

CHAUTAUQUA COUNTY  
DEPARTMENT OF HEALTH AND HUMAN SERVICES  
DIVISION OF PUBLIC HEALTH – ENVIRONMENTAL HEALTH UNIT

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PAUL M. WENDEL, JR.  
*County Executive*

CHRISTINE SCHUYLER  
*Director of Health & Human Services*  
*(Commissioner of Social Services/Public Health Director)*

November 22, 2021

Mayor Doug Essek and Village Board  
Village of Fredonia  
9-11 Church St  
Fredonia, NY 14063

Re: 2021 Sanitary Survey of the Public Water Supply  
Village of Fredonia

Dear Mayor Essek:

On July 13, 2021, we (Paul Snyder and Casey Miller) visited the Village of Fredonia to perform a sanitary survey of the Village's public water system and conducted one onsite grade IIA water system operator evaluation.

The purpose of the sanitary survey was to determine compliance with Part 5 of the New York State Sanitary Code, which regulates all public water supplies. It included evaluating the water source, treatment system, storage tank, distribution system, pumps and controls, monitoring and reporting, management and operations and operator compliance, and a comprehensive discussion of pertinent water supply topics, including the ongoing progress that has been made to address the violations and other deficiencies around the water system. Highlights of the inspection are described below.

The visit on July 13 consisted of an inspection of the reservoir, water treatment plant, and water storage tank with chief operator Chris Surma, water operator Allison Wahl, and water operator trainee, Dale Lombardo. We also inspected the interconnection between the Village of Fredonia and City of Dunkirk and discussed issues within the water distribution system with Chris and distribution system operator, Scott Marsh.

Some items of particular importance that were discussed include the ongoing upgrades to the up-flow clarifiers, several recent and ongoing upgrades to the water treatment plant and water storage tank, and issues with the reservoir & dam which must still be addressed. We also urge the village to review past sanitary survey reports for additional details, which include several previously cited violations and deficiencies that are the primary basis of the current water system improvement project.

The Village has addressed several violations and deficiencies. However, there are still more that still need to be addressed. At the time of the survey, the following items were either addressed or not addressed:

1. The pipes in the pipe gallery must be labeled with flow direction arrows.
2. The overflow pipe on the water storage tank is not terminating facing downwards and is missing a screen.
3. Locks must be kept on the hatches to the underground vaults at the storage tank to prevent vandalism.
4. A written standard operating procedure must be developed for re-establishing the sludge blanket in the newly installed clarifiers. This procedure must be made available to all operators, and reviewed on a regular basis.
5. Strong consideration should be given to providing an automatic switch over system to the coagulant feed systems. Activation of a standby feed pump in the event of primary pump failure would ensure that there are no interruptions in feeding coagulant.

Information provided below explains details of additional violations and deficiencies with Fredonia's water system that are still outstanding and have yet to be addressed.

#### **RESERVOIR:**

Conditions with the reservoir, dam and spillway are largely unchanged. Reference should be made to the 2012 sanitary survey report for specific details regarding the inspection and maintenance (I&M) program and emergency action plan (EAP) for the dam and spillway that were completed by O'Brien and Gere Engineering.

At the time of the survey, the reservoir was full, and water was flowing over the spillway. Please ensure that vegetation along the dam is controlled per NYSDEC requirements, and reference should be made to previous NYSDEC dam inspection reports for specific details.

Numerous storms have occurred over the past 60 years that have negatively impacted the reservoir, and problems with continued stream erosion and subsequent reservoir sedimentation have reduced reservoir capacity. This issue is exacerbated during periods of droughts. A bathymetric survey has recently been completed on the reservoir, and dredging will be completed to remove sedimentation in various sections of the reservoir to restore its capacity.

#### **TREATMENT PLANT:**

The village has undertaken a massive improvement project at the water treatment plant to address many outstanding deficiencies/violations. This project, and others throughout the water system, will help ensure long-term sustainability of the public water supply.

