is the water use law.

4.2 Other Systems

Based on information available, no regulated private community water systems or facilities with capacity requiring a NYSDEC water withdrawal permit lie within the Village.

4.3 Challenges and Opportunities

Like many surface water sources, among the challenges identified with the Lily Pond water source is that the pond is shallow and has a high level of natural organic matter. This organic matter can, during treatment, cause the formation of certain substances known as disinfection byproducts (DBPs). Recent water quality reporting and discussion with Village water operators have indicated that these DBPs do not exceed regulatory limits.

The Lily Pond Filtration Plant itself, constructed from equipment acquired from another water system operator and placed into service in 1998, is now over 25 years old and, according to Village water operators, needs about $50,000 per year over the next 10 to 15 years to remain in service, after which time it will likely need capital investments to continue operation; investments may also be needed in order to support any increase in supply. As noted above, a recent assessment of the WTP found that, with refurbishment, it may be possible to extend the plant's useful service life.

With respect to the Elm Street Well, its historical contamination from adjacent land uses constitutes a challenge. While remediation has been undertaken and regular testing shows the finished water meets applicable standards, the nature of the contamination is such that, if well pumping is increased, there is potential to draw contaminants along with these higher withdrawals. As noted above, the Elm Street Well likely has the capacity to provide additional water supply to the Village system. It is important to note that the Village conducts routine (quarterly) monitoring of the well, and contaminants (MTBE) have not been detected since December 1998. Also, among the challenges is that the equipment is aging, and the facility lacks a backup power source. Short-term needs likely involve new pumps, electrical upgrades, and auxiliary power.

The Village has an opportunity, partnering with the Town, to provide water to portions of the Town where economic development investment and other land development may occur. A key benefit of increasing the user base is the ability to spread the fixed costs of running the water supply system over a greater number of users. The Village and the Town of Liberty have partnered recently to plan for water infrastructure serving the Village and areas of the Town immediately adjacent, and the Village has also been exploring ways to increase supply in its system. Grant funding has been awarded to the Town of Liberty for a project to extend municipal water and sewer service to a portion of the Old Route 17 corridor in support of economic development initiatives. For a detailed description, see the Town of Liberty Report's section on **Error! Reference source not found.**.

Another challenge is that the Village-owned system likely would need further hydraulic analysis to understand whether and where within the system additional water can be

supplied. The relatively smaller 6" and 8" mains running from Buckley Street to the South Main-Route 52 intersection and the downtown area that appears to be served by a combination of 4" and 6" pipes are examples of these challenges; understanding the hydraulic properties of the system will be important to long-term management, operations, and supply availability. The various interconnections with the Town's system provide an opportunity to increase service area as well as system resiliency.

Supporting large-scale manufacturing and industrial users can be a challenge, as these large water users have the potential to impact wastewater system operations and capacity significantly, both when they commence and should they ever terminate operations. Certain types of processing facilities also require specialized processes to adequately treat certain waste products.

On the financial side, as noted above, the water fund balance is about 60% of expenditures and is an opportunity that broadly addresses the unreserved fund balance, as a matter of policy. Such policy making and implementation is a best practice in local finance. As noted above, maintaining a reserve can also help the Village to implement priority projects.

Obtaining sufficient qualified personnel to maintain operations has been a challenge. According to the 2024 AWQR, the Village reported addressing identified needs, including staffing, conducting an operational evaluation, and flushing the water system. The Village recently conducted a rate study, and a comprehensive main flushing program was initiated. The services of a private water operator were retained to provide the required number of certified operators. Plant coverage was addressed, and an operational evaluation was performed. Finally, according to the 2024 AWQR, DBPs have been detected at levels in excess of the MCL, and addressing DBPs can be a challenge due to seasonal and other dynamics in surface water sources.

5. SANITARY SEWER AND WASTEWATER TREATMENT INVENTORY & EVALUATION

5.1 Municipal Systems

The Village provides municipal sewer throughout the Village as well as to portions of the Town of Liberty, generally along Parksville Road, along Route 52 to Old Monticello Road, and the northern portion of Infirmary Road (County Social Services complex). Wastewater is conveyed to the Village's WWTP by a combination of gravity and force mains.

5.1.1 System Components Inventory and Overview

This section presents information about the collection and conveyance system as well as the Village's WWTP.

