



The State of New Hampshire  
**DEPARTMENT OF ENVIRONMENTAL SERVICES**



**Thomas S. Burack, Commissioner**

**WATER CONSERVATION PLAN APPROVAL**

January 28, 2015

David Cossette  
6 Rideout Lane  
Brookline, NH 03033

**RE:** Holderness – Pemi River Heights (PWS ID #:N/A )  
Water Conservation Plan, NHDES # 996060

Dear Mr. Cossette:

On January 23, 2015, the New Hampshire Department of Environmental Services (“DES”) Drinking Water and Groundwater Bureau received a Water Conservation Plan (the “WCP”), signed on January 14, 2015 for Pemi River Heights located in Holderness, 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 Holderness and the Lakes Region Planning Commission were provided a copy of the WCP, along with other required materials.

DES approves the WCP based on the following conditions:

1. All purchase and sales agreements for the Pemi River Heights Water System shall include the requirement that the association / owner of the water system set up a quarterly billing system for domestic water based on usage for each unit/meter within the system.
2. No later than source activation, all source meters, distribution meters, meters measuring water consuming processes, and any transfer meters and data loggers shall be installed.
3. 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.
4. No later than the source activation date, service connections shall be outfitted with meters and outside read pads.
5. For residential homes/units constructed after the source activation date, the service connection shall be outfitted with meters and outside read pads no later than system connection to the service.
6. Upon source activation, service meters shall be read on a quarterly basis, but no sooner than 83 days after and not later than 97 days after the previous quarterly reading.

7. 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.
8. Upon source activation, quarterly billing shall commence.
9. 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.
10. 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.
11. Upon source activation, all meters shall be tested and maintained based on the schedule proposed in the WCP.
12. All meters shall be installed per the manufacturer's instructions or American Water Works Association standards.
13. Upon source activation, a water conservation outreach and education program shall be implemented in accordance with the WCP.
14. Upon source activation, monthly source production volumes shall be reported to the NHDES Water Use Registration and Reporting program on a quarterly basis. Upon source 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.
15. Within 5 business days of obtaining final source approval, any consecutive water systems or privately owned redistribution systems to receive water from this system shall be contacted and informed of the proposed source activation and the requirements to comply with Env-Wq 2101 upon source activation.
16. From the date of this WCP Approval, all new 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.
17. Every three years from the date of this approval, a *Water Conservation Plan Ongoing Compliance Reporting 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), 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.

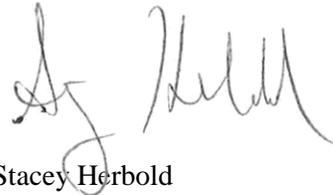
- d. Data from annual night flow analysis and a brief summary of the analysis.
- e. Leak detection survey reports.

18. Revisions to the Plan shall not be implemented without further approval from DES.

The online *Annual Water Balance Reporting Form* and the *Water Conservation Plan Ongoing Compliance Reporting Form* may be located by going to the DES website, [www.des.nh.gov](http://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](mailto:stacey.herbold@des.nh.gov).

Sincerely,



Stacey Herbold  
Water Conservation Program  
Drinking Water and Groundwater Bureau

cc: Neil Helberg, Lewis Engineering  
Selectman, Town of Holderness  
Lakes Region Planning Commission  
Christine Bowman, NHDES  
Steve Roy, NHDES  
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**WATER CONSERVATION PLAN**

**PEMI RIVER HEIGHTS**

**COMMUNITY WATER SYSTEM**

**HOLDERNESS, NEW HAMPSHIRE**

**December 2014**

**System Overview:**

The Preliminary Well Siting Report for Pemi River Heights was originally approved by the NHDES DWGB in December 19, 2005 and renewed in September 27, 2010. The proposed condominium housing development will include 18 - two bedroom units and 6 – three bedroom units. A bedrock well with a 175-foot sanitary protective area has been drilled and tested for the development. Bedrock Well No. 1 was tested at 12 gpm. The proposed community water system will provide only domestic water. Ownership of the water system will be transferred to the Pemi River Heights Homeowners Association upon completion of the construction.

