



The State of New Hampshire
DEPARTMENT OF ENVIRONMENTAL SERVICES



Thomas S. Burack, Commissioner

WATER CONSERVATION PLAN APPROVAL

June 30, 2014

Terrence & Kelly Jean Connor
1 Smith Lane
Amherst, NH 03031

RE: Amherst – Connor Court Elderly Housing (PWS ID #: N/A New System)
Water Conservation Plan

Dear Mr. and Mrs. Connor:

On June 25, 2014, the New Hampshire Department of Environmental Services (“DES”) Drinking Water and Groundwater Bureau received a Water Conservation Plan (the “WCP”), signed on June 23, 2014, for the Connor Court Elderly Housing water system located in Amherst, New Hampshire. Pursuant to RSA 485:61 and Env-Wq 2101, community water systems seeking permits from DES for new sources of groundwater shall submit a water conservation plan to DES. Based on review of the WCP, DES has determined the WCP complies with Env-Wq 2101, *Water Conservation* rules.

Pursuant to Env-Wq 2101, the Town of Amherst and the Nashua Regional Planning Commission were provided a copy of the WCP, along with other required materials.

DES approves the WCP based on the following conditions:

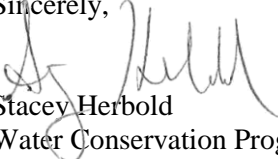
1. No later than source activation, all source meters, distribution meters, meters measuring water consuming processes, and any other proposed meters and data loggers shall be installed.
2. Upon source activation, source meters, distribution meters, and any other meters measuring water consuming processes prior to distribution shall be read monthly, no sooner than 27 days and no later than 33 days from the last meter reading.
3. No later than the source activation date, service connections shall be outfitted with meters and outside read pads.
4. Upon source activation, service meters shall be read on a quarterly basis.
5. Upon source activation, a rate structure shall be implemented. Residents shall be charged based on the amount of water each residence uses and the rate shall be structured so that the cost per gallon(s) is either constant or increasing with the amount of water used.
6. Upon source activation, quarterly billing shall commence.
7. Upon source activation, a night flow analysis using the distribution meter and data logger shall be conducted at least twice a year in accordance with the night flow methodology in the WCP.

8. Upon source activation, a water balance, the difference between the system input volume and the metered authorized consumption, shall be reported annually to DES. The water balance shall be reported by March 1 for the prior year using the online reporting tool.
9. Upon source activation, all meters shall be tested and maintained based on the schedule proposed in the WCP.
10. Upon source activation, water efficiency education materials shall be distributed twice a year to residents in accordance with the WCP.
11. Upon source activation, monthly production volumes shall be reported to the NHDES Water Use Registration and Reporting program on a quarterly basis. Upon system activation, DES will assign the system a WUID number and provide instructions for registering as a data provider and utilizing the DES OneStop reporting tool.
12. All non-metallic pipes shall be outfitted with detectable tracer tape or detectable tracer wire, or be GPS located and maintained in a GIS system.
13. Every three years from the date of this approval, a *Water Conservation Plan Ongoing Compliance Form* shall be submitted to DES documenting how the system has maintained compliance with the WCP. 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), and the approximate size of the leak (gpm).
 - b. The title of water efficiency materials distributed and the date of distribution.
 - c. Date of installation and replacement of all meters and testing and calibration records.
 - d. Data from biannual night flow analysis and a brief summary of the analysis.
14. Proposed changes to the WCP shall not be implemented unless approved by DES.

The online *Annual Water Balance Reporting Form* and the *Water Conservation Plan Ongoing Compliance Form* may be located by going to the DES website, www.des.nh.gov, clicking on the "A-Z List" in the top right corner of the page, and scrolling down to Water Conservation

Please feel free to contact me with any questions at (603) 271-0659 or via e-mail at stacey.herbold@des.nh.gov.

