



The State of New Hampshire
Department of Environmental Services

Robert R. Scott, Commissioner



June 20, 2022

Transmitted via Email to presidentleeoakcoop@gmail.com

Lynne MacKenzie
Lee Oak Cooperative
18 Roberts Road
Barrington, NH 03825

**Subject: Water Conservation Plan Approval
Barrington – Lee Oak Cooperative (PWS ID#: 0153040)
Water Conservation Plan, NHDES # 005949**

Dear Lynne MacKenzie:

On May 31, 2022, the New Hampshire Department of Environmental Services (“NHDES”) Drinking Water and Groundwater Bureau received a Water Conservation Plan (the “WCP”), signed on May 29, 2022, for Lee Oak Cooperative, located in Barrington, New Hampshire. Pursuant to RSA 485:61 and Env-Wq 2101, community water systems seeking permits from NHDES for new sources of groundwater shall submit a water conservation plan to NHDES. Based on review of the WCP, NHDES has determined the WCP complies with Env-Wq 2101, *Water Conservation* rules.

Pursuant to Env-Wq 2101.25, the Town of Barrington and the Strafford Regional Planning Commission were provided a copy of the WCP, along with other required materials. On June 15, 2022, NHDES received confirmation of public notification.

NHDES approves the WCP based on the following conditions:

1. No later than source activation, all source meters, meters measuring water-consuming processes, and any transfer meters and data loggers shall be installed.
2. Upon source activation, source meters and any other meters measuring water-consuming processes prior to distribution shall be read monthly, no sooner than 27 days and no later than 33 days from the last meter reading.
3. All meters shall be installed per the manufacturer’s instructions or American Water Works Association standards.
4. Upon source activation, all meters shall be tested and maintained based on the schedule proposed in the WCP.
5. Upon source approval, the system shall start reporting monthly source production volumes to the NHDES Water Use Registration and Reporting Program on a quarterly basis. NHDES will assign the system a Water Use Identification Number and provide instructions for registering as a data provider and utilizing the NHDES OneStop reporting tool.

6. No later than one year from the date of source approval, a distribution meter shall be installed and night flow analysis shall commence at a rate of twice a year in accordance with the night flow analysis methodology in the WCP.
7. Leaks shall be repaired within 60 days of discovery.
8. Within one year of source approval, a water conservation outreach and education program shall be implemented in accordance with the WCP, including the distribution of water efficiency outreach materials to residents twice a year.
9. From the date of this approval, all non-metallic pipes installed in the system shall be outfitted with detectable tracer tape or detectable tracer wire, or be GPS located and maintained in a GIS system.
10. Every three years from the date of this approval, a *Water Conservation Plan Ongoing Compliance Reporting Form* shall be submitted to NHDES documenting how the system has maintained compliance with the WCP. A link to the reporting form is on the *Water Conservation* page on the NHDES website (www.des.nh.gov). The following records shall be maintained by the water system to include with the report:
 - a. A leak log including the date a leak was discovered, the date a leak was repaired, the type of leak (ex. water main, service line, hydrant, valve), the approximate size of the leak (gpm), and the nearest address to the leak.
 - b. The title of water efficiency materials distributed and the date of distribution.
 - c. Date of installation and replacement of all meters as well as testing and calibration records.
 - d. Data from biannual night flow analyses and a brief summary of the analyses.
11. Proposed changes to the WCP shall not be implemented unless approved by NHDES.

Please contact me with any questions at (603) 271-0659 or via e-mail at waterconservation@des.nh.gov.

Sincerely,



Kelsey Vaughn
Water Conservation Program
Drinking Water and Groundwater Bureau

ec: Bill Brown; Lee Oak Cooperative (vicepresidentleeoakcoop1@gmail.com)
Mike Duffy; Horizons Engineering, Inc. (mduffy@horizonsengineering.com)
Henry DeBoer; Epping Well and Pump Company, Inc. (pws@eppingwell.com)
Conner MacIver; Town of Barrington (cmaciver@barrington.nh.gov)
Jen Czysz; Strafford Regional Planning Commission (jczysz@strafford.org)
David Hisz, Stacey Herbold, Christina Rambo; NHDES

WATER CONSERVATION PLAN: Lee Oak Cooperative

A community water system seeking authorization for a new source of water must submit a water conservation plan to the New Hampshire Department of Environmental Services (NHDES) for approval demonstrating how the water system proposes to comply with water conservation standards pursuant to Env-Wq 2101, *Water Conservation* rules. Lee Oak Cooperative is an existing small community water system.

