



COMMONWEALTH OF MASSACHUSETTS  
EXECUTIVE OFFICE OF ENVIRONMENTAL AFFAIRS  
DEPARTMENT OF ENVIRONMENTAL PROTECTION  
Central Regional Office, 627 Main Street, Worcester, MA 01608

MITT ROMNEY  
Governor

STEPHEN R. PRITCHARD  
Secretary

KERRY HEALEY  
Lieutenant Governor

ROBERT W. GOLLEDGE, Jr.  
Commissioner

Date: March 31, 2006

Via Email and US Mail  
Gordon Newell, Superintendent  
West Groton Water Supply District  
P.O. Box 246  
Groton, MA 01450

RE: City/Town: GROTON  
PWS: West Groton Water Supply District  
WMA Permit Application: 9P2-2-11-115.01  
Program: WMA  
Action: WMA Permit  
Activity #: MassDEP Trans. # W053705

Dear Mr. Newell:

Please find the attached documents:

- Findings of Fact in Support of the Permit Decision; and
- Final Water Management Act Permit #9P2-2-11-115.01 (Nashua Basin) issued to the West Groton Water Supply District, Massachusetts.

If you have any questions regarding the Permit, please contact Duane LeVangie at (617) 292-5706 or Barbara Kickham at (508) 767-2724.

Sincerely,

Paul Anderson  
Drinking Water & Municipal Serv. Chief  
Bureau of Resource Protection

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Cc: DWP/Boston Office (without attachment)  
Duane LeVangie, DEP-Boston WMA  
Groton Board of Selectman, Town Hall, Groton, MA  
Groton Board of Health, Town Hall, Groton, MA  
Nashua River Watershed Association  
Margaret Kearns, Riverways-MA F&W  
Doug DeNatale, WGWSO Commissioner

**Communication for Non-English Speaking Parties (310 CMR 1.03(5)(a))**

English

This document is important and should be translated immediately.

Spanish

*Este documento es importante y se debe traducir inmediatamente.*

Portuguese

*Este original é importante e deve ser traduzido imediatamente.*

Italian

*Questo documento è importante e dovrebbe essere tradotto immediatamente.*

Greek

Αυτό το έγγραφο είναι σημαντικό και πρέπει να μεταφραστεί αμέσως.

French

*Ce document est important et devrait être traduit immédiatement.*

Chinese (traditional)

這個文件重要和應該立刻被翻譯。  
这个文件重要和应该立刻被翻译。



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**Findings of Fact in Support of the Permit Decision  
Water Management Permit # 9P2-2-11-115.01**

The Massachusetts Department of Environmental Protection (MassDEP or the Department) has completed its review of the West Groton Water Supply District (West Groton) Water Management Act Permit application to add a new withdrawal location for its authorized withdrawal from the Nashua River Basin. West Groton currently operates the Tubular Wellfield (Source Code ID 2115001-01G) located adjacent to the Nashua River at 309 Townsend Road. Historically, there was no back-up source to the Tubular Wellfield in the event of a water emergency. The Town Forest Well will be the primary water supply for West Groton and the Tubular Wellfield will provide a reliable back-up supply.

**West Groton Water Supply District Withdrawal History**

The West Groton Water Supply District has applied for this permit to add the Town Forest Well as a withdrawal point and is not requesting additional withdrawal volumes. West Groton is currently authorized through Water Management Act registration #2-11-115.01 to withdraw 0.27 million gallons per day (MGD). The pumping test report for the Town Forest Well has been reviewed by MassDEP and the Source Approval permit (WS 19) will be issued with the final Water Management Act permit. West Groton received a certificate from the Executive Office of Environmental Affairs (EOEA) on the Final Environmental Impact Report (EIR) dated January 27, 2006. The Section 61 Findings are included as Special Condition 11.

In response to West Groton's application for a permit to withdraw water from an additional location within the Nashua River Basin, and after reviewing the information that West Groton has provided, including the comments provided by the West Groton Water Supply District on March 22, 2006 regarding the Draft permit, MassDEP hereby approves the Water Management Act Permit #9P2-2-11-115.01 (the Permit) in accordance with the Act.

**The Water Management Act**

The Act requires that the Department issue permits that balance a variety of factors including:

- Reasonable protection of existing water uses, land values, investments and enterprises;
- Reasonable conservation consistent with efficient water use;
- Reasonable protection of public drinking water supplies, water quality, wastewater treatment capacity, waste assimilation capacity, groundwater recharge areas, navigation, hydropower resources, water-based recreation, wetland habitat, fish and wildlife, agriculture, flood plains; and
- Reasonable economic development and job creation.

This information is available in alternate format. Call Donald M. Gomes, ADA Coordinator, at 1-617-556-1057. TDD Service - 1-800-298-2207.

To better achieve the balance of competing water uses mandated by the Act, the Department has adopted the “Water Management Policy For Permit and Permit Amendment Applications and 5-Year Review, Effective Date: April 2, 2004” and the “Guidance Document for Water Management Act Permitting Policy, Effective Date: January 17, 2006”. The Policy, WMA Policy #: BRP/ DWM/DW/P04-1, and Guidance, Guidance #BRP/DWM/DW/G05-01, can be found on the Department’s web site at <http://www.mass.gov/dep/brp/wtrm/wtrmregs.htm>. The Policy and Guidance identify specific Performance Standards and conditions to be applied to new Water Management permits and to existing permits at the time they are amended, during 5-year permit review or permit renewal. The Department has applied these Performance Standards and conditions in West Groton’s permit.