Sincerely,



Stacey Herbold
Water Conservation Program
Drinking Water and Groundwater Bureau

cc: Mark Lopez
Neil Helberg, Lewis Engineering, LLC
Christine Bowman, NHDES
Town of Amherst
Nashua Regional Planning Commission

**WATER CONSERVATION PLAN
CONNOR COURT ELDERLY HOUSING
COMMUNITY WATER SYSTEM
AMHERST, NEW HAMPSHIRE**

April 2014

System Overview:

The Preliminary Well Siting Report for Connor Court Elderly Housing will be submitted to the NHDES DWGB during the middle of April 2014. The elderly housing development will include 30 - two bedroom homes and a clubhouse. A bedrock well with 175-foot sanitary protective area is proposed for the development. Bedrock Well No. 1 will be tested at 20 gpm. The proposed community water system will provide domestic water, sprinkled fire protection, and lawn irrigation. Ownership of the water system will be transferred to The Connor Court Homeowners Association upon completion of the construction.

The Source Capacity required for the water system has been calculated as 22,500 gallons per day (15.63 gpm). The total water usage for the water system shall not exceed 28,800 gallons per day subject to the proposed 175-foot sanitary protective radius. The pump house will include water treatment, atmospheric storage, booster pumps, automatic controls and a backup generator. The water distribution system will provide domestic water and sprinkled fire protection for each unit.

The plan outlined below addresses the requirements of the NHDES Water Conservation Plan.

Property Owner.

Name: **Terrence & Kelly Jean Connor**
Address: 1 Smith Lane, Amherst, NH 03031
Phone Number: (603) 249-8869

Future Project Owner.

Name: **Mark Lopez**
Address: 438 Commons Drive, Bridgton, ME 04009
Company: **Connor Court, LLC**
Phone Number: 603-479-9095

Project Contact

Name: **Neil W. Helberg, P.E.**
Address: 44 Stark Lane, Litchfield NH 03052
Company: **Lewis Engineering, PLLC**
Phone Number: 603-886-4985

Water System Owner (Proposed)

Name: **Chairperson**
Address: Amherst, NH 03031
Company: Connor Court Homeowners Association
Phone Number: 603-____-____

Water System Operator (Proposed)

Name: **Bernie Rousseau, Vice President**
Address: Merrimack, New Hampshire 03054
Company: **Pennichuck Water Services, Inc.**
Phone Number: 603-913-2328

In accordance to NHDES Administrative Rule Env-Wq 2101.04, Water Conservation Rules, Connor Court will conduct the following water conservation measures subsequent to the approval of the final new bedrock well.

The completed Connor Court Water System will have a bedrock well with a capacity of 28,800 gpd (20 gpm).

- Total Source Capacity Required under Env-Dw 301 for domestic and lawn irrigation = 22,700 gallons (15.8gpm)
- Average Daily domestic water use has been calculated at 6,100 gallons per day (4.24 gpm).
- Smart Systems certified by WaterSense will be installed for lawn irrigation. 15 units will be allowed to water each day. The proposed irrigation usage per day is calculated at 700 gallons per unit or 10,500 gallons (7.3 gpm)
- Total water system usage per day shall not exceed 28,800 gallons (20 gpm).

Source Meters:

- All meters shall be installed no later than the source activation date.
- Raw water from the single bedrock well will be metered using a ¾-inch Neptune T-10 positive displacement meter. The meter will be installed prior to reaching any future treatment equipment required at the pump house.
- The water meter for water pumped from the storage tanks to the distribution system will be a 1- ½ inch Badger Mag Meter with transmitter. The pump house control panel for the water system controls the operation of the booster pumps based a 4-20mA signal from the Badger Mag meter’s transmitter.
- A data recorder shall be connected to the water meter leaving the pump house. The data recorder shall record water usage leaving the pump house each day.
- The Pump Station Discharge Meter and the individual well meters shall be read at least once a month.
- Meters shall be tested or changed out per the following schedule, recommended by the AWWA:

| Meter Size | Testing Period Years |
|--------------------|----------------------|
| Less than 1" | 10 |
| 1" to Less than 3" | 4 |
| 3" | 2 |
| More than 3" | 1 |

- The source water meters for the wells and station discharge will be selected, installed and maintained as described in "Manual of Water Supply Practices, Water Meters Selection, Installation, Testing and Maintenance", document identification number AWWA M6, 1999 as required by (EnvWq 2101.04 (d)).