Activities outlined in the water conservation plan will be completed by water system personnel under the supervision of a certified water system operator.

I. Introduction

A. Contact Information

1. Name and location of system: Lee Oak Cooperative, Barrington, NH
2. Owner of system and mailing address: Lee Oak Cooperative, 180 Roberts Rd, Barrington, NH 03825
3. Name and mailing address of preparer of water conservation plan: Joel F. Banaszak, Horizons Engineering, Inc. PO Box 1825, New London, NH 03257

B. System Overview

1. Description of the community being served:
The community is a manufactured home park with 73 units and 69 connections, serving approximately 163 people. The park was built around 50 years ago and became a coop in April 2018.

Due to aging and failing infrastructure, a project is currently underway to design and construct approximately 4,900 feet of new water mains, 69 new service connections, a new pump house, a new 10,000 gallon storage tank, and a new well. The application for the new well is the reason that this water conservation plan is being developed.

In-ground irrigation systems aren't allowed.

2. Description of water sources, including water sources to be developed for non-potable uses such as irrigation:

The system currently has an active dug well. A bedrock well is proposed. The dug well will be deactivated as part of this project.

There are no sources specifically for irrigation or other non-potable uses.

3. Name designation of each proposed water source and any existing sources:

Existing: Dug 1

Proposed: BRW 1

4. Number of connections proposed for each of the following classes:

a) Residential: 69

b) Industrial/Commercial/Institutional: 0

c) Municipal: 0

5. The water system does not provide water to any consecutive water systems or privately owned redistribution systems.
6. There are no proposed connections that receive more than 20,000 gpd.
7. Please provide the following information based on metered source withdrawal volumes. Please report in gallons.

Year: October 2020-October 2021

Average daily use (ADU): 22,404 gpd

Lowest ADU in the winter: 16,898 gpd

Highest ADU in the summer: 23,345 gpd

Average daily use in the winter is likely affected by the practice of residents leaving faucets dripping to prevent pipe freezing.

C. Transfer of Ownership

1. The system ownership is not proposed to be transferred.

II. System Side Management

A. Water Meters

1. Source Meters

- a) No later than the source activation date, a meter will be installed on each new and any existing water source.
- b) An irrigation well is not proposed.
- c) Source meter information for each existing source and if known, for each proposed source:

Source Name: Dug Well (Existing)

Meter Size: 1"

Meter Make: Neptune

Meter Model: T-10

Meter Installation Date: 2/9/22

The Plans for Bidding (May 2022) for the new pump house state that the inflow from the well pump is required to be a 1-inch meter and that the meter should be equipped to provide a 4-20 mA output to the control panel.

- d) No later than the source activation date, source meters will be read at least monthly.

2. Meter Selection, Installation, and Maintenance

- a) All meters will be American Water Works Association (AWWA) certified.
- b) The selected size of the meters will be based on projected flow rates.

- c) Meters will be installed as specified by the manufacturer, including requirements for horizontal or vertical placement, distance of straight run of pipe upstream and downstream of the meter, and strainer installation. If the manufacturer does not supply installation specifics, meters will be installed in accordance with the “Manual of Water Supply Practices M6, Water Meters-Selection, Installation, Testing, and Maintenance” (AWWA, 2012).
- d) The following meter testing and calibration schedule or meter change-out schedule will be implemented. If the manufacturer’s accuracy warranty extends beyond the schedule below, the meter will be tested or changed-out no later than the warranty expiration date.

Meter Size (inches)	Testing Rate (years)
<1"	10 yrs
1" - 2"	4 yrs
3"	2 yrs
>3"	1 yr

- e) A log of the date meters were installed, tested, calibrated, repaired, and replaced will be maintained. Calibration certificates will be kept on file.

B. Pressure Management

- 1. The design pressures of the system are from 50 psi to 65 psi.