At the time of the inspection, the replacement of the upflow clarifiers was underway and several upgrades around the treatment plant were already completed. Clarifier number 1 was replaced and already in service, while clarifier number 2 was being cleaned and prepped for construction. Additionally, the old gas

chlorination disinfection system was replaced with a liquid chlorination system. This improvement will create much safer working conditions for the water operators. The following is a list of improvements, some of which were completed prior to the inspection:

1. New filter media in all 4 filters,
2. New filter to waste valve,
3. New sludge pumps,
4. New raw water turbidimeter,
5. Alarms for PAC/polymer pumps,
6. New upflow clarifier,
7. A new liquid chlorination system, and
8. Hatches over the clearwell were replaced.

Some minor items around the water plant that still need to be addressed include the following:

1. The pipes in the pipe gallery must be labeled with flow direction arrows.
2. Spill containment is still needed around the liquid chemical storage area and the area needs to be configured to minimize the need to move the 55 gallon drums around.

#### **FINISHED WATER STORAGE/BOOSTER PUMP STATION:**

An inspection of the finished water storage tank concluded that several improvements have been made, which are detailed below, however several violations with the tank still exist. First and foremost, the village still does not have ample finished water storage volume to meet both domestic and fire flow demands, which in return does not allow the water plant to be shut down for extended periods of time. Furthermore, water emergencies in recent years exemplify the importance of supplementing the current amount of finished water storage with additional storage or construction of a major emergency interconnection with the City of Dunkirk that would be large enough to serve as a fully redundant supply.

Upgrades to the finished water storage include:

1. An emergency power source has been installed at the pump station for the Webster Road storage tank.
2. New Solar Bee aerator/mixing device for reduction in disinfection byproducts and improvement of water quality inside the tank.
3. New emergency generator, which automatically performs a weekly load test.
4. New variable speed drives (VFDs) for the pumps.

The Village of Fredonia remains in violation of *Part 5, Subpart 5-1, Appendix A, Recommended Standards for Water Works (RSWW) Section 7.01* in that there is an insufficient amount of finished water storage to meet fire flows and domestic demands combined.

### **DISTRIBUTION SYSTEM:**

The CCHD has recommended numerous times in the past that the Village continue to evaluate replacing sections of the distribution system that are composed of deteriorated cast iron water mains, or have had a history of leaks and repairs. This was again reiterated and discussed with distribution system operator, Scott Marsh.

In 2018 and 2019, the village completed a large water main replacement project that was partially funded through an emergency loan from NYSEFC. The project replaced old cast iron mains on James Place, Forbes and Cottage Streets, Pleasant Avenue and Middlesex Drive to address a long history of breaks and poor water quality due to tuberculation of the old cast iron mains.

Scott Marsh mentioned other areas of the distribution system that must be prioritized for upgrades, and we discussed various alternatives that should be evaluated so that improvements around the village are maximized for cost efficiency. The alternatives include full replacement or cleaning and relining. Relining can be done using various technologies ranging from a non-structural cement mortar lining to a fully structural or semi-structural spray-on epoxy or plastic liner, which would be used to restore full structural integrity of a pipe. Relining water mains may be a very cost effective method to address problematic water mains that are located in sections of the village where construction costs would be very high.

Some various locations in the village that have been prioritized for improvements based on a history of breaks, poor fire flows or poor water quality include the following:

1. Chestnut Street – approximately 5,000 feet of 4 inch cast iron main,
2. Castile Heights – approximately 3,000 feet of 12 inch main,
3. Burnett, Forbes, Gardner, Johnson, Pulaski, Steuben, Risley, Sahel, Sunset, Temple, Westerly, Leon, Douglas – approximately 25,000 feet.