### **Findings of Fact for the Performance Standards in West Groton’s Water Management Permit**

As required by MGL c 21G, s 11 and 310 CMR 36.00, the Department makes the following Findings of Fact in support of the Permit, and includes herewith its reasons for approving the Permit and for imposing the conditions of approval.

In applying the Performance Standards in Water Management permits, the Department relies primarily upon the determinations of relative stress established the Water Resources Commission’s (WRC) Stressed Basins Report approved December 13, 2001. The Department also reviews other available research, such as reports by the United States Geological Survey, the Department’s Watershed Water Quality Assessment Reports and any other pertinent reports available for specific river basins.

West Groton’s sources are located in the Nashua River Basin, which is identified as a medium stress basin to which the following Performance Standards apply:

1. Residential gallons per capita day water use (RGPCD) of 65 gallons or less;
2. Unaccounted for water (UAW) of 10% or less; and
3. Summer Limits on Withdrawals implemented through either a calendar trigger or a streamflow trigger.

The map of stressed basins can be reviewed at the following link:

<http://www.mass.gov/dep/brp/wtrm/files/stresmap.htm>.

The Performance Standards of 65 gallons per day or less for residential per capita water use and 10% or less for unaccounted for water are consistent with the WRC’s Interbasin Transfer Performance Standards and with the WRC Stressed Basins Report finding that these Performance Standards could be applied in stressed basins. The Department believes these standards are reasonable and warranted based on studies and data developed throughout the country, the use of 10% UAW in various water supply industry standards, and the fact that the average values in 2004 for Massachusetts were 67 RGPCD, and 13% UAW. In addition, while these Performance Standards represent minimum standards required for compliance with West Groton’s Permit, the Department believes that the cumulative effect of complying with all the terms and conditions of its Permit will enable West Groton to go beyond these Performance Standards for RGPCD and UAW.

The Guidance as revised on January 17, 2006 includes implementation and enforcement guidelines for permitting. It establishes:

- reasonable timelines for compliance with the Performance Standards;
- procedures and requirements for permittees that fail to document compliance with the Performance Standards within those timelines;

- some flexibility in enforcement with enforcement forbearance that the Department may employ for permittees in high and medium stress basins.

For more information on enforcement margins and forbearance, see [Guidance Document for Water Management Act Permitting Policy](#), Section II, paragraph 3 and Section III, paragraph 3.

The Department commends West Groton for its current achievement of the RGPCD and UAF performance standards set for the Nashua River Basin Performance Standards ahead of the implementation schedule outlined in the Permit. In 2004, West Groton's reported RGPCD was 50 and UAW was 1.3%. West Groton's average day demand in 2004 was 0.24 (million gallons per day) MGD, which is below its registered withdrawal volume of 0.27 MGD.

### **Findings of Fact for Specific Permit Conditions**

In issuing permits in the Nashua River Basin, the Department looked primarily at site-specific impacts and other issues specific to the system, such as impacts to nearby streams, wetlands, or other water users, justification of long-term demand projections and the capacity of permitted withdrawal points. The conditions are intended to ensure the efficient use of water and to mitigate the potential impact of withdrawals.

**Special Conditions 1, Maximum Authorized Annual Average Withdrawal Volume**, reflects the registered withdrawal volume of 0.27 MGD and no additional permitted withdrawal volume. West Groton's WMA application included a request to add a withdrawal location and did not include a request for additional withdrawal volumes. MassDEP acknowledges the concern stated in your March 22, 2006 response to the Draft WMA permit that the registered volume is not sufficient to meet growing demand. West Groton is required to file a Water Management Act permit application should you project exceeding the permitting of threshold of 0.1 MGD above the volume authorized in this permit.

**Special Condition 2, Maximum Authorized Daily Withdrawals From Each Withdrawal Point**, reflects the volume of groundwater withdrawal expressed as a daily rate for each source, according to the Department approved Zone II rates. The Permit includes the Zone II approved rate for the Town Forest Well of 0.85 MGD.

**Special Condition 3, Zone II Delineations**, requirement has been met and no further delineations are required as a condition of this Permit.

**Special Condition 4, Wellhead Protection**, discusses the Best Effort requirements necessary to meet the Wellhead Protection regulations, 310 CMR 22.21 for the Town Forest Well. This Best Effort requirement must be met prior to placing the Town Forest Well on-line.

**Special Condition 5, Wetlands and Vernal Pool Monitoring**, will be conducted on an annual basis to evaluate potential impacts to the adjacent wetlands and vernal pool. The Town Forest Well is located within the Sqannassit Area of Critical Environmental Concern and occurs within the Priority Habitat and Estimated Habitat of five rare species. The wetland and vernal pool monitoring are required as a result of comments received by the Department during the MEPA process. Concerns were raised with respect to the long term impact of the withdrawal on the aquatic life in nearby wetlands and vernal pool.

**Special Condition 6, Performance Standard for Residential Gallons Per Capita Day Water Use**, discussed previously.

**Special Condition 7, Performance Standard for Unaccounted for Water**, discussed previously.

**Special Condition 8, Summer Limits on Withdrawals**, addresses limits on nonessential outside water use from May through September. Note that this condition requires the West Groton Water Supply District to continue to implement and enforce for the summer of 2006, any restrictions on summer withdrawals that were in effect during the summer of 2005, in advance of the adoption and implementation of any new restrictions adopted in response to this condition.

