



ILLINOIS ENVIRONMENTAL PROTECTION AGENCY

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JB PRITZKER, GOVERNOR

JOHN J. KIM, DIRECTOR

April 11, 2022

Facility Number: 0755200

Lake Iroquois Association – Iroquois County

Public Water Supply Evaluation Report – Noncompliance Advisory

Lake Iroquois Association
c/o Darrell Aders, Association President
140 Shawnee Lane
Loda, IL 60948

Association President:

An engineering evaluation of the Lake Iroquois Association Public Water Supply has been completed by Engineer Shane McCulley. Mr. McCulley inspected the water supply facilities on February 9, 2022, at which time he was accompanied by Jared Morgan, Operator.

These evaluations are periodically conducted to determine if your public water supply complies with the requirements of the Environmental Protection Act, 415 ILCS 5/1 et seq. (Act), Title 35 of the Illinois Administrative Code (IAC), and related standards. The deficiencies determined as a result of this evaluation are outlined in Attachment A. Attachment B includes suggested improvements. A copy of the evaluation report is also enclosed.

A written reply directed to this office at 2125 South First Street, Champaign, Illinois 61820, indicating the plan of action to correct the deficiencies listed in Attachment A is required within 45 days. The reply must include a specific date by which each deficiency will be corrected. A response to the items in Attachment B is also requested.

This letter is a Noncompliance Advisory and is not a Violation Notice as specified in Section 31(a)(1) of the Act. If you do not adequately respond to the Noncompliance Advisory, the Illinois EPA may issue a formal violation notice according to Section 31(a)(1) of the Act.

2125 S. First Street, Champaign, IL 61820 (217) 278-5800
1101 Eastport Plaza Dr., Suite 100, Collinsville, IL 62234 (618) 346-5120
9511 Harrison Street, Des Plaines, IL 60016 (847) 294-4000
595 S. State Street, Elgin, IL 60123 (847) 608-3131

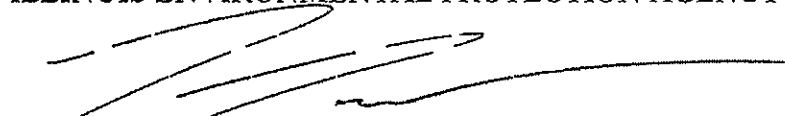
2309 W. Main Street, Suite 116, Marion, IL 62959 (618) 993-7200
412 SW Washington Street, Suite D, Peoria, IL 61602 (309) 671-3022
4302 N. Main Street, Rockford, IL 61103 (815) 987-7760

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We appreciate the courtesy extended Mr. McCulley by Mr. Morgan. If you have any questions regarding this letter or other water supply matters, please contact this office at (217) 278-5800.

Sincerely,

ILLINOIS ENVIRONMENTAL PROTECTION AGENCY

A handwritten signature in black ink, appearing to read "Michael Brown", is written over the typed name and title.

Michael Brown
Division Manager
Division of Public Water Supplies
Illinois Environmental Protection Agency

SM:

Attachments A and B

cc: John McBride, ERH Enterprises, Inc.
Illinois State Water Survey
Iroquois County Health Department
IDPH/Rose Mutzbauer

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ATTACHMENT A

SUMMARY OF DEFICIENCIES

The current evaluation of your community water supply indicates that the following conditions appear to violate Title IV of the Illinois Environmental Protection Act 415 ILCS 5/1-58.17 (2018) (The Act), 35 Illinois Administrative Code (35 IAC), the Recommended Standards for Water Works (2012) (Standards) and related standards.

TREATMENT

- 1) Remove from the plant any chemicals not considered pertinent to the treatment process [Section 18 of the Act, 35 Ill. Admin. Code Section 601.101 and 604.1100]. Sodium hydroxide is not listed as a permitted treatment chemical for this supply.

DISTRIBUTION SYSTEM

- 2) Conduct a triennial cross connection survey of the distribution system as outlined in your cross-connection control ordinance [Section 18 of the Act; 35 IAC, Section 604.1505]. A record system to maintain data on inspections, reinspections, repairs, alterations and tests must also be established.