5.1.1.1 Collection and Conveyance System

The gravity mains serving the Village were primarily installed at the turn of the last century, or earlier, and are comprised mainly of 8" mains. The sewer system has approximately 111,000 linear feet (lf) of pipe ranging from 6" to 30" with at least 250 manholes. There are eight (8) pump stations installed on the collection system tributary to the Village WWTP, six of which are Village-owned and two of which are owned by the Town of Liberty.

The Days Inn PS accepts flow from the Infirmary Road Pump Station, Lannings PS, Millers PS, and Ferndale PS, and makes it an important element of the system, conveying a substantial amount of flow from both the Village and the Town of Liberty. It is a package system installed in the 1970s, with new pumps capable of handling rags installed in the 2010s. According to a recent assessment conducted in concert with Village officials, the pump station operates close to capacity during wet weather flows, with the 6" discharge forcemain also potentially limiting capacity, according to recent testing.

As noted below, in the past decade, portions of the conveyance system have required emergency repairs, including a roughly 400-foot gravity main known as the Green Lane line. I&I has been observed and investigated by the Village. The Village has also undertaken prior efforts to investigate and address I&I, and these have focused on grouting mains, repair of laterals, disconnection of sump pumps and roof leaders, and addressing surface and subsurface inflow and infiltration into manholes.

❶7¡7¡7¡7 Wastewater.Treatment.Plant

The Village WWTP has a permitted capacity of 2.0 MGD and discharges to an unnamed tributary of the East Branch Mongaup River, classified as a B(TS) stream for regulatory purposes. The WWTP dates to the 1980s, and since the 2010s, the Village has undertaken a multi-phase program of upgrades to address life-cycle issues and improve efficiency and performance.

The WWTP is an extended aeration, oxidation ditch style, activated sludge treatment plant that removes biological ammonia through nitrification and ultraviolet (UV) disinfection to meet the requirements of the discharge permits. The WWTP headworks have mechanical bar screens, and the treatment process employs two clarifiers, three sludge holding tanks, and a belt press for sludge drying and processing. Sludge is currently hauled off-site and

Village of Liberty Wastewater Facilities Map

Sullivan County, New York

Prepared by: Delaware Engineering, DPC
Date: January 2026
Source: Sullivan County, NYSDEC, ESRI World Terrain

0 0.25 0.5 1 1.5 2 Miles

N

- Village Wastewater Service Areas
- Municipal Sewer Service Areas
- Centralized or Regulated Decentralized Service
- Individual On-Site Systems
- Delaware River Basin (Entire Village)
- NYC Watershed (Entirely Outside)
- Village Boundary
- Stream
- Waterbody

landfilled. The plant operates at average daily flows of roughly 0.9 MGD, with increases experienced during wet-weather events.

The SPDES permit was issued in 1995. In 2022, NYSDEC initiated a full technical review to update this permit and reflect current standards. Accordingly, and as part of this process, current standards may require the WWTP to implement new procedures as part of the treatment process, including addressing carbonaceous biochemical oxygen demand (BOD). On September 1, 2025, NYSDEC issued a new SPDES permit for the WWTP. The issued permit reduces effluent limits for BOD, total residual chlorine, and winter ammonia. In addition, a new effluent limit for dissolved oxygen (DO) was instituted. Taken together, these new limits may require a major modification to the treatment facility or operations that will take a significant amount of time and financial resources to properly plan, design, fund, and build.

5.1.2 Recent/Future Upgrades

Since the early 2010's, the Village has carried out a number of projects at the WWTP aimed at repair and modernization. For example, between 2012 and 2017, a series of emergency repairs and upgrades were undertaken. These projects involved repair and replacement of key parts of the biological treatment processes as well as upgrades to the headworks equipment, including a new headworks building. Later phases involved UV disinfection system upgrades and reconstruction of one of the clarifiers.

The Village is moving forward with a comprehensive WWTP upgrade, involving upgrading the existing facility with new components and various process improvements, but no major process changes. Work on Phase 1 of these improvements was completed in July 2024. In addition, planned upgrades in the short term include upgrades to replace aged sludge dewatering and sludge handling equipment.

As noted, a SPDES permit review and update was initiated in 2022. The proposed daily maximum limit of 15 mg/L CBOD can be challenging for a secondary treatment plant like the WWTP without decreasing treatment capacity, and additional upgrades may be necessary in the future to maintain the permit flow of 2.0 MGD.

