



## Department of Health

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Executive Deputy Commissioner

November 30, 2018

Village of Watkins Glen  
303 North Franklin Street  
Watkins Glen, NY 14891

**PUBLIC WATER SYSTEM**  
Watkins Glen Village  
Sanitary Survey - 2018

Attn: Mayor Steve Schimizzi

Dear Village Board:

On September 21 & 28, 2018, representatives of the New York State Department of Health (Hyland Hartsough, April Kellerhouse, Gary Garofalo and Michael Bailey) met with Martin Pierce, Watkins Glen Water Treatment Plant chief operator and Lee Kent, former Public Works Director to perform a sanitary survey of the Watkins Glen Village Public Water System. Internal review of previous sanitary surveys and events related to the Watkins Glen Village Boil Water Order in mid-August led to the joint inspection by Regional and District Office staff.

### **RECENT IMPROVEMENTS**

We commend the Village Board, Mr. Kent, Mr. Pierce, and other involved personnel for undertaking the following activities and improvements:

1. Hunt Engineers, Architects, and Land Surveyors has been commissioned to prepare a study for obtaining funding to replace the main Programmable Logic Controller (PLC) that runs the water treatment plant.
2. In response to issues during the storm event in August that identified problems with alarms, the Village has upgraded turbidity alarms to notify operators of high turbidity events. Two turbidimeters were upgraded to insure readings are properly recorded. Please note there are additional comments on the requirements for Supervisory Control and Data Acquisition (SCADA) in the discussion of the Water Treatment Plant.
3. The Village is in the process of replacing approximately 1,900 linear feet of 8-inch diameter old deteriorated water main along New York State Route 14, between Bath and Division Street.

### **INTAKE AND RAW WATER PUMP STATION**

Watkins Glen Public Water System is supplied by surface water from Seneca Lake. The intake is a 12-inch cast iron main installed in the early 1900's. The intake extends approximately 300 feet from shore at a depth of approximately 35 feet. The intake has a bend up and screen and is

surrounded by a timber crib. The water is seasonally treated with gaseous chlorine for zebra mussel control at the intake structure. The water enters a raw water pump well on shore at the raw water pumping station. The water is pumped to the filtration plant by two vertical turbine low-lift pumps equipped with variable frequency drives (VFDs). The pumps are set to alternate and pump approximately 840 gallons per minute (gpm), with a maximum discharge rate of 1,300 gpm.

Violations:

1. The Village is in violation of Title 10 of the New York State Code of Rules and Regulations, Subpart 5-1, Public Drinking Water Systems (hereafter Subpart 5-1) Subpart 5-1.71 (b) for failure to exercise due care and diligence in the operation of a water treatment plant or distribution system. There is no provision for an alarm to notify the operator of a chlorine gas leak at a remote (not typically staffed) location. Potential release of chlorine gas is an immediate health and safety concern. In addition to the failure to alarm the operator, no provision is made to chemically neutralize a leak as required by Subpart 5-1 Appendix A, Recommended Standards for Water Works (RSWW). Chlorine gas is a toxic substance and the recent development of apartments in the adjoining building makes this a significant risk to neighboring residents.



Figure 1: Raw Water Chlorine Gas Room & Apartments

Requirements:

1. The Village must explore alternative forms of treatment at the intake. As noted previously the location of the chlorine gas adjacent to apartment buildings is a safety and health hazard. Should there be a release, the vent for the room will discharge gas into the driveway for the apartments, and into the pathway of anyone attempting to access the room. Using a different chemical for zebra mussel control may also improve disinfection by-product levels in the distribution system.

Recommendations:

1. The Village should evaluate security at the raw water intake building. The remote location makes it a candidate for intrusion alarms or video surveillance.