**Special Condition 9, Water Conservation Requirements**, incorporates the Water Conservation Standards for the Commonwealth of Massachusetts reviewed and approved by the WRC in October 1992.

**Special Condition 10, Requirement to Report Raw and Finished Water Volumes**, ensures that the information necessary to evaluate compliance with the conditions included herein is accurately reported.

**Special Condition 11, Section 61 Findings**, are the mitigation measures required by the Final EIR. The summary of Permit conditions above as part of MassDEP's findings of fact is not intended to, and should not be construed as, modifying any of the Permit conditions. In the event of any conflict or ambiguity between this letter and the Permit, the Permit language shall control.



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**WATER WITHDRAWAL PERMIT**  
**MGL c 21G**

This permit is issued pursuant to the Massachusetts Water Management Act for the sole purpose of authorizing the withdrawal of a volume of water as stated herein and subject to the following special and general conditions. This permit conveys no right in or to any property beyond the right to withdraw the volume of water for which it is issued.

**PERMIT NUMBER:** 9P2-2-11-115.01      **RIVER BASIN:** Nashua

**PERMITTEE:** West Groton Water Supply District  
 309 Townsend Road  
 West Groton, MA 01472

**ISSUANCE DATE:** March 31, 2006

**EXPIRATION DATE:** February 28, 2014

**NUMBER OF WITHDRAWAL POINTS:** 1

Groundwater: 1

**USE:** Public Water Supply

**DAYS OF OPERATION:** 365

**LOCATION(S):**

**Table 1: Withdrawal Point Identification**

Well Name	PWS Source ID Code
Town Forest Well	2115001-0AG*

\* A final Source ID Code will be assigned when the well is constructed and MassDEP grants the approval to go on-line.

This information is available in alternate format. Call Donald M. Gomes, ADA Coordinator at 617-556-1057.

<http://www.mass.gov/dep> • Phone (508) 792-7650 • Fax (508) 792-7621 • TDD # (508) 767-2788

**SPECIAL CONDITIONS**

**1. Maximum Authorized Annual Average Withdrawal Volume**

This permit authorizes the West Groton Water Supply District (West Groton) to withdraw water from an additional location within the Nashua River Basin at the rate described below (Table 2). The volume reflected by this rate is the 0.27 million gallons per day (MGD) previously authorized to West Groton under WMA Registration #211115.02 for withdrawal from the Nashua River Basin. No additional withdrawal volume is authorized under this permit.

The Department of Environmental Protection (the Department) bases these withdrawal volumes on the raw water withdrawn from the authorized withdrawal points, and will use the raw water amount to assess compliance with the registered and permitted withdrawal volumes.

**Table 2: Authorized Withdrawal Volumes**

5-Year Periods		Total Raw Water Withdrawal Volumes			
		Permit		Permit + Registration	
		Daily Average (MGD)	Total Annual (MGY)	Daily Average (MGD)	Total Annual (MGY)
Period One Years 2-5	3/1/1994 to 2/28/1999	No permit	No permit	0.27	98.55
Period Two Years 6-10	3/1/1999 to 2/29/2004	No permit	No permit	0.27	98.55
Period Three Years 11-15	3/1/2004 to 2/28/2009	0.0	0.0	0.27	98.55
Period Four Years 16-20	3/1/2009 to 2/28/2014	0.0	0.0	0.27	98.55

**2. Maximum Authorized Daily Withdrawal Volume From Each Withdrawal Point**

Withdrawals from individual withdrawal points are not to exceed the approved maximum daily volume listed below without specific advance written approval from the Department (Table 3). The authorized maximum daily volume is the approved rate of the source. In no event shall the combined withdrawals from the individual withdrawal points (registered and permitted) exceed the withdrawal volumes authorized above in Special Condition 1.

**Table 3: Maximum Daily Withdrawal Rates**

Well Name	PWS Source ID Code	Maximum Daily Rate (MGD)
Town Forest Well	2115001-0AG	0.85

### **3. Zone of Contribution Delineations**

Department records show that the Town Forest Well (2115001-0AG) has a MassDEP approved Zone II delineation. No further Zone II work is required as a condition of this permit.

### **4. Wellhead Protection**

West Groton must comply the MassDEP's Best Effort Requirement 310 CMR 22.21(1). West Groton must request the Town of Groton to amend their Water Resource Protection District Map to cover the Zone II of the **Town Forest Well (2115001-0AG)** to fulfill the requirements of the Department's Wellhead Protection Regulations, 310 CMR 22.21(2). The Best Effort letters and any changes to the final text of the control measures must be submitted to the Wellhead Protection Program in Boston **prior to receiving approval to place the Town Forest Well in operation.**

### **5. Wetlands and Vernal Pool Monitoring**

The Town Forest Well is located within the Squannassit Area of Critical Environmental Concern (ACEC). The proposed project occurs within Priority Habitat and Estimated Habitat of five rare species listed as being of "special concern" or "threatened". These include: forcipate emerald, spotted turtle, wood turtle, triangle floater, and Blanding's turtle. Long-term vegetative and wetland hydrology monitoring as outlined in Section 7.22 of the Final Environmental Impact Report (FEIR) is required as a condition of this permit (attached as Appendix D). The observation plots selected for long-term monitoring must be approved by MassDEP prior to the start of the monitoring. Collection of baseline (pre-pumping) data will begin in 2006 and will be submitted to the Department by December 31, 2006. Annual reports as described in the FEIR must be submitted to the Department by December 31 of each year. MassDEP reserves the right to modify the monitoring plan as needed to address the impacts to sensitive receptors.