FINISHED WATER STORAGE

- 3) Repair the screen on the elevated storage tank overflow line to prevent contamination as required by Section 18 of the Illinois Environmental Protection Act, (Section 18 of the Act 415 ILCS 5/18, 35 IAC Section 604.1305.e.1 and the Recommended Standards for Water Works, 2012 Edition, Part 7.0.7 (c). Install a new 4 mesh, non-corrodible screen or mechanical device to keep animals and insects out.

MONITORING AND REPORTING; DATA VERIFICATION

- 4) In addition to the information being provided on the Monthly Operational Reports (MOR) submitted to this office, include the following changes [Section 19 of the Act; 35 IAC, Sections 604.165]:
 - a) Record the concentration and dilution ratio (if any) for each chemical used in the treatment process;
 - b) Perform daily dosage calculations for each chemical used in the treatment process.

- 5) Confirm whether chloramination or breakpoint chlorination is occurring. To achieve breakpoint chlorination, the $\text{Cl}_2:\text{N}$ ratio must be greater than 7.6:1 and total ammonia reaches zero. Total chlorine, free chlorine, free ammonia, total ammonia and mono-chloramine must be monitored periodically to confirm that breakpoint chlorination is achieved. Results should be provided to the Champaign region office. Chlorine dosage may need to be adjusted based on flow rate and the ammonia present in each well. Illinois Rural Water Association may be able to offer additional guidance to your facility. If breakpoint chlorination is not occurring, your facility will need to create a Nitrification Action Plan [Section 19 of the Act; 35 Ill. Adm. Code 604.140].

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ATTACHMENT B

REMINDERS AND/OR RECOMMENDED IMPROVEMENTS

The following recommended improvements are intended to increase the Technical, Managerial and/or Financial Capacity of your water system:

TREATMENT

- 1) Install equipment to chemically neutralize chlorine gas in the event of any measured chlorine release. The equipment must be sized to treat the entire contents of the largest storage container on site [35 Ill. Adm. Code 604.1115(c)(11)].
- 2) Tanks, pipes and chemical feed lines should be painted and labelled according to 35 IAC 604.120 and ANSI guidance. Color coding provides the ability to quickly identify pipe contents and any potential hazards. Labelling tanks with contents and safety information provides additional operator and emergency response safety. Information such as temperature, pressure and direction of flow provides additional information for maintenance efficiency and operator security.

DISTRIBUTION SYSTEM

- 3) Locate all valves on the distribution system so that they can be utilized when needed.
- 4) Perform water audits by comparing the amount of water pumped from the treatment plant with the amount of water billed through individual customer meters. This comparison should be made after each billing cycle in order to track your finished water losses in the system. Action to reduce loss is warranted if the loss exceeds 15% of the finished water pumped. Reducing the amount of water loss could lead to shorter run times for the water treatment plant, increase its longevity, and reduce operating costs.
- 5) When water main repair, replacement or flushing is planned, notification of potentially affected residents must be conducted to provide information regarding potential sediment, possibly containing lead, that may result from the repair or replacement project. Notification should include recommendations that may reduce the potential lead exposure, including flushing of service lines for at least three minutes prior to use, cleaning of faucet aerator screens, and/or replacement of the lead service line.

- 6) It is recommended that maintenance and routine updating of the Lead and Copper materials inventory for the distribution system be conducted. The materials inventory should include locations of lead service lines, along with maps designating the length, size and types of all distribution mains. The information can be used in revising the lead and copper sample site plan subsequent to lead service line removal projects and to comply with monitoring requirements included in the Lead and Copper Rule.

FINISHED WATER STORAGE

- 7) If the elevated tank does not already have active cathodic protection, consider installing this improvement in order to extend overall tank life by suppressing the rate of corrosion in the interior.
- 8) If the elevated tank does not already have tank mixing equipment, consider installing this improvement in order to eliminate thermal stratification, reduce nitrification potential, inhibit the formation of trihalomethane disinfection byproduct, and promote better preservation of chlorine residuals for safer water quality.

MANAGEMENT AND OPERATIONS

- 9) Each community water supply that treats surface or groundwater as a primary or emergency supply of water must develop a source water protection plan that contains the following minimum elements [35 Ill. Adm. Code 604.305]:
 - a) a vision statement as set forth in Section 604.310;
 - b) a source water assessment as set forth in Section 604.315;
 - c) the objectives set forth in Section 604.320; and
 - d) an action plan as set forth in Section 604.325.