There have been numerous major leaks in the village that resulted in widespread pressure loss and accompanying boil water orders. The condition of the water main on many of the streets listed above have deteriorated to a point that replacement of the water main is absolutely necessary. Please note because of the condition of these mains, the Village of Fredonia is in violation of the following sections of the New York State Sanitary Code:

1. *Part 5-1.27 Maintain minimum distribution system pressure of 20 psi at ground level.*
2. *Part 5-1.71(b) Exercise due care and diligence in the operation and maintenance of a water treatment plant and distribution system.*

### **INTERCONNECTION:**

The existing Vineyard Drive interconnection between the City of Dunkirk and the Village was recently upgraded as part of the water system improvement project. These upgrades have addressed some significant deficiencies with the pump station and increased its capacity to help provide more water to the village during emergencies. The improvements include replacing the suction piping and transmission main, replace/rehabilitate the existing pumps and VFDs and install an emergency backup generator. At the time of the inspection, all improvements were working well.

Although these improvements to the Vineyard Drive interconnection were important and have already proven vital during various emergencies, the CCHD strongly endorses a major interconnection between the Village of Fredonia and the City of Dunkirk that would serve as a fully redundant supply for the village. A new, much more robust interconnection between the two municipalities is needed for several reasons, some of which would address violations of the New York State Sanitary Code that have been previously cited by the CCHD and NYSDOH.

- 1) **Emergency Source:** In case of an emergency or reservoir depletion due to drought, the existing interconnection is extremely inadequate for supplementing the Village with enough water to meet the Village's daily demands.
- 2) **New Brooks Memorial Hospital:** The potential construction of a new hospital in the Village of Fredonia would necessitate a secondary source of water so that the hospital is provided with an uninterrupted source of drinking water in the event of an emergency with Fredonia's water supply.
- 3) **Finished Water Storage:** The combined capacity of the finished water storage facilities in the Village is less than required by the NYSDOH. A new interconnection will be able to provide a redundant source of water that can meet all Village demands when needed, and eliminate the need for construction of additional storage tank(s).

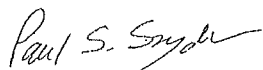
Based on all of these factors above, this Department again urges the Village of Fredonia to pursue the construction of a major interconnection with the City of Dunkirk.

**OPERATIONAL:**

During the inspection, we completed an on-site assessment for Mr. Lombardo, which is the final step for him to obtain a Grade IIA NYS Water Operators Certification. Mr. Lombardo demonstrated that he possesses the skills and knowledge to operate and maintain the water treatment plant and has since received his grade IIA license.

The Chautauqua County Health Department is extremely pleased that Fredonia is making significant progress to address violations and other deficiencies around the water system. There are some outstanding improvements that are in the planning phase for completion. If you should have any questions regarding this sanitary survey report, or any other matters, please contact me at 753-4768.

Sincerely,



Paul S. Snyder, P.E.  
Engineer III



Casey Miller  
Water Resource Specialist

Pc. Mr. Christopher Surma, Chief Water Operator  
Mr. Scott Marsh  
NYSDOH

# Water System Field Compliance Report: A Review of Compliance with Subpart 5-1 of the New York State Sanitary Code

NEW YORK STATE DEPARTMENT OF HEALTH  
Bureau of Water Supply Protection

Public Water System Name <i>Fredonia Village</i>	Street Address <i>911 Church St.</i>
Town, Village, or City <i>Fredonia</i>	County <i>Chautauque</i>

PWS ID Number: **N Y 0 6 0 0 3 6 4**      PWS Type:  C    NC    NTNC    NP  
 Source Type:  Surface    Ground    GWUDI      Date of Service: **0 7 / 1 1 3 / 2 1**  
 Begin Time: **1 0 : 0 0**      End Time: **3 : 0 0**      Disinfection Waiver Issued?  Yes    No      4-Log Virus Treatment?  Yes    No

Field Visit Type:  Pre-operational    Complaint    Incident    Illness    Reinspection    Sanitary Survey    Inspection