An obligate vernal pool species (fairy sprimp) was observed by MassDEP and Riverways Program staff in the wetlands between the well and railroad track on May 6, 2005. West Groton must officially certify the vernal pool in order to ensure that the wetlands monitoring plan is designed with consideration of the life cycles that are present.

In the FEIR the proponent committed to the completion of an optimization study of the withdrawal rates of the supply wells to minimize environmental impacts to the wetlands. During the summer months when water demand is high and water levels in wetlands are low the optimization study may be used to balance environmental impacts against user demands.

### **6. Performance Standard for Residential Gallons Per Capita Day Water Use**

West Groton's Performance Standard for Residential Gallons Per Capita Day (RGPCD) is 65 gallons. West Groton shall be in compliance with the Performance Standard by December 31, 2008. West Groton shall report its RGPCD water use annually in its Annual Statistical Report (ASR) and document compliance with this Performance Standard in its ASR for 2008 and each year thereafter.

West Groton shall report its RGPCD and the calculation used to derive that figure as part of its ASR including, without limitation, the source of the data used to establish the service population and the year in which this data was developed.

See Appendix A for additional information on the requirements if the Performance Standard for RGPCD is not met.

**7. Performance Standard for Unaccounted for Water**

West Groton's Performance Standard for Unaccounted for Water (UAW) is 10% of overall water withdrawal. West Groton shall be in compliance with the Performance Standard by December 31, 2008. West Groton shall report its UAW annually in its Annual Statistical Report (ASR) and document compliance with this Performance Standard in its ASR for 2008 and each year thereafter.

West Groton shall report its UAW and the calculation used to derive that figure as part of its ASR. UAW is defined as the difference between water pumped or purchased and water that is metered or confidently estimated. UAW shall include, without limitation, water that cannot be accounted for due to meter problems, unauthorized hydrant openings, unavoidable leakage, recoverable leakage, illegal connections, stand pipe overflows, and fire protection where it cannot be confidently estimated. The need for water main flushing and the use of water in construction or meter calibration shall be metered or estimated as appropriate to assist in determining actual demand. Volumes flushed to waste shall be reported on West Groton's ASR.

See Appendix B for additional information on requirements if the Performance Standard for UAW is not met.

**8. Summer Limits on Withdrawals**

Nothing in this permit shall prevent West Groton from implementing water use restrictions stricter than those set forth in Options 1 and 2. West Groton shall limit summer water withdrawals by implementing one of the following two options (Table 4).

**Table 4: Options for Summer Limits on Withdrawals**

<b><u>Option 1: Calendar Trigger</u></b>	<b><u>Option 2: Stream Flow Trigger</u></b>
<p>At a minimum, implement the following restrictions on nonessential outdoor water use between May 1<sup>st</sup> and September 30<sup>th</sup>.</p> <ul style="list-style-type: none"> <li>• No nonessential outdoor water use allowed, except that sprinklers may be used for lawn watering outside the hours of 9 AM to 5 PM up to <b>two (2)</b> days per week.</li> <li>• Upon the declaration of a drought level of “Watch” (or higher drought designation) by the Massachusetts Drought Management Task Force for the region in which West Groton’s withdrawal source(s) is located*, the restrictions set forth in Option 2 must be implemented and remain in place until the drought level is returned to “Advisory” or “Normal”.</li> </ul>	<p>At a minimum, implement the following restrictions on nonessential outdoor water use whenever stream flow falls below a mean daily streamflow of 0.50 cubic feet per second per square mile (cfsm) for <b>three (3)</b> consecutive days between May 1<sup>st</sup> and September 30<sup>th</sup>. Stream flow shall be measured at the USGS Squannacook River Gauge Station at West Groton #01096000 (West Groton Gauge)**. At the West Groton Gauge, 0.50 cfsm is equal to 31.85 cubic feet per second (cfs).</p> <ul style="list-style-type: none"> <li>• No nonessential outdoor water use allowed, except that sprinklers may be used for lawn watering outside the hours of 9 AM to 5 PM <b>one (1)</b> day per week.</li> <li>• Once implemented, the restrictions shall remain in place until streamflow at the West Groton Gauge meets or exceeds 0.50 cfsm (31.85 cfs) for <b>seven (7)</b> consecutive days.</li> </ul>

\*This information is available at <http://www.mass.gov/dcr/waterSupply/rainfall/drought.htm>.

\*\*Gauge readings can be accessed at <http://waterdata.usgs.gov/ma/nwis/current/?type=flow>. See Appendix C for more detailed instructions on accessing mean daily streamflows for the West Groton Gauge.

As used herein, “nonessential outdoor water use” includes uses that are not required:

- (a) for health or safety reasons;
- (b) by regulation;
- (c) for the production of food and fiber;
- (d) for the maintenance of livestock; or
- (e) to meet the core functions of a business.

For additional guidance on nonessential outdoor water use, see Appendix C.

West Groton shall choose either Option 1 or Option 2 above, and implement and enforce the required restrictions starting no later than May 1, 2007<sup>1</sup>

West Groton shall document its compliance with the summer limits on withdrawal requirements annually in its ASR for 2007, and each year thereafter.

<sup>1</sup> West Groton shall continue to implement and enforce any restrictions on summer use that were in effect during 2005 until those restrictions are superseded by the restrictions adopted in accordance with this permit.