C. Leak Detection and Repair

- 1. All non-metal pipes will either be GPS located and stored in a GIS system or equipped with detectable tracer tape or detectable tracer wire.
- 2. Leak detection will be conducted in accordance with the “Manual of Water Supply Practices M36, Water Audits and Loss Control Programs” (AWWA, 2016).
- 3. Leaks will be repaired within 60 days of discovery unless a waiver is obtained in accordance with Env-Wq 2101.23.
- 4. A log of all leaks will be maintained, including the date the leak was discovered, the date the leak was repaired, the type of leak (ex. service, main, hydrant, valve), the size of the leak (gpm), and the nearest street address to the leak.

D. Water Loss Minimization: Night Flow Analysis

- 1. Night flow analysis will be implemented no later than one year from the date of final source approval.
- 2. The system will conduct a night flow analysis at least twice a year.

3. A distribution meter capable of reading low flows will be installed on the distribution line. The make, model, and size of the proposed distribution meter is TBD. However, the Plans for Bidding (May 2022) for the new pump house state that the outflow from the pump station is required to be a 2-inch meter and that the meter should be equipped to provide a 4-20 mA output to the control panel.
4. See Appendix B for the night flow analysis methodology.

III. Consumption Side Management

A. Educational Outreach Initiative

1. No later than one year from the date of final source approval, the system will begin distributing water efficiency outreach materials to residents twice a year with the rent bills. (Rent bills are sent to residents monthly and include a fixed water charge.)
 - a) The materials distributed will be either NHDES Water Efficiency Fact Sheets located at <https://www.des.nh.gov/resource-center/publications?keys=efficiency&purpose=&subcategory=Water+Conservation> or EPA WaterSense materials located at <http://www.epa.gov/watersense/>.
2. The system may also become a WaterSense partner.
3. The system will maintain a log indicating how the system has complied with III. A.1., above. The log will include dates the outreach and education actions were taken and what was done.

IV. Reporting and Implementation

- A. The water system will submit a form supplied by NHDES once every three years from the date of the water conservation plan approval documenting how compliance with the requirements of Env-Wq 2101, *Water Conservation* rules, is being achieved.
- B. The data collected with each night flow analysis from the previous three years, as well as a statement as to whether a leak was suspected or not, will be submitted with the report form in IV.A., above.
- C. The water system will report monthly production volumes quarterly to the NHDES Water Use Registration and Reporting Program upon receiving a Water Use Identification Number from NHDES. Monthly means once every calendar month, but no sooner than 27 days after and no later than 33 days after the previous reading.

I certify that I have read this Water Conservation Plan, understand the responsibilities of the water system as referenced in the plan, and that all information provided is complete, accurate, and not misleading.

Owner Name (print): Lynne MacKenzie

Owner Signature: Lynne MacKenzie Date: May 29, 2022

Appendix A Definitions

Authorized metered consumption: billed metered water plus unbilled metered water.

Community water system (CWS): a public water system which serves at least 15 service connections used by year-round residents or regularly serves at least 25 year-round residents.

Consecutive water system: a public water system that buys or otherwise receives some or all of its finished water from one or more wholesale systems for at least 60 days per year.

Final source approval: the date of final well siting approval or the date of issuance of the large groundwater withdrawal permit.

Large community water system: a community water system that serves more than 1,000 persons.

Privately owned redistribution system (PORS): A system for the provision of piped water for human consumption which does not meet the definition of a public water system and meets all of the following criteria:

- (1) Obtains all of its water from, but is not owned or operated by, a public water system; (2) serves a population of at least 25 people, 10 household units or 15 service connections, whichever is fewest, for at least 60 days per year; and (3) has exterior pumping facilities, not including facilities used to reduce pressure, or exterior storage facilities which are not part of building plumbing.

Public water system (PWS): a system for the provision to the public of piped water for human consumption, if such system has at least 15 service connections or regularly serves an average of at least 25 individuals daily at least 60 days out of the year.

Small community water system: a community water system that serves 1,000 people or less.

Source activation date: the date the source is placed into use.

System input volume: the volume of water input to the water supply system after treatment, analysis, and storage.

