



The State of New Hampshire
Department of Environmental Services

Robert R. Scott, Commissioner



May 9, 2022

Transmitted via Email to smalizia@hudsonnh.gov

Stephen Malizia
Town of Hudson
12 School Street
Hudson, NH 03051

**Subject: Water Conservation Plan Approval
Hudson – Hudson Water Department (PWS ID#: 1201010)
Water Conservation Plan, NHDES # 004094**

Dear Stephen Malizia:

On January 4, 2022, the New Hampshire Department of Environmental Services (“NHDES”) Drinking Water and Groundwater Bureau received a Water Conservation Plan (the “WCP”), signed on January 4, 2022, for Hudson Water Department, located in Hudson, 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, the Town of Hudson, Nashua Regional Planning Commission, Town of Litchfield, and Pennichuck Water Works were provided a copy of the WCP, along with other required materials.

NHDES approves the WCP based on the following conditions:

1. All source meters, distribution meters, meters measuring water-consuming processes, transfer meters, and data loggers shall be installed as outlined in the WCP.
2. Source meters and any other meters measuring water-consuming processes prior to distribution shall continue to be read at least monthly.
3. The system shall continue reporting monthly source production volumes to the NHDES Water Use Registration and Reporting Program on a quarterly basis.
4. Service meters shall continue to be read at least quarterly.
5. All meters shall be installed per the manufacturer’s instructions or American Water Works Association standards.
6. All meters shall be tested and maintained based on the schedule proposed in the WCP.
7. A water balance—the difference between the system input volume and the metered authorized consumption—shall be reported annually to NHDES. The water balance shall be reported by March 1 for the prior year using the online reporting tool.
8. A leak detection and repair program shall be implemented in accordance with the WCP.

9. Leaks shall be repaired within 60 days of discovery.
10. 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.
11. A water efficiency outreach and education program shall be implemented in accordance with the WCP.
12. A conservation rate structure shall continue to be implemented and residents billed at least quarterly.
13. 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. 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 source, distribution, and transfer meters as well as testing and calibration records.
 - d. Leak detection survey reports and/or a summary of leak detection activities.
14. Proposed changes to the WCP shall not be implemented unless approved by NHDES.

Links to the online *Annual Water Balance Reporting Form* and the *Water Conservation Plan Ongoing Compliance Reporting Form* are on the *Water Conservation* page on the NHDES website (www.des.nh.gov).

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: Elvis Dhima; Town of Hudson
Stephen Donovan, Russell Tierney; Whitewater, Inc.
Nashua Regional Planning Commission

WATER CONSERVATION PLAN: Hudson Water Department

A community water system seeking authorization for a new source of water that will serve as a replacement for an existing source that is not being abandoned must submit a water conservation plan to the New Hampshire Department of Environmental Services (NHDES) for approval. This plan will demonstrate how the water system proposes to comply with water conservation standards pursuant to Env-Wq 2101, *Water Conservation* rules. Hudson Water Department is an existing large 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:
Hudson Water Department (PWSID 1201010)
Hudson, NH
2. Current owner of system and mailing address:
Town of Hudson
Stephen Malizia
Town Administrator
12 School Street
Hudson, NH 03051
3. Name and mailing address of preparer of water conservation plan:
Weston & Sampson, Inc.
Jeffrey W. McClure, P.E.
Senior Associate
100 International Drive
Portsmouth, NH 03801

B. System Overview

1. Description of the community being served:
The Town of Hudson is a gradually increasing community with a population of nearly 25,000 people, made up of approximately 9,167 total housing units. It reflects that of a suburban community with urban elements, including non-residential and multi-family residential development. It includes residential, commercial, and industrial areas. The Town estimates that 60 percent of the town lots are serviced by town water, which is about 6,500 service connections and 16,700 people. There is fire protection.
2. Description of water sources, including water sources for non-potable uses such as irrigation:
The Town of Hudson, through a Purchasing Agreement with Pennichuck Water Service Corporation (PWW), in Nashua, currently draws its primary water supply from the Weinstein Replacement well, located in Litchfield, NH, as well as the Taylor Falls water source in Nashua and the Merrimack Crossing in Litchfield. The Dame and Ducharme wells are currently offline.