### **Option 1: Calendar Trigger**

If West Groton chooses **Option 1: Calendar Trigger**, then West Groton shall notify its customers of the need to adhere to restrictions as applicable on or before May 1, 2007. Notice must include:

- The need to limit water use, especially nonessential outside water use, to protect streamflow for aquatic life and to ensure a sustainable drinking water supply;
- Ways individual homeowners can limit water use, especially nonessential outdoor water use;
- A detailed description of the restrictions and penalties for violating the restrictions.

Notice that restrictions have been put in place shall be filed each year with MassDEP within 14 days of the restriction's effective date. Filing shall be in writing on the Water Use Restrictions Form at <http://www.mass.gov/dep/water/approvals/wmgforms.htm#conserve>.

### **Option 2: Stream Flow Trigger**

If West Groton chooses **Option 2: Stream Flow Trigger**, when streamflow falls below 0.50 cfs (31.85 cfs at the West Groton Gauge) for three (3) consecutive days, West Groton shall notify its customers as soon as possible, and in any event no more than three days after implementation, of the restrictions and the consequences for failing to adhere to the restrictions. Notice must include:

- the streamflow value triggering the required notification;
- the need to limit water use, especially nonessential outdoor water use, to protect streamflow for aquatic life and to ensure a sustainable drinking water supply;
- ways individual homeowners can limit water use, especially nonessential outdoor water use;
- a detailed description of the restrictions and penalties for violating the restrictions.

Notice that restrictions have been put in place shall be filed with MassDEP within 14 days of the restriction's effective date. Filing shall be in writing on the Water Use Restrictions Form at <http://www.mass.gov/dep/water/approvals/wmgforms.htm#conserve>.

Notice to customers and MassDEP need not be provided if West Groton has already implemented water use restrictions that conform to the applicable restrictions and those restrictions are still in force.

Should the reliability of flow measurement at the West Groton Gauge Station be so impaired as to question its accuracy, West Groton may request the Department's review and approval for the trigger mechanism to be transferred to another gauge. The Department reserves the right to require use of a different gauge.

## **9. Water Conservation Requirements**

At a minimum, West Groton shall implement the following conservation measures forthwith and shall be in compliance with these measures on or before the next 5 Year Review of this permit. The Department recognizes that West Groton is currently meeting a number of these requirements. Compliance with the water conservation requirements will be reported to the Department upon request or at the time of Permit Renewal unless otherwise noted below.

**Table 5: Minimum Water Conservation Requirements**

<b>System Water Audits and Leak Detection</b>	
1.	At a minimum, conduct a full leak detection survey every three years. The first full leak detection survey shall be completed no later than December 31, 2007.
2.	Perform a leak detection survey of the entire distribution system within one year whenever the percentage of unaccounted for water increases by 5% or more (for example an increase from 3% to 8%) over the percentage reported on the ASR for the prior calendar year. Within 60 days of completing the leak detection survey, West Groton shall submit to the Department for its review a report detailing the leak detection survey, any leaks uncovered as a result of the survey or otherwise, dates of repair and the estimated water savings as a result of the repairs.
3.	Conduct field surveys for leaks and repair programs in accordance with the <u>AWWA Manual 36</u> .
4.	<p>West Groton shall have repair reports available for inspection by the Department. West Groton shall establish a schedule for repairing leaks that is at least as stringent as the following:</p> <ul style="list-style-type: none"> <li>- Leaks of three (3) gallons per minute or more shall be repaired as soon as possible and in any event no more than three (3) months after detection.</li> <li>- Leaks of less than three (3) gallons per minute at hydrants and appurtenances shall be repaired as soon as possible.</li> <li>- Leaks of less than three (3) gallons per minute shall be repaired in a timely manner, but in no event more than six (6) months from detection, except that leaks in freeway, arterial or collector roadways shall be repaired when other road work is being performed on the roadway.</li> </ul> <p>Leaks shall be repaired in accordance with West Groton’s priority schedule including leaks up to the service meter. However, in the event that the landowner is unwilling or unable to repair leaks between the property line and the service meter in accordance with West Groton’s schedule, West Groton shall repair such leaks within seven (7) days of obtaining either: (1) the written consent of the landowner; or (2) a warrant authorizing access to the property to make the necessary repair. West Groton shall exercise best efforts to obtain the written consent of the landowner or a warrant authorizing access to the property to make the necessary repair.</p>
5.	<p>Currently, West Groton does not have a filtration system or water filtration facility. If a filtration system is required in the future, the following requirement will be in effect.</p> <p>If the difference between the quantity of the raw water entering each treatment plant and the quantity of the finished water entering the distribution system from each treatment plant exceeds 5%, West Groton shall submit to the Department for its review and approval a scope of work and schedule for conducting a water audit of the treatment plant by December 31<sup>st</sup> of the year following the exceedance. The scope of work for the water audit shall provide for a comprehensive evaluation of the operations of the treatment plant and include a schedule for completing the evaluation. West Groton shall conduct the water audit in accordance with the scope of work and schedule approved by the Department. Within 60 days of completing the water audit of the treatment plant, West Groton shall submit to the Department for its approval a report documenting the results of the water audit, the recommended actions to save water during the treatment process, and the schedule for implementing the recommended actions. West Groton shall implement such actions as approved by the Department and in accordance with the schedule approved by the Department.</p>
<b>Metering</b>	
1.	Calibrate all source and finished water meters at least annually and report date of calibration on the ASR.
2.	100% of the West Groton system must be metered by June 30, 2007. By that date, West Groton will have metered four publicly owned buildings and two churches not currently metered. All water distribution system users shall have properly sized service lines and meters that meet AWWA calibration and accuracy performance standards as set forth in <u>AWWA Manual M6 – Water Meters</u> .
3.	West Groton reports an ongoing program to inspect individual service meters to ensure that all service

**Table 5: Minimum Water Conservation Requirements**

meters accurately measure the volume of water used by your customers. The metering program shall include regular meter maintenance, including testing, calibration, repair, replacement and checks for tampering to identify and correct illegal connections. The plan shall continue to include placement of sufficient funds in West Groton’s annual water budget to calibrate, repair, or replace meters as necessary.