A community water supply in existence as of July 26, 2019, must develop and submit to the Agency for approval a source water protection plan within the following time frame after July 26, 2019 [35 Ill. Adm. Code 604.330(b)]:

- 1) within 3 years, for a community water supply serving a population *greater* than **50,000** persons;
- 2) within 4 years, for a community water supply serving a population of *greater* than **3,000** *but less than or equal* to **49,999** persons; or
- 3) within 5 years, for a community water supply serving a population of *less than or equal* to **2,999** persons.

- 10) Source water protection is one of the four pillars in the Multiple Barrier Approach to drinking water safety. Along with a source water protection plan, effective treatment design and proper disinfection, the Agency would like to emphasize the assurance of distribution system sanitary integrity. This emphasis encourages operators to take chlorine residual samples at various locations in the far areas of the system at frequencies above those required for Monthly Operating Reports (MOR). Additional samples taken in this fashion are not necessarily required for submittal on the MOR. However, if multiple samples are taken during a day and only one is reported, the lowest residual measured, along with time and location, should be the one included. Alternatively, the operator can choose to report all chlorine residual samples taken during a day in order to demonstrate how residuals behave throughout the distribution system.

FY2022

ILLINOIS ENVIRONMENTAL PROTECTION AGENCY DIVISION OF PUBLIC WATER SUPPLIES

PUBLIC WATER SUPPLY DATA SHEET

Facility: IL0755200 (W0758130003) **County and Supply:** Iroquois/Lake Iroquois Association
Date of Inspection: February 9, 2022 **EPA Lab Fee Participant:** No
Exemption Status: None **Plant Phone:** 217/386-2610
Operator: John McBride, *A* **Business Phone:** 217/267-2331
 Emergency Phone: 800/569-0467
John "Bud" Tosh, *C* **E-mail:** erh@nwcable.net
Jared Morgan *N* **Business Phone:** 217/267-2331
Sean McBride **Cell Phone:** 815/904-9178
 Cell Phone: 217/304-5786
Other Officials: Darrell Aders, Association President **Cell Phone:** 217/841-3614
 Home Phone: 217/386-2670
 E-mail: lia@illicom.net
Steve Garbaciak Water Committee Chair **Office Phone:** 217/386-2311

Send Mail To: John McBride, ERH Enterprises Inc; P.O. Box 377; Westville, IL 61883

Interviewed: John McBride, Jared Morgan

Brief description of supply: Water obtained from three drift wells is treated with potassium permanganate, filtered, softened, chlorinated, passes to a 5,000-gallon clear well, pumped, fluoridated, and passes to the distribution system and the 150,000-gallon elevated tank.

Capacities: Back-up Well #1: Rated 70 gpm; Actual 70 gpm
Back-up Well #2: Rated 105 gpm; Actual 105 gpm
Primary Well #3: Rated 160 gpm; Actual 130 gpm
Filters: Rated 160 gpm @ 2.83gpm/sf;
H.S.P. #1: Rated 160 gpm; Actual 130 gpm
H.S.P. #2: Rated 160 gpm; Actual 130 gpm

Number of Services: Direct 260 – 0% Metered

Adequacy of Supply:

Annual Usage in Million Gals: **23.9**; Avg. Daily Usage in Gals: **65,479**
Max. Avg. Seven Day Usage in Gals: **111,143** for Inclusive Dates of **June 11 to 17, 2021**
Estimated Population: **800**; Avg. Daily per Capita Consumption in Gals: **87**
Hours Required to Produce Avg. Daily Consumption @ 130 gpm: **8.4**
Hours Required to Produce Max. Avg. Seven Day Consumption @ 130 gpm: **14.2**
Large Consumers: **Swimming Pool (seasonal)**

Emergency Water and Power Sources: An emergency generator was installed with the new water plant that will operate the water plant and the wells. The generator is exercised monthly under load conditions. There are no mutual aid agreements with any other water supplies.

CHANGES IN WATERWORKS

No recommendations were made as a result of the February 17, 2017 evaluation.