Household, Common Building, and Irrigation Meters:

- Household service meters will be installed in each unit and common building no later than the source activation date or if constructed after the source activation date, prior to connection with the system . Meters shall be 5/8-inch Neptune T-10 positive displacement meters.
- The lawn irrigation system shall be metered and controlled with a WaterSense certified smart irrigation controller. Irrigation water shall be billed to the Homeowners Association according to usage.
- Household service and irrigation meters will be installed with an outside read pad or other method of reading meters outside the home. The service meters installed will also have the capability of being converted to a radio read meter in the future.
- Upon system activation, household service meters will be read quarterly on the first of each month (January, April, July, and October). Source meter will be read on the same day as the house service meters are read.
- Irrigation meters shall be read the first day of each month from April through October.
- Upon source activation, residents will be billed at least quarterly.
- Water will be billed according to usage and rates will either be flat or increasing (ex. \$5.00 per1000 gallons or \$5.00 1-1000 gallons \$6.00 1001-2000 gallons etc.)
- All purchase and sales agreements for the Connor Court Elderly Housing Water System shall include the requirement that the association / owner of the water system set up a quarterly billing system based on usage for each unit/meter within the system.
- Service meters will be tested or replaced every 10 years per AWWA Standards or per the manufacturers meter accuracy warranty period.
- The household service water meters will be selected, installed and maintained as described in "Manual of Water Supply Practices, Water Meters Selection, Installation, Testing and Maintenance", document identification number AWWA M6, 1999 as required by (EnvWq 2101.04 (d)).

Water Audit and Leak Detection:

A water balance will be submitted to DES by March 1 of each year for the previous year. (Water Balance = System input volume – (Metered use *plus* Non-metered use *plus* lawn irrigation use). The water system owner will prepare and submit a water audit and response plan if more than 15% of system input volume cannot be accounted for by authorized metered consumption.

- The response plan shall identify how the water system intends to reduce the percentage to below 15% within two years.

- The water audit will be calculated in accordance with “Manual of Water Supply Practices M36, Water Audits and Loss Control Programs” (American Water Works Association, 2009).
- Upon receipt of NHDES approval of the response plan, the water system will conduct the activities outlined in the response plan following the approval schedule.

All leaks will be repaired within 60 days of their discovery unless a waiver is obtained as required by (EnvWq 2101.04 (h)).

Night Flow Leak Detection Methodology- Connor Court Association:

- Distribution Meter

Prior to source activation, the proposed station discharge meter (1½ - inch Badger Mag Meter) will be installed on the distribution line following the water system booster pumps. The M2000 Electromagnetic Flow Meter is capable of measuring flows between 0.8 and 239 gallons per minute. The meter will have valves installed on each side to allow for meter isolation and removal. A Devar Data Logger (Smart Chart) will be attached to the 1 ½ - inch Badger Mag Meter to record flows during routine day-to-day water use as well as during the Night Flow Leakage Testing. The meter make, model, and size and data logger information is attached for NHDES review and approval. Unless otherwise specified by formal documentation from manufacturer, the meter will be tested / calibrated based on the following rate schedule:

| Meter Size | Testing Period Years |
|--------------------|----------------------|
| Less than 1" | 10 |
| 1" to Less than 3" | 4 |
| 3" | 2 |
| More than 3" | 1 |

The testing rate may be adjusted based on results of prior tests, but DES must approve less frequent testing.

The distribution meter will be selected, installed, and maintained in compliance with “Manual of Water Supply Practices M6, Water Meters-Selection, Installation, Testing, and Maintenance,” (American Water Works Association, 1999).