**Pricing**

1. West Groton must continue to implement a water pricing structure that includes the full cost of operating the water supply system. Evaluate rates every three to five years and adjust costs as needed. Full cost pricing factors all costs - operations, maintenance, capital, and indirect costs (environmental impacts, watershed protection) - into prices.
2. West Groton shall not use decreasing block rates. Decreasing block rates which charge lower prices as water use increases during the billing period, are not allowed by M.G.L. Chapter 40: Section 39L.

**Residential and Public Sector Conservation**

1. West Groton shall meet the standards set forth in the Federal Energy Policy Act, 1992 and the Massachusetts Plumbing Code.
2. Meter or estimate water used by contractors using fire hydrants for pipe flushing and construction.
3. Municipal buildings
  - By January 1, 2007, submit to the Department a status report detailing which municipally owned public buildings in the West Groton Water District’s service area have been retrofitted with water saving devices (faucet aerators, low flow shower heads and low flow toilets) and which of those buildings have yet to be retrofitted, along with a schedule to complete the retrofitting by January 1, 2008.
  - On or before January 1, 2008, West Groton Water District shall ensure that all the municipally owned public buildings in their service area are retrofit, or demonstrate to the Department’s satisfaction that a “Best Effort” was made by the Water Supply District to get the Town to make those retrofits. By January 1, 2008, the Water District shall also notify the Department in writing on the status of completing this condition.
  - Note municipally owned public buildings that may be scheduled for rehabilitation or demolition after the January 1, 2008 deadline for completing the retrofits, may with the Department’s approval, be exempted from this condition based on the schedule of work. Status report required above should identify those buildings and schedule for repairs/demolition.

**Industrial and Commercial Water Conservation**

1. West Groton shall review the use records for its industrial, commercial and institutional water users and develop an inventory of the largest water users. West Groton shall develop and implement an outreach program designed to inform and (where appropriate) work with its largest industrial, commercial and institutional water users on ways to reduce their water use by the next permit renewal (March 1, 2009). Such outreach plans can include, but are not limited to: information on water audits, meter sizing, water reuse, low-flow plumbing fixtures, mandatory outdoor water use restrictions, suggestions for contacting trade associations for process specific information on water use reductions, and information on contacting the Executive Office of Environmental Affairs Office of Technical Assistance for Toxics Use Reduction (OTA) which offers a range of assistance and information to help facilities improve water use efficiency and reduce wastewater discharge. OTA can be contacted at (617) 626-1060 or at [www.mass.gov/envir/ota](http://www.mass.gov/envir/ota).
2. Upon request by the Department, West Groton shall report on industrial, commercial and institutional water conservation including the results of its review of water use records for industrial, commercial and institutional water users, the inventory of the largest water users, copies of any outreach materials distributed to industrial, commercial and institutional water users, and to the extent practical, a summary of water use reductions or savings that have resulted. Upon receipt of this report, the Department will take whatever action it deems appropriate to promote the interests of the Water Management Act, including without limitation requiring the Town to take additional actions to reduce

<b>Table 5: Minimum Water Conservation Requirements</b>	
industrial, commercial and institutional water use.	
<b>Lawn and Landscape</b>	
1. Adopt a water use restriction bylaw, ordinance or regulation by May 1, 2007, to provide authority to implement and enforce water use restrictions required by Special Condition #8.	
<b>Public Education and Outreach</b>	
1. Develop and implement a Water Conservation Education Plan. West Groton's Water Conservation Education Plan shall be designed to educate West Groton's water customers of ways to conserve water. Without limitation, West Groton's plan may include the following actions: <ul style="list-style-type: none"> <li>• Include in bill stuffers and/or bills, a work sheet to enable customers to track water use and conservation efforts and estimate the dollar savings;</li> <li>• Public space advertising/media stories on successes (and failures);</li> <li>• Conservation information centers perhaps run jointly with electric or gas company;</li> <li>• Speakers for community organizations;</li> <li>• Public service announcements; radio/T.V./audio-visual presentations;</li> <li>• Joint advertising with hardware stores to promote conservation devices;</li> <li>• Use of civic and professional organization resources;</li> <li>• Special events such as Conservation Fairs;</li> <li>• Develop materials that are targeted to schools with media that appeals to children, including materials on water resource projects and field trips; and</li> <li>• Make multilingual materials available as needed.</li> </ul>	
2. Upon request of the Department, West Groton shall report on its public education and outreach effort, including a summary of activities developed for specific target audiences, any events or activities sponsored to promote water conservation and copies of written materials.	

**10. Requirement to Report Raw and Finished Water Volumes**

West Groton does not currently have a filtration treatment system. Should treatment be added to the system, West Groton shall report on the ASR both the raw water volumes and finished water volumes for the entire water system. Raw water volumes shall also be reported for individual water withdrawal points.