Part 5 Subsection	Summary Description of Sanitary Code Requirement	SDWIS	Status
5-1.12(a)	Appropriate actions are taken in response to deteriorating source water quality or diminished effectiveness of treatment with potential for MCL violation.	SA	1
5-1.22(a)	Obtain health department approval prior to the construction or modification of a water system.	SB	1
5-1.23(a)	Obtain health department approval prior to use of an emergency water supply or alteration of a treatment process necessary to protect public health.	SD	1
5-1.27	Maintain minimum distribution system pressure of 20 psi at ground level.	SH	2
5-1.30	Bypass of any stage of treatment.	SJ	1
5-1.30	Disinfection of a groundwater source, surface water source or groundwater source influenced by surface water.	ND 41	1
5-1.30(b)	Filtration of surface source and groundwater influenced by surface water unless avoidance criteria is met.	42	1
5-1.30(b)(2)	Free chlorine residual disinfection concentration in the water entering the distribution system must be at least 0.2 mg/l and may not be less than the minimum concentration for compliance for more than four hours. Systems using other chemical disinfectants shall maintain residual disinfection levels entering the distribution system comparable to requirements for systems using chlorination.	41	1
5-1.30(g)	Maintain free chlorine residual at representative points in the distribution system.	NR	1
5-1.31	Protect the water distribution system from the creation of cross connections of sufficient hazard to adversely affect the health of water consumers.	SJ	2
5-1.71(a)	Exercise due care and diligence in the maintenance and supervision of all sources of the public water to prevent so far as possible, their pollution and depletion.	SN	2
5-1.71(b)	Exercise due care and diligence in the operation and maintenance of a water treatment plant and distribution system.	SO	2

Have all outstanding violations been resolved?  Yes    No  
 Explain \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

Part 5 Subsection	Deficiency	Summary Description of Sanitary Code Requirement	SDWIS	Status
5-1.23(c)	M	Conspicuous posting of Sanitary Code Section 5-1.23, "Reporting Emergencies."	SF	1
5-1.29	S M	Finished (treated) water used for priming pumps.		1
5-1.30	S M	Redundant disinfection equipment provided.	ND	1
5-1.30 (e)	S	Complies with disinfection waiver provision.	ND	4
5-1.31(a)(3)	S M	Cross connection control program is implemented by supplier of water, including records of all device testing.	SJ	1
5-1.72(c)	S M	Complete daily records of operation of a water system.	09 10	1
5-1.72(d)	S M	Maintain records (e.g., sample results, reports, filter backwash recycle flow information).	09	1
5-1.72(b)	S	System is in compliance with Subpart 5-4. The correct number and level of operator(s) are available during plant operation. System has designated operators of appropriate grade level in responsible charge.	SQ SY 12	1
5-1.73	S M	Provide or have available test kit.		1
App.5-A.3.2.1	S M	Developed well sources sufficient to meet maximum day demand with the largest well out of service.		4
App.5-A.6.1	S	Pumps are accessible for maintenance and 3 feet above the 100 year flood plain.		1
App.5-A.7.0.3	S M	Water tanks, hatches, roofing, and access ways are watertight, vermin proof, and secure.		1
App.5-A.7.0.7	S M	Tank overflow terminates 12"-24" above grade with proper screen on outlet.		2
App.5-B.2(d)	S M	Finished grade of well is mounded to divert surface water.		4
App.5-B.5(g)	S	Vented, water tight, vermin proof sanitary seal well cap.	SO	4
App.5-D.3(b)	S M	Well casing in good condition and more than 18" above grade.		4

Chlorine Residual \_\_\_\_\_ mg/l      Sample Collection Time \_\_\_\_\_ : \_\_\_\_\_  
 Point of Collection \_\_\_\_\_  
 Chlorine Residual \_\_\_\_\_ mg/l      Sample Collection Time \_\_\_\_\_ : \_\_\_\_\_  
 Point of Collection \_\_\_\_\_

Comments: *See included inspection report.*

Completed by: *Cathy Miller Paetz-Snyder*      Date: *11 123 121*  
 Received by: *Mailed to Mayor Essex*      Date: *11 123 121*

Status Codes: 1. No violation observed 2. All or parts of an item in violation 3. Item was not reviewed 4. Item not applicable 5. Item(s) corrected during inspection  
 Deficiency Codes: S: Significant Deficiency M: Minor Deficiency R: Recommendation