## **WATER TREATMENT PLANT**

The Watkins Glen Water Treatment Plant is a direct filtration plant that was approved for construction in 1993. The plant typically produces water for approximately 60 to 120 minutes at a time, 3 to 12 times per day. Typical daily production during 2018 ranged from approximately 300,000 to 800,000 gallons per day (gpd). The variation in volume of water produced depends on water usage at large events being held at Watkins Glen International (WGI) and local industry demands, which are seasonal. The plant can produce a maximum of approximately 1.87 million gallons per day (mgd). However, the rating of the plant is approximately 1.3 mgd which is based on capacity with one filter out of service (typically for backwashing). Alum is injected into the raw waterline prior to a static mixer then the water enters a flocculation chamber. Sodium bicarbonate can also be injected into the incoming waterline for improved flocculation. Water then spills over a weir and is routed to one of four filters. The filter media was designed at 18 inches of anthracite over a 12-inch sand layer. Gaseous chlorine is added for disinfection and a blended phosphate is added for corrosion control as water leaves the plant to the water storage tank on the premises (Steuben Street Tank).

### Violations:

1. The Village is in violation of Subpart 5-1.71 (b) for failure to exercise due care and diligence in the operation of a water treatment plant or distribution system. The water treatment facility is operated without staff on site and without the proper controls, alarms, and call out features in place to ensure any issues with water quality and/or quantity are detected and reported to an operator in a timely manner. Proper automation must include features to shut the plant down in the event of a turbidity exceedance and chlorine over/under feed. Since the August storm and system upset the Village has installed a new alarm with a call-out feature based on turbidity levels. This must be evaluated to insure it meets the requirements of the unattended operation policy. If the Village wishes to continue with unattended operation, a plan to comply with Subpart 5-1, Appendix A, Recommended Standards for Water Works, Unattended Operation Policy Statement must be submitted to the Hornell District Office for review and approval.
2. The Village is in violation of Subpart 5-1.52 in that the location currently used to collect entry point samples does not meet the definition of entry point. A true entry point location must be determined, and a sampling tap provided for all future required samples. Subpart 5-1.1 (aj) defines an entry point as, "a representative sampling location after the last point of treatment but before the first consumer connection."
3. The Village is in violation of Subpart 5-1.72 (c) for failure to record and/or retain turbidity readings. Composite filter effluent (CFE) turbidity is shown on the graph in the computer, but no other form of the result records could be found. At the time of the storm event only 2 of the 4 individual filter turbidimeters were recording data.

In addition to the system control and data acquisition improvements to allow for unattended operation in item 1 of this section, turbidimeters must be evaluated and upgraded if necessary to provide the plant operators with the capability of maintaining the data in tabular format for the minimum required period of 10 years as specified under Subpart 5-1.72 (d)(1).

4. The Village is in violation of Subpart 5-1.72 (c) for failure to report turbidity and chlorine readings during the time the plant is in operation. The operators are reporting readings on the monthly operation report during the time they are at the plant, which does not always coincide with plant operation. Data reported on the operation report must indicate conditions when water is being produced. Each time the plant is in operation readings must be recorded and reported. If the plant is not producing finished water, readings do not need to be reported. This should also be indicated on the operation report.

#### Requirements:

1. While ventilation is provided for the chlorine room as required by Subpart 5-1, Appendix A, in the event of a gas leak it was noted that the fan discharges adjacent to the access door to the plant and this is a health and safety concern for operators accessing the plant.
2. None of the chemical feed pumps in the treatment plant appear to be equipped with devices to prevent the potential for siphoning and/or overfeed. The valves should be multifunction and provide pressure relief for the protection of discharge tubing, back pressure regulation for maintaining feed output, air bleeding to prevent air locking, and discharge drainage to help protect operators from chemical exposure. If the chemical feed pumps are not equipped with such valves, they must be installed.

#### Recommendations:

1. The treatment plant lacks any type of security features such as fences, intrusion alarms, or cameras.
2. Standard Operating Procedures (SOPs) should be developed for operation of the plant. The document should detail actions to be taken by un-certified workers who assist with operation of the plant while Mr. Pierce is not present. The procedures should also reference the required plan for unattended operation.
3. On-line analyzers, with recording and alarm capabilities are recommended for monitoring the level of pre-disinfectant and raw water turbidity at the plant.

## **STEUBEN STREET TANK AND PUMP STATIONS**

The Steuben Street Tank is a 500,000-gallon welded steel tank built in 1989 with a separate inlet and outlet which provides contact time for the system. The water leaves the tank to feed two pressure zones. Storage and pressure in the lower zone is provided by the Steuben Street Tank. The Steuben Street Pump Station adjacent to the tank pumps water to the upper zone and Padua water storage tank. This pump station contains two pumps that alternate and are capable of discharging approximately 150 gallons per minute.