**11. Section 61 Findings**

West Groton is required to comply with the mitigation measures as addressed in the Final EIR and summarized in the Section 61 Findings. A copy of the Section 61 Findings is attached to this Permit.

**GENERAL PERMIT CONDITIONS (applicable to all permittees)**

No withdrawal in excess of 100,000 gallons per day over the registered volume (if any) shall be made following the expiration of this permit, unless before that date the Department has received a renewal permit application pursuant to 310 CMR 36.00.

1. **Duty to Comply** The permittee shall comply at all times with the terms and conditions of this permit, the Act and all applicable State and Federal statutes and regulations.
2. **Operation and Maintenance** The permittee shall at all times properly operate and maintain all facilities and equipment installed or used to withdraw up to the authorized volume so as not to impair the purposes and interests of the Act.
3. **Entry and Inspections** The permittee or the permittee's agent shall allow personnel or authorized agents or employees of the Department to enter and examine any property for the purpose of determining compliance with this permit, the Act or the regulations published pursuant thereto, upon presentation of proper identification and an oral statement of purpose.
4. **Water Emergency** Withdrawal volumes authorized by this permit are subject to restriction in any water emergency declared by the Department pursuant to MGL c 21G ss 15-17, MGL c 150 ss 111, or any other enabling authority.
5. **Transfer of Permits** This permit shall not be transferred in whole or in part unless and until the Department approves such transfer in writing, pursuant to a transfer application on forms provided by the Department requesting such approval and received by the Department at least thirty (30) days before the effective date of the proposed transfer. No transfer application shall be deemed filed unless it is accompanied by the applicable transfer fee established by 310 CMR 36.37.
6. **Duty to Report** The permittee shall submit annually, on a form provided by the Department, a certified statement of the withdrawal, such report to be received by the Department by the date specified on the form each year. Such report must be mailed or hand delivered to:

Department of Environmental Protection  
Drinking Water Program  
Water Management Program  
One Winter Street, 6 th Floor  
Boston, MA 02108

7. **Duty to Maintain Records** The permittee shall be responsible for maintaining daily withdrawal records.
8. **Metering** All withdrawal points included within the permit shall be metered within one year of the date of issuance of the permit. Meters shall be maintained and replaced as necessary to ensure the accuracy of the withdrawal records.

**APPEAL RIGHTS AND TIME LIMITS**

This permit is a decision of the Department. Any person aggrieved by this decision may request an adjudicatory hearing. Any such request must be made in writing, by certified mail and received by the

Department within twenty-one (21) days of the date of receipt of this permit. No request for an appeal of this permit shall be validly filed unless a copy of the request is sent by certified mail, or delivered by hand to the local water resources management official in the city or town in which the withdrawal point is located; and for any person appealing this decision, who is not the applicant, unless such person notifies the permit applicant of the appeal in writing by certified mail or by hand within five (5) days of mailing the appeal to the Department.

#### **CONTENTS OF HEARING REQUEST**

310 CMR 1.01(6)(b) requires the request to include a clear and concise statement of the facts which are the grounds for the request and the relief sought. In addition, the request must include a statement of the reasons why the decision of the Department is not consistent with applicable rules and regulations, and for any person appealing this decision who is not the applicant, a clear and concise statement of how that person is aggrieved by the issuance of this permit.

#### **FILING FEE AND ADDRESS**

The hearing request, together with a valid check, payable to the Commonwealth of Massachusetts in the amount of \$100 must be mailed to:

Commonwealth of Massachusetts  
Department of Environmental Protection  
P.O. Box 4062  
Boston, Ma. 02211

The request shall be dismissed if the filing fee is not paid, unless the appellant is exempt or granted a waiver as described below.

#### **EXEMPTIONS**

The filing fee is not required if the appellant is a city or town (or municipal agency), county, district of the Commonwealth of Massachusetts, or a municipal housing authority.

#### **WAIVER**

The Department may waive the adjudicatory hearing filing fee for any person who demonstrates to the satisfaction of the Department that the fee will create an undue financial hardship. A person, seeking a waiver must file, together with the hearing request, an affidavit setting forth the facts which support the claim of undue hardship.

## Appendix A – Residential Gallons Per Capita Day

### **I. Compliance Plan Requirement**

If West Groton fails to document compliance with the RGPCD Performance Standard in its 2008 ASR, or in any ASR thereafter, then West Groton must file with that ASR a Residential Gallons Per Capita Day Compliance Plan (RGPCD Plan) which shall:

- a. meet the requirement set forth below in Section II;
- b. include measures to be implemented to meet the Performance Standard); and
- c. include the schedule for implementing such measures.

The filing of a RGPCD Plan shall not constitute a return to compliance, nor shall it affect the Department's authority to take action in response to West Groton's failure to meet the Performance Standard.

If a RGPCD Plan is required, West Groton must:

- a. submit information and supporting documentation sufficient to demonstrate compliance with its RGPCD Plan annually at the time it files its ASR; and
- b. continue to implement the RGPCD Plan until it complies with the Performance Standard and such compliance is documented in West Groton's ASR for the calendar year in which the standard is met.

### **II. Contents of a Residential Gallons Per Capita Day Compliance Plan**

At a minimum, all RGPCD Compliance Plans must include a detailed:

- a. description of the actions taken during the prior calendar year to meet the Performance Standard;
- b. analysis of the cause of the failure to meet the Performance Standard;
- c. description and schedule of the actions that will be taken to meet the Performance Standard; and
- d. analysis of how the actions described in c. will address the specific circumstances that resulted in the failure to meet the Performance Standard.