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

Source Name	Current Status
Weinstein Replacement Well	New; Active
Taylor Falls—Purchase from Pennichuck	Active
Dame Well	Deactivated
Ducharme Well	Deactivated

4. There are an estimated 6,630 service meters connected to the system, with approximately 100 being irrigation meters. The Town estimates that the connections for each class are as follows:
- a) Residential: 5,000
 - b) Industrial/Commercial/Institutional: 815
 - c) Municipal: 815
5. The water mains currently consist of CI, DI, and cemented DI pipe and the following:

WATER DISTRIBUTION SYSTEM PIPE SIZES

Water Main Size (inch)	Linear Footage of Pipe (ft) ¹	Percent of Distribution System (%)
≤2	24,455	5
4	8,936	1.8
6	86,698	17.6
8	213,578	43.5
10	1,358	0.3
12	128,566	26.2
16	27,373	5.6
TOTAL	490,964 (93.0 miles)	100

1. Footage of water main based on the Town's water system DIS as developed by WSE in 2001

6. Names of any consecutive water systems or privately owned redistribution systems that receive water from the system:

Three Pennichuck Water Works' systems are consecutive water systems:
 PEU/Whispering Winds (PWSID 1851020), which is located in Windham/Pelham
 PEU/Avery Estates (PWSID 1392250), which is located in Londonderry
 PEU/Litchfield (PWSID 1371010), which is located in Litchfield

7. Description of any connections that receive more than 20,000 gpd:

The business at 35 Sagamore Park Road is estimated to use approximately 23,000 gpd. It's called Sonic Manufacturing Company, Inc. or Uni Clean.

The proposed Hudson Logistics Center to be built on the site of the former Green Meadow Golf Course may also use more than 20,000 gpd.

8. Please provide the following information based on metered source withdrawal volumes from the last complete year. Please report in gallons.

Year: 2020
 Average daily use (ADU): 1,907,070 gpd
 Lowest ADU in the winter: 1,351,470 gpd
 Highest ADU in the summer: 3,096,540 gpd

C. Transfer of Ownership

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

II. System Side Management

A. Water Meters

1. Source and Other System Side Meters

- a) No later than the source activation date, a meter will be installed on the new water source. A meter is currently installed on each existing water source.
- b) Distribution and transfer meters are installed to measure flow at the points of entry into the water system.
- c) An irrigation well is not proposed.
- d) Hudson receives and measures its water through the following process:
 - Water enters Hudson service mains through Meter #1 from the three Litchfield Wells; through Meter #8 and #9 at Hickory Road; through Meter #10 from Taylor Falls; and through Meter #11 for the Weinstein Replacement Well
 - Water exits Hudson through PWW service mains through Meter #2 and #3 (to Litchfield)
 - Water exits Hudson through PWW service mains through Meter #4 and #5 (to Pelham)
 - Water exits Hudson through PWW service mains through Meter #6 and #7 (to Londonderry)
 - Hudson water usage is determined by the summation of the water entering through Meter #1, #8, #9, #10, #11, #12, #13 minus the summation of the water measured exiting through Meter #2, #3, #4, #5, #6, #7.
- e) Meter information for each water source and other system side meters:

METER #1	(PWW Property & Responsibility)
Location	Adams Drive Meter Pit
Meter Make	Neptune
Meter Model	Turbine (Part of Compound Meter)
Meter Size (inches)	8"
Designation	Litchfield to Hudson
Last Meter Calibration	May 2021

METER #2	(PWW Property & Responsibility)
Location	Adams Drive Meter Pit
Meter Make	Neptune
Meter Model	Turbine (Part of Compound Meter)
Meter Size (inches)	2"
Designation	Litchfield to Hudson
Last Meter Calibration	May 2021

METER #3	
Location	Adams Drive Meter Pit
Meter Make	Neptune
Meter Model	Turbine
Meter Size (inches)	8"
Designation	Hudson to Litchfield
Last Meter Calibration	May 2021

METER #4	
Location	Sullivan Road Meter Pit
Meter Make	Neptune
Meter Model	Turbine (Part of Compound Meter)
Meter Size (inches)	6"
Designation	Hudson to Pelham
Last Meter Calibration	May 2021

METER #5	
Location	Sullivan Road Meter Pit
Meter Make	Neptune
Meter Model	Turbine (Part of Compound Meter)
Meter Size (inches)	1 ½"
Designation	Hudson to Pelham
Last Meter Calibration	May 2021

METER #6	
Location	West Road Meter Pit
Meter Make	Neptune
Meter Model	Turbine (Part of Compound Meter)
Meter Size (inches)	6"
Designation	Hudson to Londonderry
Last Meter Calibration	May 2021

METER #7	
Location	West Road Meter Pit
Meter Make	Neptune
Meter Model	T-10, Positive Displacement (Part of Compound Meter)
Meter Size (inches)	2"
Designation	Hudson to Londonderry
Last Meter Calibration	May 2021