### Requirements:

1. We have evaluated monthly operation reports and information provided by Hunt Engineers regarding minimum treatment requirements for a surface water source. Based on information provided during the sanitary survey and a preliminary report from Hunt Engineers dated October 17, 2018, it is not clear that adequate CT (concentration x time) to meet the 3.0-log removal and/or inactivation requirement for *Giardia lamblia* cysts is provided at all times during the year. CT is dependent on temperature, pH of the water, chlorine residual and flow rates through the plant and tank. Because the tank represents the volume of water where the minimum treatment requirements are met it is critical to understand the tank configuration (i.e. inlet and outlet pipes). Because there is no flow meter registering flow rates out of the tank and chlorine residual monitoring must be relocated in accordance with item 2 from the previous section, the CT calculation may be inaccurate. The Village must contract with an engineer to evaluate all conditions to determine if adequate treatment is being provided.
2. It was reported that this tank has not been internally inspected in approximately 18 years. AWWA Standard G-200 recommends internal inspections of all storage tanks be performed every 5 years. As such, and due to the questions surrounding appropriate CT for the system, this tank must be internally inspected by May 1, 2019. All reports, pictures, and videos based upon this inspection shall be submitted to the Hornell District Office.

### Recommendations:

1. Based on a review of plans and discussion with Mr. Pierce, it appears that there is a  $\frac{3}{4}$ " pipe in this pump house that could be used as the entry point sampling location identified as the second violation under the Water Treatment Plant section.

## **DISTRIBUTION SYSTEM**

The distribution system consists of two pressure zones. The lower pressure zone serves most of the Village proper and is fed from the Steuben Street Tank. The pressure in this zone ranges from 80 – 90 pounds per square inch (psi). The upper pressure zone is fed from the Steuben

Street Booster Station and provides water to the Towns of Reading and Dix, and to Watkins Glen International (WGI) racetrack. The pressure in this zone ranges from 40 – 150 psi, with most areas being below 100 psi.

## **LOWER PRESSURE ZONE**

A significant portion of the distribution system is comprised of older, small diameter water mains with deficient fire flows. The Village should continue to implement its program to gradually replace undersized and deteriorating mains.

Some areas of the distribution system also have pressure/flow problems, such as Lee and Monroe Streets. In a few instances, individual homes have booster pumps installed to boost the Village water pressure. Subpart 5-1.27 requires water systems to assure a minimum working pressure of 20 psi at ground level at all points in the distribution system. While this is the minimum requirement in accordance with Subpart 5-1.27, the design standards, referenced as Subpart 5-1, Appendix A, Recommended Standards for Water Works recommends a minimum operating pressure of 35 psi.

## **UPPER PRESSURE ZONE**

### **Padua Tank**

The Padua Tank is a 250,000-gallon steel tank built in 1934. The tank has a single inlet/outlet that feeds the upper pressure zone. This tank also feeds back to the water treatment plant to supply the restroom facility and laboratory sink.



*Figure 2: Padua Tank*

#### **Requirements:**

1. This tank appears to be at the end of its useful life. The foundation appears to be crumbling and there is at least one bullet hole completely through the side wall. Mr. Pierce reports that he cannot completely fill the tank because of this hole. This tank must be rehabilitated or replaced. No information was available regarding recent inspection of the tank. AWWA Standard G-200 recommends internal inspections of all storage tanks be performed every 5 years.
2. The water main from the plant to this tank was installed in the 1930's. As this line is aging, and in an area that is not easily accessible, the Village should also consider replacing it.

Recommendations:

1. Access to this tank is difficult. The Village should insure that there is an easement through the property and gravel pit. The road to the tank itself must be maintained to allow adequate access during all times of the year.
2. The Village should address security at the site. There is no fencing around the tank to restrict access.

We also reviewed the following routine operation and maintenance items for the distribution system. Distribution system operation and maintenance is covered by Subpart 5-1.71(b)

Cross Connection Control:

Mr. Pierce indicated he has records for cross connection control device testing. The Village has a program for obtaining test results and insuring protection of the public water system. In accordance with Subpart 5-1.31, the Village shall ensure that all devices are tested annually.