The following suggestions were made:

- 1) In addition to information provided on the monthly operational reports, include pH results. The pH samples should be collected, and results recorded daily.
pH is monitored periodically, as needed, if issues with the treatment process merit it. These measurements are not recorded in the Monthly Operating Report (MOR).
- 2) Establish a five-year projected operating and cash flow budget which includes at a minimum, revenue income, operating expenses, capitalization expenses, reserves, capital improvements, and an emergency reserve fund.
ERH has an internal system for this process.
- 3) Repair or replace the hydrant used for draining the elevated tank. This hydrant may have been damaged by a vehicle collision and its availability for use is unknown.
This has been done.
- 4) Maintain the fluoride content in the finished water at 0.7 milligrams per liter (mg/l).
Fluoride averages around 0.60 mg/L based on 2020 monitoring results.
- 5) Consider creating a written mutual aid agreement with another public water supply. This agreement should include provisions for assistance in the event of natural disaster or major equipment/system failure.
ERH has some tanker trucks that can, and have in the past, be certified for transporting drinking water in an emergency.

SUMMARY OF FINDINGS

The following deficiencies or issues of note were found during the inspection:

- 1) Not every isolation valve's location in the distribution system is known. Of those that are known, ERH reports annual exercising, and all are fully functional.
- 2) The triennial residential cross-connection survey is due to be conducted.
- 3) A water loss estimation is suggested for this system. Water loss was not reported as part of the survey response during the evaluation.
- 4) Based on the test results from the 1980's, some naturally occurring ammonia is present in the raw water from Well #1 and 2. This represents the possibility of nitrification events if the supply is using this natural ammonia to combine with chlorine and use chloramination chemistry for disinfection. Daily monitoring suggests instead that chlorine breakpoint chemistry is being achieved for disinfection, but a current round of testing should be conducted to verify whether chloramination or breakpoint conditions exist. All three wells should be sampled for total and free ammonia. The plant's finished water should be sampled for total and free ammonia, monochloramines, and total and free chlorine. The absence of ammonia and monochloramines in the finished water will help confirm that breakpoint is being achieved. If breakpoint is verified, then the supply does not need to develop a Nitrification Action Plan (NAP).
- 5) The Monthly Operating Report (MOR) requires the following additions:
 - The concentration and dilution ratio (if any) for each chemical used in the treatment process;
 - Daily dosage calculations for each chemical used in the treatment process.
- 6) The screen on the elevated tank's overflow pipe has been blown out.
- 7) The chlorine gas room lacks a scrubber capable of neutralizing gas leaks.
- 8) The hydrofluosilicic acid day tank is unmarked to indicate its contents.
- 9) A drum of 50% sodium hydroxide is present inside the plant. The operator was unsure of its purpose and stated that it had been there since he started. Chemicals that are not used in the water treatment process should be removed and properly disposed of.
- 10) Lake Iroquois Association PWS is the subject of a number of discoloration complaints starting January 13, 2022 and extending through the date of the evaluation. During the field visit, the inspector observed the raw water from Well #3 which was in operation and found no discoloration. The inspector further performed visual observations of finished water at hydrants located in each of four approximate quadrants in order to get an overall sense of the visible water quality.

At the first two hydrants, each located in the southern half of the neighborhood, the finished water was clear. The third hydrant, located in roughly the north and west area, had observable discoloration consistent with digital photographs from complainants. However, after letting the hydrant flush for two to three minutes, the coloration cleared up to only a very faint yellowish tint. At the fourth hydrant, in the generally north and east section, the water ran with a very faint yellowish tint from start to finish.

ERH has been investigating the issue since the first complaints arose. Filter media has been inspected and found to be in good condition. Raw and finished water samples are collected in the plant each day and kept for one week as reference for any water coloration issues reported on any particular day. All of the complaints received by the Agency have been referred to ERH for further investigation on an individual basis. Based on their findings, issues with residential plumbing are likely contributing, though further diagnosis should occur in all sections of the distribution system.

Although ERH is already aware of the need to conduct spring distribution system flushing, it is the recommendation of the inspector to conduct this flushing using a targeted valve and hydrant program to directionally scour water mains, to whatever extent is possible. Concurrent to this flushing, residences on the mains being affected should be individually notified of the exact date and time of this flushing. Private plumbing should be flushed simultaneously to optimize overall efficiency. This sort of flushing will require that ERH distribute Lead Informational Notices to affected residences.

