

June 29, 2007

John Boisvert
Pennichuck Water Works
25 Manchester Street
Merrimack, New Hampshire 03054

Fred Bickford
Hydrosource Associates
50 Winter Street
Post Office Box 609
Ashland, New Hampshire 03217

**Subject: CWS BARNSTEAD: PAC Locke Lake WS; EPA ID: 0142010
Proposed BRW 15; NHDES #998034**

Dear Mr. Boisvert & Mr. Bickford:

The purpose of this letter is to approve the Preliminary Report and Water Conservation Plan for the subject water system. These materials were submitted to meet the requirements of New Hampshire Administrative Rules Env-Ws 378 and Env-Ws 390, *Site Selection of Small Production Wells for Community Water Systems*, and *Water Conservation*.

Water Conservation:

The Water Conservation Plan is approved as submitted with revisions. The Plan shall be implemented when the new well is approved and connected to the water system. Every three years from the date of this letter the water system shall supply the New Hampshire Department of Environmental Services (NHDES) with documentation of compliance with the plan. This information shall be supplied on a form provided by NHDES and shall include contact information for the water system owner and the person responsible for carrying out the tasks of the plan, all data relating to leak detection, water use audits, and meter reading, if applicable, and the dates these tasks were performed.

Preliminary Well Siting Report Approval:

The approval of your Preliminary Well Siting Report is subject to the following conditions.

- The pumping test shall meet the pumping test requirements for bedrock wells as outlined in Env-Ws 379, *Site Selection of Large Production Wells for Community Water Systems*. This includes monitoring ambient groundwater conditions one week prior to starting the test.
- Preliminary testing indicates a hydraulic connection between BRW 15 and BRWs 13 and 14. If possible, all three wells should be run at a constant rate during the pumping test and water levels monitored in the existing wells. If it is not possible to run BRWs 13 & 14 at a constant rate during the pumping test, every effort should be made to turn the pumps off in these wells for at least 48 hours during the test.

- In the final report, provide a copy of the recorded easement for the portion of the sanitary protective area not owned by PAC.

Within 60 days of receipt of final approval for the subject well the water system must submit an emergency plan, in accordance with New Hampshire Administrative Rule Env-Ws 360.15. This plan must continue to be updated and submitted to NHDES in March once every 6 years. This regulation also requires the plan be reviewed annually by the system and updated as needed. Additionally, the plan will be a checklist item during each sanitary survey and lack of one will be a survey deficiency. Guidance documents and other emergency planning information are available on our website at: <http://www.des.state.nh.us/wseb/EmergencyPlanning/index.asp>. You may contact Johnna McKenna at **603-271-7017** or jmckenna@des.state.nh.us for more information or assistance in completing emergency planning for your water system.

A groundwater discharge permit must be obtained from NHDES prior to conducting a pumping test. Contact Mitch Locker at **271-2858** or email him at mlocker@des.state.nh.us for more information. An application form may be found online at <http://www.des.state.nh.us/orcb/doclist/temporary.pdf>.

The Department is strongly encouraging applicants developing new sources of water for community water systems to collect a water quality sample for perchlorate from each proposed new source during the withdrawal test required by the new source approval process. New Hampshire is currently developing a health standard for this constituent. Although this is not required by law or regulations at this time, the State or USEPA may adopt standards in the future, and knowing if this chemical is present in a proposed water supply may affect your approach to developing a new source of water. Other states have recently adopted varying health standards for perchlorate in drinking water. Please note that many laboratories do not conduct perchlorate analysis. To assist you in identifying a laboratory that can complete this analysis, the New Hampshire Department of Environmental Services refers you to a list of laboratories certified by Massachusetts to complete perchlorate analyses at www.mass.gov/dep/brp/dws/files/perclab.doc.

Please notify NHDES at least one business week, and preferably two, before the start of the pumping test. If you have any questions about this letter or any other well siting issues feel free to call me at **271-2947** or email me at dmorgan@des.state.nh.us.

Sincerely,

Diana W. Morgan, Professional Geologist
Drinking Water & Groundwater Bureau

Cc: Bob Mann, Derek Bennett, NHDES



25 MANCHESTER STREET
PO BOX 1947
MERRIMACK, NH 03054-1947
(603) 882-5191
FAX (603) 913-2305

WWW.PENNICHUCK.COM

May 23, 2007

Ms. Diana W. Morgan, P.G.
NH Department of Environmental Services
P.O. Box 95
29 Hazen Drive
Concord, New Hampshire 03302-0095

Re: CWS Barnstead: PAC Locke Lake WS; EPA ID: 0142010
Proposed BRW #15; NHDES #998034
Water Conservation Plan (Revised)



Dear Ms. Morgan:

This letter is in response to your letter to Mr. Fred Bickford of HydroSource Associates (HSA) of April 20, 2007. Pittsfield Aqueduct Company (PAC) is pleased to provide you with the Water Conservation Plan (WCP) required by Env-Ws 390 and Env-Ws 378 as PAC pursues new source approval of well BRW #15. Preparation of this WCP is predicated on the following:

- PAC has owned and operated the Locke Lake Water System for approximately one year. During this time, PAC has worked diligently to address acute system deficiencies as well as initiate the planning, engineering, and construction of facilities that will address the long term viability of the water system.
- It is not possible to establish an accurate quantitative baseline for water production, water use, and unaccounted for water based on the data that has been collected. Qualitatively PAC has repaired nearly one leak per week. Many of these leaks were obvious and required emergency repair. However, several were more difficult to identify but known to exist because per customer water use, based on water production at the source, was significantly higher than that found in systems similar to Locke Lake. This analysis and a significant field effort allowed PAC to locate and correct several chronic leaks within the system. Per customer use based on water production continued to drop in 2006. Unaccounted for water is likely to be high until the distribution system becomes structurally sound.
- The reliability of the existing source flow meters at the time of acquisition were suspect. PAC responded by repairing those meters and adding run time meters on the associated pumps. This provided greater confidence in our production numbers. PAC reads source meters and booster station meters on a weekly basis and maintains those readings in spreadsheet format. When flow increases beyond recent trends or is not typical for the season, PAC crews begin to search for a leak.
- The water system is fully metered. Customer meters are read monthly. Meters found to be faulty are inspected, repaired, or replaced.
- PAC will be completing significant capital upgrades in 2007 that will allow for continuous monitoring of source flow. This data will be collected and stored through a comprehensive SCADA system. The collected data will allow water use trending and

analysis. Once completed, these improvements will facilitate a more accurate analysis of system unaccounted for water.

- PAC has put forth a significant effort, by necessity for the most part, to become more water efficient over the past 12 months.

PAC would like to address the requirements of Env-Ws 390 with respect to the new source approval of BRW #15 as well as for the water system in the future. The New Hampshire Department of Environmental Services (NHDES) in previous correspondence now considers the Locke Lake water system as a "Large Community Water System". The requirements of Env-Ws 390.05 are addressed below.

PAC agrees to comply with the requirements of section Env-Ws 390.05 (a). Water meters are in place, sized, and read at the locations required by Env-Ws 390.05 (b) (c) (d) and (f). PAC maintains a meter repair/replacement program in accordance with the New Hampshire Public Utilities Commission (NHPUC) rule "Chapter Puc 600 RULES FOR WATER SERVICE". Part 605 of the rule covers meters. A copy of CHAPTER Puc 600 is attached. All meters are read monthly.

A leak detection program is ongoing at the Locke Lake System. PAC agrees to continue this leak detection program in accordance with Env-Ws 390.05 (a) through (m). Acute system leaks that result in falling storage levels or breakthrough at the ground surface, in general, are recognized and addressed immediately. To reduce chronic system leakage PAC is pursuing the following measures:

- PAC currently monitors water production at the sources. Monthly production volumes are compared to monthly billing records to identify an increase in unaccounted for water. When an increase is identified PAC crews are tasked with locating the potential leak or leaks.
- Leak locating has become more efficient due to the fact that a significant number of main leaks have allowed PAC to install additional isolation valves within the system. The practice of adding additional isolation valves will continue when it is reasonable, prudent, and cost effective to do so.
- Planned capital projects for 2007 and 2008 include water main replacement. PAC anticipates that water main replacement will be a line item in future capital budgets.

PAC does request that due to the current structural condition of the Locke Lake water system that the NHDES acknowledge that it may not be financially feasible to attain a less than 15% rate for unaccounted for water within the time periods set forth in Env-Ws 390. Initial PAC planning estimates indicate that it could take up to 20 years of systematic main replacement and service replacement to correct distribution system structural deficiencies to the point where leaks are minimized. PAC proposes to provide a summary of unaccounted for water reduction efforts one year after the activation of BRW #15 and each year after until unaccounted for water drops below 15%. The summary will include the following information:

- Monthly production volume and monthly customer volume.
- Calculation of average customer use.
- Leak repair summary including location, type of leak (main or service), flow/volume estimate of the leak.
- Valve repair/replacement/installation summary.
- Service repair/replacement summary.

- Meter repair/replacement summary.
- Annual unaccounted for water percentage and the annual unaccounted for water trend.

Pressure reduction in accordance with Env-Ws 390.04 (n) is not advisable at this time. If anything, PAC needs to increase system pressures to ensure that minimum system pressures are maintained over the range of demand from average day through peak hour.

PAC currently maintains a rate structure in accordance with Env-Ws 390.05 (o). A copy of the current rate structure and a copy of the PAC NHPUC Tariff are attached. PAC anticipates that rates will require adjustment upwards due to capital expenditures for projects completed in 2006 and 2007. The projects are necessary to comply with State and Federal drinking water regulations.

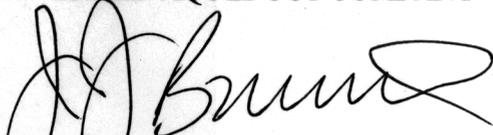
PAC will initiate a water conservation outreach initiative using materials available through the NHDES, the American Water Works Association, and Pennichuck Water. PAC through its Customer Service Department is able to prepare and distribute educational materials efficiently. Selected outreach and educational materials are distributed directly to our customers annually in a monthly bill. Examples of outreach and educational materials are attached.

All activities required by Env-Ws 390 will be under the supervision of a certified operator. PAC does not request any waivers from the requirements of Env-Ws 390 at this time. Within seven days of submitting this letter (Report) to the NHDES, PAC will forward a copy of the letter to the Barnstead Selectmen and the Lakes Region Planning Commission. There are no wholesale customers on the system and the system only serves customers in Barnstead. In addition, materials will be forwarded to governing boards in accordance with Env-Ws 390.11 (b) and (c). Copies of the cover letters are attached for review and comment.

PAC trusts that this information will allow the new source approval process for BRW #15 to proceed. Please contact our office or Mr. Fred Bickford of HydroSource Associates if you have any questions or comments.

Respectfully submitted,

PITTSFIELD AQUEDUCT COMPANY



John J. Boisvert, P.E.
Chief Engineer

Cc: Mr. Fred Bickford