Meters & Leak Detection:

It is our understanding that the Village has a water service meter replacement program in place and that some of the meters are more than 20-years old. These meters should be calibrated or replaced as meters tend to lose up to 20% of their accuracy as they approach 30 years of age. The backwash meter in the plant must be calibrated or replaced. The Village should also track unmetered water for uses such as hydrant flushing and perform leak detection studies if its unaccounted-for-water is 15 percent or more. There are production costs associated with unmetered water that are not recovered.

Hydrants and Valves:

Hydrants and valves must be routinely (annually) exercised to ensure they will work when needed and are not a liability to the Village in case of an emergency. Guidance for proper operation and maintenance of a distribution system can be found in AWWA G-200.

Routine Maintenance:

Routine maintenance must continue to be performed. Replacement of screens on vents, mowing grass and trimming brush, drainage of pits and maintenance of meters must be routinely performed.

Distribution System Turbidity:

Distribution system turbidity analysis is required by Part 5-1.52 Table 10A. The

water treatment plant operators currently take distribution samples for turbidity using a bucket and pour them into an on-line analyzer in the plant. Due to chances for error or inaccurate readings using this method the Village shall purchase a bench/handheld turbidimeter for analyzing grab samples and for verification of the on-line analyzers.

## **WATER QUALITY**

A review of the most recent water quality monitoring results indicates that there were two turbidity treatment technique violations in August 2018. More than 5% of the composite filter effluent turbidity readings were above the performance standard of 0.3 NTU in a single month and the composite filter effluent readings exceeded 1.0 NTU on August 16<sup>th</sup> and 17<sup>th</sup>. These violations were issued in separate correspondence and the appropriate public notification was completed on August 16, 2018 and November 2, 2018.

The Village and its purchase water systems in the Towns of Reading and Dix must work to address disinfection by-products. Disinfection by-products form when chlorine combines with naturally occurring organic matter in the water. Two groups of compounds are regulated, total trihalomethanes (TTHMs) and haloacetic acids (HAAs). The Environmental Protection Agency has set Maximum Contaminant Levels (MCLs) for these groups of 80 and 60 micrograms per liter (ug/l), respectively, based on the locational running annual averages of quarterly sample results taken from the distribution system. Although the Village has not exceeded these standards, there are issues in the Towns that purchase water from the Village. As such, the Village should consider all options for the reduction of these contaminants within its distributions system.

Some options to evaluate to reduce disinfection by-products include changing chemicals at the raw water intake, extending the raw water intake, improving filtration by evaluating different coagulants, and providing mixing and aeration at water storage tanks. In addition, the Village should work with the Towns of Dix and Reading to develop and implement a robust flushing program.

The Village has performed raw water e. coli monitoring as required by the Long Term 2 Enhanced Surface Water Treatment Rule. Hornell District Office will review the data and inform the Village of any additional requirements.

## **CERTIFIED OPERATORS**

The Village currently employs only two certified operators. Mr. Martin Pierce holds a IIA certification and Mr. Stanley Swarthout holds a D certification. The Village also contracts with Hunt Engineers (Mr. Harley Connelly – IIA, IIB, C, and D) for a back-up operator. Please provide a copy of this contract to the Hornell District Office as soon as possible. While this meets the certified operator requirements for the Village outlined in Subpart 5-4, you are strongly encouraged to pursue the hiring of additional certified operators. In addition, it is our understanding that the Village contracts with the Towns of Dix and Reading to operate their

systems. The Town of Reading Water Districts require an operator with a D certification. The Town of Dix Water District also requires an operator with a D Certification, as well as a C certification due to the addition of chlorine.

In general, the system appears to be in good physical and operating condition. Mr. Pierce and Mr. Kent were very knowledgeable of the systems' components and very courteous and helpful during the sanitary survey. Please provide a written response to all the items in this report, no later than **January 31, 2019**. If you have any questions, please do not hesitate to contact the Hornell District Office at (607) 324-8371.

Sincerely

A handwritten signature in black ink, appearing to read "Hyland Hartsough". The signature is fluid and cursive, with a large loop at the end.

Hyland Hartsough, PE  
Western Region Water Supply.  
(for April Kellerhouse, Gary  
Garofalo, PE and Michael Bailey)

pc: Lloyd Wilson, PhD, NYSDOH BWSP