Water balance: the difference between the system input volume and authorized metered consumption.

Water conservation: any beneficial reduction in water losses, waste or use.

Wholesale system: a public water system or an industrial, commercial or institutional (ICI) water user that treats source water and then sells or otherwise delivers finished water to a consecutive water system or privately owned distribution system.

Appendix B
Night Flow Analysis Methodology

1. Distribution Meter

- a. A meter capable of measuring flows less than 2 gallons per minute (gpm) will be installed on the distribution line and located after treatment, any other water consuming processes, and storage. The meter make, model, and size will be forwarded to NHDES prior to purchase/installation for review and approval.

2. Determining Baseline Flow

- a. Baseline flow will be determined when the system is tight. The system will be considered tight when (this may vary based on the size and age of the system):
 - 1. A leak detection survey is conducted and all leaks discovered are repaired; or
 - 2. An initial night flow analysis is conducted and the lowest flow is less than 2 gpm.
- b. The results of the initial night flow analysis and the proposed baseline flow will be submitted to NHDES for review.

3. Night Flow Analysis

- a. Night flow analysis will be conducted at least twice a year and no sooner or later than 6 months apart.
- b. Water usage will be recorded every minute for one hour during a period of anticipated low water demand using a distribution meter (between 1 am and 3 am is recommended). Prior to the night flow analysis, users of the system will be requested to refrain from using water during the date and time of the scheduled night flow analysis. (Night flow analysis will be conducted prior to sprinkler season.)
- c. If the lowest flow is above the baseline flow, then water usage will continue to be recorded every minute for an additional hour.
- d. If the lowest flow is more than 2 gpm above the baseline, a leak will be suspected.
 - 1. All residents will be asked to check their homes for leaks, including running toilets and outdoor spigots. The previous steps will then be repeated in 3 days. If the lowest flow is still above the baseline flow, the actions in Steps 2 and 3 below will be taken.
 - 2. Select portions of the system will be isolated and evaluated by closing valves while monitoring the change in flow as measured by the distribution meter. For example, when one valve is closed, the person in the field operating the valve will then communicate with a second person observing the distribution meter to monitor for a change in the background flow.
 - 3. No later than two weeks after isolating the leak to a branch of the system, a sub-contractor skilled in acoustic leak detection will be retained and will assist with pinpointing the leak.
- e. Records will be maintained of each night flow analysis, including recorded flows and leak repair results.

Appendix C Notification Process

Public Notification Instructions

Once a final draft of the water conservation plan is agreed upon by the applicant and NHDES, NHDES will send a signature line to the applicant for addition to the plan, along with a summary of the requirements of Env-Wq 2101, which is also available at <https://www.des.nh.gov/sites/g/files/ehbemt341/files/documents/2020-01/water-conservation-summary-of-rules.pdf>.

Within 10 working days of receiving the summary from NHDES, the applicant is required to provide a copy of the water conservation plan and rules summary via certified mail with return receipt requested to:

- the governing board of the municipality in which a proposed source is located,
- the governing board of all municipalities that receive water from the water system (if any),
- the governing board of all wholesale customers of the water system (if any), and
- the regional planning commission serving the location of the proposed source.

The applicant must also request that the governing board amend local site planning requirements to reflect the requirements of Env-Wq 2101 and to promote water conservation landscaping for new projects.

All signed copies of the certified mail return receipts (green cards) must be forwarded to NHDES along with the final, signed water conservation plan before approval of the water conservation plan will be issued.

Notification of Consecutive Water Systems and Privately Owned Redistribution Systems

Within 5 working days of obtaining final approval of the source from NHDES, the system is required to notify any consecutive water system or privately owned redistribution system receiving water from the system of the following:

- The projected source activation date; and
- The system will be subject to Env-Wq 2101 as of the source activation date, pursuant to Env-Wq 2101.13 and should contact the NHDES Water Conservation Program using the contact information below.

New Hampshire Department of Environmental Services
Drinking Water and Groundwater Bureau
Water Conservation Program
PO Box 95
Concord, NH 03302-0095
waterconservation@des.nh.gov
Phone: (603) 271-0659
Fax: (603) 271-0656