METER #8	(PWW Property & Responsibility)
Location	Hickory Road Booster
Meter Make	Neptune
Meter Model	Turbine (Part of Compound Meter)
Meter Size (inches)	6"
Designation	Litchfield to Hudson
Last Meter Calibration	May 2021

METER #9	(PWW Property & Responsibility)
Location	Hickory Road Booster
Meter Make	Neptune
Meter Model	T-10, Positive Displacement (Part of Compound Meter)
Meter Size (inches)	1"
Designation	Litchfield to Hudson
Last Meter Calibration	May 2021

METER #10	(PWW Property & Responsibility)
Location	Taylor Falls
Meter Make	Neptune
Meter Model	Turbine
Meter Size (inches)	4"
Designation	Source Water
Last Meter Calibration	May 2021

METER #11	
Location	Weinstein Well Replacement
Meter Make	Neptune
Meter Model	High Performance Turbine (HPT)
Meter Size (inches)	6"
Designation	Source Water
Last Meter Calibration	May 2021

METER #12	
Location	Dame Well (inactive)
Meter Make	Neptune
Meter Model	Turbine
Meter Size (inches)	6"
Designation	Source Water
Last Meter Calibration	May 2021

METER #13	
Location	Ducharme Well (inactive)
Meter Make	Neptune
Meter Model	High Performance Turbine (HPT)
Meter Size (inches)	4"
Designation	Source Water
Last Meter Calibration	May 2021

- f) Source meters and other system side meters will continue to be read at least monthly. Currently, the water system can get the meter readings hourly through SCADA for the meters that they own. Pennichuck also provides the meter readings daily for the transfer meters that they own.
- g) Currently, all source meters and transfer meters are flow-tested and calibrated each year in the spring (May/June).

2. Service Meter Installation, Reading, and Maintenance

- a) Service meters are already installed on all service connections, including public sector service connections and all points of transfer to consecutive water systems and privately owned redistribution systems.
- b) Summary of service meter makes, models, sizes, and dates of installation:

There are approximately 6,518 service meters. Approximately 6,200 meters are for measuring domestic use and 300 are for measuring use related to fire suppression. It's estimated that approximately 2,500 meters are outdated.

The residential customers on the system are serviced by Neptune meters ranging in size from 5/8" to 3/4". These meters have R900 endpoints. The larger customers have 1", 1.5", 2", 3", and 4" meters.
- c) Service meters are read monthly.
- d) Service meters are read by drive-by read. Despite some of the meter bodies being outdated, all of the meters have radio-read capability.
- e) It is expected it will take less than a day to read all service meters. Usually, the meters can be read in 4-5 hours.
- f) Service meters will be maintained in accordance with II.A.3.e), below.
 - (1) The town currently uses a meter replacement program which replaces approximately 400 meters per year at a minimum. Most years, 700-800 meters are replaced. This change-out structure has been in place for many years.

3. 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. Testing and calibration reports will be kept on file.

B. Water Balance and Water Audit

1. The system currently has service meters installed. The previous year’s water balance (system input volume - authorized metered consumption) is included in Appendix C and will continue to be reported to NHDES annually.
2. No later than March 1 of each year, a water balance for the previous year will be reported to NHDES using the NHDES online water balance reporting tool. The link to the electronic reporting form is located on the Water Conservation homepage of the NHDES website.
3. If the water balance calculated in II.B.1., above is more than 15% of the system input volume, the water system will prepare a water audit and response plan and submit them with the water balance.
 - a) The water audit will be completed in accordance with the “Manual of Water Supply Practices M36, Water Audits and Loss Control Programs” (AWWA, 2016).
 - b) The response plan will be based on the findings of the water audit and will identify how the water system intends to reduce the water balance to below 15% within two years.

C. Leak Detection and Repair

1. Description of the system’s leak detection program:

The system has SCADA and looks at nightly flow, tank elevation, and pressure trends in their 4 pressure zones. Their primary operator, Whitewater, has some leak detection equipment and is authorized to call a leak detection specialist to pinpoint leaks.

The system has applied to the NHDES Leak Detection Survey Grant Program several times over the last few years and plans to continue to apply in the future.
2. Non-metal pipes will either be GPS located and stored in a GIS system or equipped with detectable tracer tape or detectable tracer wire during new installation.
 - a) Pipes, hydrants, and valves in the distribution system are available on GIS.
3. Leak detection will be conducted in accordance with the “Manual of Water Supply Practices M36, Water Audits and Loss Control Programs” (AWWA, 2016).