Night Flow Methodology

1. Night flow analysis will be conducted twice a year 6 months apart (no less than 173 or more than 187 days apart).
2. Water usage will be recorded every minute for one hour between 1 am and 3 am (unless another time of day when there is little water use is established) using the distribution meter. Users of the system will be requested prior to the night flow analysis to refrain from using water between 1 am and 3 am.
3. If the lowest flows are above 0 gpm, then flows will continue to be recorded for an additional hour. If low flows are equal to or more than 8 gpm above the baseline, an emergency leak will be suspected and valve isolation will begin as stated below in #6 and leaks repaired as stated in #7.
4. If flows are above baseline but less than 8 gpm, all residents will be asked to check their homes for leaks and will be provided instructions on how to use their water meter to determine if there is a leak. The previous steps will then be repeated again in 3 days.
5. If again flows are above the threshold, a leak on the distribution side of the system will be assumed and Steps 6 and 7 will be taken.
6. If a leak is suspected, valves will be closed to isolate select portions of the system and to evaluate the change in flow as measured by the distribution meter to isolate the leak. For example, when one valve is closed, one person in the field (operating the valves) will then communicate with a second person observing the distribution meter to monitor for a change in the background flow.
7. No later than two weeks from isolating the leak to a certain branch of a system, a sub-contractor skilled in acoustic leak detection will be retained and assist with pinpointing the leak.
8. Leak detection will be conducted in accordance with “Manual of Water Supply Practices M36, Water Audits and Loss Control Programs” (American Water Works Association, 2009).
9. Leaks will be repaired within 60 days of discovery unless a waiver is obtained in accordance with Env-Wq 2101.09.

Water services to the units will be 1-½ inch CTS, 200 psi polyethylene tubing. The service will provide domestic water and water for the unit’s fire protection sprinklers. Location wire will be installed over the distribution and service piping to allow for easy location of the piping. Isolation valves will be located at each intersection and flushing points will be installed at the end of the water main runs.

Pressure Management:

The water system will be designed consistent with water system industry standards and regulation and consistent with other public health and safety considerations in regards to minimum and maximum operating pressures as required by (EnvWq 2101.04 (n)). The pump station provides a constant 70-psi pressure to the water system. Pressures within the system range from 50 to 80 psi.

Intentional Water Loss:

The water system will not intentionally allow for water loss using bleeders or the intentional overflow of atmospheric storage tanks.

Water Use Restrictions:

The proposed community water system was designed to provide domestic water and fire protection only. The Connor Court Homeowners Association presently allows lawn and garden irrigation during the summer months.

Educational and Outreach Initiative:

The water system owner will conduct public notification and outreach activities as required by EnvWq 2101.11. The water system owner will be distributing water conservation educational literature twice a year to its homeowners in Connor Court. Educational materials will be included with the Consumer Confidence Reports in the Spring. The educational materials will be distributed again in the Fall. Water Conservation Information will be obtained from EPA WaterSense (www.epa.gov/watersense) or the DES Water Efficiency Fact sheets (Go to www.des.nh.gov and scroll down “A-Z” list to “Water Conservation then to Publications”).

Reporting and Implementation:

The system shall keep the following records:

- The date of discovery and repair of all leaks, as well as the closest address, type of leak (ex. main, service, valve, hydrant), and estimated size of leak (gpm).
- The date and title water efficiency materials were distributed.
- Meter testing, calibration, and replacement log.
- If choosing to do night flow analysis, the date of analysis, flows recorded, and actions taken in response to analysis if any.

The system shall report monthly production volumes on a quarterly basis to the DES Water Use and Registration Program upon receiving a WU ID number.

The system will submit a report form supplied by the NHDES once every 3 (three) years documenting how compliance with the requirements of EnvWq 2101 is being achieved.

All activities outlined in this water conservation plan for Connor Court will be completed under the supervision of its certified water system operator.

Public Notification:

Within seven days of submitting this water conservation plan; the applicant will provide a copy of the application and report via certified mail with return receipt requested to the Town of Amherst and the Nashua Planning Commission located in Merrimack. The information provided to the Town will include a summary of the requirements of Env-Wq 2101 and will request that the Town of Amherst amend local site planning requirements to reflect the requirements of Env-Wq 2101 or to promote water efficiency. Signed copies of the Certified Mail Return Receipts (the green card) will be forwarded to NHDES.

Water Conservation Plan Certification:

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.

Property Owner Name (print): Kelly Connor / Terry Connor

Owner Signature: Kelly Connor / Terry C

Date: 6-23-14