With respect to the collection and conveyance system, the Village has undertaken or planned several projects. In 2012, a portion of the Green Lane line needed reconstruction, which involved about 325 lf of replacement of an 8" sewer main and four manholes. This project involved only a portion of this 8" main, which, over its length, is about 3,600 lf. Given its age, location along a watercourse, history of failure (including due to wet weather and blockages), further investment in the Green Lane 8" main remains an important

planned project for the Village, as this portion of the system serves a large proportion of the southwestern portion of the Village, including West St.

The Village in 2024 was awarded an Engineering Planning Grant (EPG) from NYSEFC to conduct I&I investigations into the sanitary sewer collection system. These investigations are the first step in the development of a comprehensive I&I reduction strategy. The effort will positively identify, through observation, direct inspection, investigation, and indirect monitoring, those areas responsible for the largest periodic increases to system flow due to I&I into the collection system. The intent of the report is to ultimately identify a candidate project aimed at addressing these issues and to support an application for additional funding assistance.

Finally, the Town of Liberty was recently awarded economic development grant funding from NYS Empire State Development. A portion of these funds will be used to carry out upgrades to the Days Inn PS and 6" forcemain in order to upgrade this equipment and infrastructure to increase capacity in support of economic development goals. For a detailed description, see the Town of Liberty report.

5.1.3 Finances and Administration

As part of the data collection process, information about system finances and budgeting was requested and researched from publicly available sources; local codes governing system administration and use were also reviewed, where publicly available. This information, where available, was used in order to develop an understanding of key metrics, including revenues and trends, expenses and trends, rate structure, revenues versus expenditures, debt service, and reserves.

Analysis of available financial information against the following metrics is as follows.

- Revenues and trends – According to the 2023/2024 sewer fund budget, revenues were mainly sourced from sewer rents, with about 10% from appropriated fund balance.
- Expenses and trends – Expenditures overall increased 11% from 2022/2023 but are not detailed in the materials reviewed. Detailed budget information for the remaining portions of the Village budget was unavailable for review.
- Rate structure – Rates are based on metered water usage. Outside user rates are about 56% greater than inside users. There are 1,593 sewer connections, with about 75% of these connections being residential users. Chapter 67 of the Village code establishes authority for sewer rents, and it provides for large users, as defined in

the code, to be changed for O&M and Capital expenditure according to two formulas based on these users' proportionate share of these costs as related to the average daily flow, solids, and BOD they generate and send to the WWTP.

- Revenue versus expenditures – As reflected in the 2023/2024 budget, revenue was about 5% lower than expenditures.
- Debt service - Debt service accounts for about 17% of expenditures.
- Reserves – Sewer fund balance is about 20% of expenditures.
- Sewer use law – Chapter 68 of the Village code is the sewer use law.

5.2 Other Systems

No private centralized sewer systems exist within the Village of Liberty.

5.3 Challenges and Opportunities

The age of the Village sewer infrastructure represents a challenge. For example, prior emergency repairs to the Green Lane sewer line have been required, and there is an additional expense and complexity in addressing several thousand additional feet of sewer main with challenging site conditions. In addition, sewer flow increases during wet weather indicate the presence of I&I, and addressing this issue often involves varied types of projects aimed at both the condition of the mains, manholes, and service connections as well as work to disconnect stormwater conveyances (often on private property) from the sanitary system.

As noted, the Village WWTP SPDES permit was updated, with new standards for what it may discharge to receiving waters. Meeting these new standards will likely involve significant investment in the treatment equipment and processes and/or lower permitted influent limits, potentially lowering capacity. Among the opportunities – already being realized – is the ongoing and expanded collaboration with the Town of Liberty. As noted, there is a substantial planned investment in a key portion of the Village infrastructure – the Days Inn PS – to be undertaken with grant support from NYSESD. In addition to involving capital investment in aging infrastructure, expansion of the user base can help support addressing fixed costs.

6. METHODOLOGY AND SOURCES

In preparing this report, publicly available data were collected and reviewed, along with any additional documentation supplied by a municipal representative, county office, or other authoritative sources. In addition, the project team contacted and interviewed key individuals who have specialized knowledge of their local systems. The following is a list of sources consulted.

- Liberty V/T Infrastructure Master Plan (2025)
- DRBC Water Supply Docket Number D-1965-039 CP-3
- NYS DEC 2023 Water Withdrawal Permit (WWR0000908)
- 2024 Annual Drinking Water Quality Report (NY5203329)
- EPA Detailed Facility Report: Elm Street Treatment Plant
- SPDES Permit Modification (NY0234770)
- SPDES Permit Renewal (4/21/2021)