Meanwhile, ERH should track the date and contact information of each complaint, the jarred samples of their hot and cold water on that day (or time-stamped photographs of their color), and any chemical analyses performed during the investigation. A complaint log in this manner may provide a chance to identify areas of the system which might be greater affected and allow for better diagnosis of issues in the future.

PERIODIC TESTING ANALYSES

Ammonia:

Date	Location	mg/L
06-Apr-82	WELL 2 SOUTH WELL OF	1.2
01-Aug-85	WELL 2 SOUTH WELL OF	1.3
17-Dec-87	WELL 1 IS NORTH OF 2	1.2

Bacteriological Analyses:

Three hundred sixty-eight samples were submitted to a certified laboratory between 1/5/16 and 1/11/22. Three samples came back positive for total coliform. One was on each well and one in the distribution system. Repeat samples came back negative. No other issues with bacteriological sampling were found.

Chlorine Residuals:

Minimum chlorine residuals of 0.5 mg/L free or 1.0 mg/L combined are always required to be maintained throughout the distribution system. The system is likely utilizing breakpoint chemistry for disinfection. One chlorine residual test was performed during the inspection:

South end hydrant (1:35 PM)
 > Free: 2.4 mg/L

Disinfection Byproducts:

Location	75 A Ponca Point	
Date	HAA5 (µg/L) MCL = 60 µg/L	TTHM (µg/L) MCL = 80 µg/L
11-Jul-16	8.41	31.9
12-Jul-17	9.19	40
17-Jul-18	0	0
10-Jul-19	0	0
21-Jul-20	5.71	2.12
13-Jul-21	10.4	15.7

Fluoride Analyses:

Testing records for 2020 report an average fluoride content of 0.63 mg/L tested at the site and 0.60 mg/L tested in the lab. The target goal for fluoride is 0.70 mg/L.

Inorganic Analyses:

Date	Location	Arsenic (µg/L) MCL = 10 µg/L	Iron (µg/L) *	Manganese (µg/L) **
17-Apr-18	TP01	1.4	0.049	6.7
08-Jun-21	TP01	0	0.058	2.8

* Federal Secondary Limit 300 µg/L; State limit 1,000 µg/L in municipalities > 1,000 people
 ** Federal Secondary Limit 50 µg/L; State limit 150 µg/L in municipalities > 1,000 people

Lead/Copper Analyses:

DATE	Copper action level = 1.3 mg/l	Lead action level = 0.015 mg/l
06-Sep-16	1	0.0018
25-Aug-19	0.091	0

Nitrate/Nitrite Analyses:

Date	Location	Nitrate MCL = 10 mg/L	Nitrite MCL = 1 mg/L
11-Apr-16	TP01	0	-
03-Apr-17	TP01	0.37	-
15-Aug-17	WL01883	0	-
11-Apr-18	TP01	0.77	-
20-Nov-18	TP01	-	0
28-May-19	TP01	1.5	-
07-Apr-20	TP01	0.05	-
11-May-21	TP01	2.7	-
09-Nov-21	TP01	-	0

Radiochemistry Analyses:

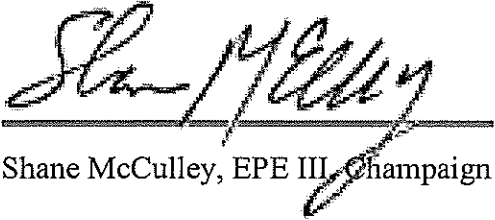
Date	Location	Radium-226 (pCi/L)	Radium-228 (pCi/L)	Combined Radium MCL = 5.0 pCi/L
06-Jan-16	TP01	0.091	0.315	0.406

Synthetic Organic Analyses:

No synthetic organic chemicals were detected during the tests performed within the 2016 to 2021 time period analyzed for this inspection.

Volatile Organic Analyses:

No volatile organics were detected during the tests performed within the 2016 to 2021 time period analyzed for this inspection.



Shane McCulley, EPE III, Champaign

SM:

cc: John McBride, Certified Operator
Lake Iroquois Association
Illinois State Water Survey
IDPH/Rose Mutzbauer