4. Leaks will be repaired within 60 days of discovery unless a waiver is obtained in accordance with Env-Wq 2101.23.
5. 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. Pressure Management

1. The design pressures of the system are from 20 psi to 110 psi.
2. The system experiences pressures over 100 psi only in high service areas. These pressures are reduced at the affected residences through the use of pressure reducing valves (PRV) on the system service line. There is also a PRV for the connection with the Pelham system and a booster station.

III. Consumption Side Management

A. Conservation Rate Structure and Billing

1. A conservation rate structure is currently being implemented. A conservation rate structure means that customers are charged based on usage, and the rate per unit of water for residential connections is uniform (ex. \$4.00/1000 gallons of water) or increases with usage (ex. \$4.00/0-500 gallons of water, \$4.50/501-1000 gallons of water).

2. The current rate structure is as follows:

Town of Hudson follows a rate structure defined by the size of the service meter and the customer consumption volume.

1. Volume Charge:	
\$3.30 per 100 Cubic Feet	
2. Fixed Meter Size Rate:	
Meter Size:	Monthly Rate:
5/8"	\$10.69
3/4"	\$20.58
1"	\$32.21
1 ½"	\$65.49
2"	\$105.59
3"	\$205.82

4"	\$322.10
6"	\$644.19
8"	\$804.57
10"	\$911.49

3. Irrigation water is billed separately at the same rate. There are an estimated 100 total irrigation accounts.
4. Customers will continue to be billed monthly.

B. Outdoor Water Use Restrictions

1. The Town of Hudson's Water Use Restriction Bylaw follows the New Hampshire Public Utilities Commission's "Rules for Water Service."
 - a) PWW, which operates Hudson's wells, will monitor the water levels in these wells, and when water restrictions are warranted, will take the following levels of action:
 - Advisory
 - Tier 1: odd/even watering ban
 - Tier 2: watering every 4th day
 - Tier 3: total outdoor watering ban

C. Educational Outreach Initiative

1. The system will distribute water efficiency outreach materials to residents twice a year with bills. 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/>. Any outreach materials from other sources will be provided to NHDES for review.
 - a) The system will also put water efficiency tips on the Town's website and on social media.
2. The system will maintain a log indicating how the system has complied with III. C.1., above. The log will include dates the outreach and education actions were taken and what was done.

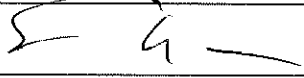
IV. Reporting and Implementation

- A. By no later than March 1 of each year, a water balance for the previous year will be submitted to NHDES using the electronic reporting form located on the Water Conservation homepage of the NHDES website (www.des.nh.gov).

- B. The water system will continue to report monthly production volumes, quarterly to the NHDES Water Use Registration and Reporting Program. Monthly means once every calendar month, but no sooner than 27 days after and no later than 33 days after the previous reading.
- C. 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.

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): STEPHEN A. Malizia

Owner Signature:  Date: 1/4/22

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
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: Town of Litchfield
- the governing board of all municipalities that receive water from the water system: Town of Hudson
- the governing board of all wholesale customers of the water system (if any): Pennichuck Water Works
- the regional planning commission serving the location of the proposed source: Nashua Regional Planning Commission

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

Appendix C
2020 Water Balance Data

Volume from Own Sources	System Input Volume	Water Exported	Billed Water Exported			Revenue Water
		Water Supplied	Authorized Consumption	Billed Authorized Consumption	Billed Metered Consumption	
Water Imported						Unbilled Authorized Consumption
		Water Losses	Apparent Losses			Errors
				Real Losses	Leakage	

2020 Totals:

System Input Volume:

$$52,460 + 49,006 + 49,285 + 51,417 + 66,852 + 112,420 + 98,847 + 98,575 + 82,029 + 61,510 + 51,778 + 49,416 = 823,595$$

Water Exported:

$$1,850 + 1,814 + 1,358 + 2,288 + 3,249 + 5,170 + 3,960 + 4,109 + 3,615 + 2,281 + 1,455 + 1,412 = 32,561$$

Billed Metered Consumption:

$$44,774 + 37,759 + 41,311 + 41,551 + 55,439 + 95,487 + 84,221 + 88,201 + 69,303 + 50,252 + 43,248 + 42,097 = 693,643$$

Water Balance:

$$\text{Water Balance} = \text{System Input Volume} - \text{Water Exported} - \text{Billed Metered Consumption} - \text{Unbilled Metered Consumption}$$

$$\text{Water Balance} = 823,595 - 32,561 - 693,643 - 0 = 97,391$$

$$\% \text{ Water Balance} = (\text{Water Balance} / \text{System Input Volume}) \times 100$$

$$\% \text{ Water Balance} = (97,391 / 823,595) \times 100 = 11.83\%$$