The Source Capacity required for the water system has been calculated as 16,200 gallons per day (11.25 gpm). The total water usage for the water system shall not exceed 17,280 gallons per day subject to the proposed 175-foot sanitary protective radius. The pump house will include water treatment, atmospheric storage, booster pumps, and automatic controls. The water distribution system will provide domestic water for each unit.

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

**Property Owner.**

Name: **David Cossette**  
Address: 6 Rideout Lane, Brookline, NH 03033  
Phone Number: (603) 566-4029

**Future Project Owner.**

Name: **Unknown**  
Address:  
Company:  
Phone Number:

**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: Holderness, NH 03245  
Company: Pemi River Heights Homeowners Association  
Phone Number:

**Water System Operator (Proposed)**

Name:  
Address: **Unknown**  
Company:  
Phone Number:

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

**Water Usage:**

The completed Pemi River Heights Water System will have a bedrock well with a capacity of 17,280 gpd (12 gpm).

- Total Source Capacity Required under Env-Dw 301 for domestic needs = 16,200 gpd (11.25gpm)
- Average Daily domestic water use has been calculated at 8,100 gallons per day (5.63 gpm).
- Total water system usage per day shall not exceed 17,280 gallons (12 gpm).

**Meter Installation, Selection, and Testing:**

- All meters shall be installed no later than the bedrock well source activation date. For homes or common buildings not constructed until after the source activation date, meters will be installed prior to connection with the system.
- All meters will be AWWA certified, with the exception of magnetic flow meters.
- AWWA does not have standards for magnetic flow meters. If a magnetic flow meter is proposed, the meter make, model, size, and manufacturer specifications will be forwarded to the NHDES Water Conservation program for review. The meter will not be installed until receiving approval for its use.
- The selected size of the meters will be based on projected flow rates.
- 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,” (American Water Works Association, 2012).
- The following meter testing and calibration schedule or meter change-out schedule will be implemented. If the manufacturer’s accuracy warranty extends beyond the below schedule, the meter will be tested or changed-out no later than the warranty expiration date. The testing rate may be adjusted based on results of prior tests, but DES must approve less frequent testing.

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

Source Meter, Distribution Meter, and Service Meter Types:

- Services meters will be installed on all household units and common buildings. The meters shall be 5/8-inch Neptune T-10 positive displacement meters.
- Household service 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.
- Raw water from the single bedrock well will be metered using a 1-inch Badger Mag Meter with transmitter. 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 2 - 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 Generating Solutions GS-400 monitoring /alarm device shall be connected to the water meter leaving the pump house. The GS-400 will record and store water usage leaving the pump house each day.

**Meter Reading:**

- Upon source activation, source and distribution meters will be read monthly.
- Upon source activation, service meters will be read quarterly on the first of each month (January, April, July, and October). The distribution meter will be read on the same day as the house service meters are read for water accounting purposes.

### **Billing:**

- 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 per 1000 gallons or \$5.00 for the first 1000 gallons and \$6.00 for 1001-2000 gallons etc.)
- All purchase and sales agreements for the Pemi River Heights Water System shall include the requirement that the association / owner of the water system set up a quarterly billing system for domestic water based on usage for each unit/meter within the system.

### **Water Audit and Leak Detection:**

To ensure easy pipe location and leak pinpointing and repair, 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.

### **Water Balance and Audits:**

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). The system input volume is the amount of water distributed into the system over the year as determined by subtracting the distribution meter reading from the beginning of the year from the reading at the end of the year. Metered usage is the total amount of water consumed by each household and common building measured by subtracting service meter readings taken at the beginning of the year from those at the end of the year. 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- Pemi River Heights Water System:**

Prior to source activation, the proposed station discharge meter (2 - 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 2 - 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.

### Night Flow Methodology

1. To detect leaks, 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.

### **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 55 to 70 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 only. The Pemi River Heights Homeowners Association will only allow for hand watering for flower and vegetable garden irrigation during the summer months. In-ground irrigation will not be allowed.

### **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 Pemi River Heights. 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](http://www.epa.gov/watersense)) or the DES Water Efficiency Fact sheets (Go to [www.des.nh.gov](http://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 Pemi River Heights 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 Holderness and the Lakes Region Planning Commission located in Meredith. The information provided to the Town will include a summary of the requirements of Env-Wq 2101 and will request that the Town of Holderness 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): David J. Cossette

Owner Signature: 

Date: 1-14-15