RGPCD Plans may be amended to revise the actions that will be taken to meet the Performance Standard. Amended RGPCD Plans must include the information set forth in paragraph above.

At a minimum, all RGPCD Plans for failure to meet the RGPCD Performance Standard must include implementation of at least one of the following residential conservation programs:

- a. a program that provides water saving devices such as faucet aerators and low flow shower heads at cost;
- b. a program that provides rebates or other incentives for the purchase of low water use appliances (washing machines, dishwashers, and toilets); or
- c. the adoption and enforcement of an ordinance, bylaw or regulation to require the installation of moisture sensors or similar climate related control technology on all automatic irrigation systems.

If West Groton is already implementing one or more of these programs, it must include in its RGPCD Plan the continued implementation of such program(s), as well as implementation of at least one

additional program. All programs must include a public information component designed to inform customers of the program and to encourage participation in the program.

Without limitation, RGPCD Plans for failure to meet the RGPCD Performance Standard may include the following actions in addition to those outlined in the paragraph above:

- a. the use of an increasing block water rate or a seasonal water rate structure as a tool to encourage water conservation;
- b. a program that provides rebates or other incentives for the installation of moisture sensors or similar climate related control technology on automatic irrigation systems;
- c. the adoption and enforcement of an ordinance, bylaw or regulation to require that all new construction include water saving devices and low water use appliances;
- d. the adoption and enforcement of an ordinance, bylaw or regulation to require that all new construction minimize lawn area and/or irrigated lawn area, maximize the use of drought resistant landscaping, and maximize the use of top soil with a high water retention rate;
- e. the implementation of a program to encourage the use of cisterns or rain barrels for outside watering; and
- f. the implementation of monthly or quarterly billing.

## Appendix B – Unaccounted for Water

### **I. Compliance Plan Requirement**

If West Groton fails to document compliance with the UAW Performance Standard in its 2008 ASR, or in any ASR thereafter, then West Groton must file with that ASR an Unaccounted for Water Compliance Plan (UAW Plan) which shall:

- a. meet the requirements set forth below in Section II;
- b. include measures to be implemented to meet the Performance Standard; and
- c. include the schedule for implementing such measures.

The filing of a UAW Plan shall not constitute a return to compliance, nor shall it affect the Department's authority to take action in response to West Groton's failure to meet the Performance Standard.

If a UAW Plan is required, West Groton must:

- a. submit information and supporting documentation sufficient to demonstrate compliance with its UAW Plan annually at the time it files its ASR; and
- b. continue to implement the UAW Plan until it complies with the Performance Standard and such compliance is documented in West Groton's ASR for the calendar year in which the standard is met.

### **II. Contents of an Unaccounted for Water Compliance Plan**

West Groton has the choice to file a UAW Plan with measures tailored to the specific needs of its water supply system (Individualized UAW Plan) or a UAW Plan that includes Best Management Practices (BMP UAW Plan).

At a minimum, all UAW Plans must include a detailed:

- a. description of the actions taken during the prior calendar year to meet the applicable Performance Standard;
- b. analysis of the cause of the failure to meet the Performance Standard;
- c. description and schedule of the actions that will be taken to meet the Performance Standard; and
- d. analysis of how the actions described in c. will address the specific circumstances that resulted in the failure to meet the Performance Standard.

UAW Plans may be amended to revise the actions that will be taken to meet the Performance Standard. Amended UAW Plans must include the information set forth in the paragraph above.

#### Individualized UAW Compliance Plan

Without limitation, Individualized UAW Compliance Plans for failure to meet the UAW Performance Standard may include any of the actions set forth in the BMP UAW Compliance Plan below.

#### BMP UAW Compliance Plan

At a minimum, all BMP UAW Plans for failure to meet the UAW Performance Standard must include all of the following actions:

- a. within one year of filing the UAW Plan, complete a water audit and leak detection survey of the entire system and submit completed audit and survey to the Department; within one year of completing the audit and leak detection survey, conduct sufficient repairs to reduce by 75% (by water volume) all leaks detected in the survey; and within one year of completing such repairs, conduct

additional repairs of leaks detected in the survey as may be necessary to reduce permittee's UAW to 10% or less;

b. implementation of a program that ensures the inspection and evaluation of all water meters and, as appropriate, the repair, replacement and calibration of water meters in accordance with the following schedule:

- Large Meters (2" or greater) - within one year of filing the BMP UAW Plan
- Medium Meters (1" or greater and less than 2") - within two years of filing the BMP UAW Plan
- Small Meters (less than 1") - by the next permit review (February 28, 2009);

c. implementation of monthly or quarterly billing by the next permit renewal (February 28, 2009); and

d. within one year of filing the UAW Plan, implementation of a water pricing structure that achieves sufficient revenues to pay the full cost of operating the system including, without limitation, the costs of repairs under paragraph a., the costs of meter repairs, replacements and calibrations under paragraph b., the costs of employees and equipment, and ongoing maintenance and capital costs.

## Appendix C – Summer Limits on Withdrawals

### I. Nonessential Outdoor Water Use

As stated in Special Condition 8 in Water Management Act permits, “nonessential outdoor water use” includes uses that are not required:

- a. for health or safety reasons;
- b. by regulation;
- c. for the production of food and fiber;
- d. for the maintenance of livestock; or
- e. to meet the core functions of a business.

Examples of **nonessential** outdoor water uses include:

- irrigation of lawns,
  - except by means of a hand-held hose outside the hours of 9AM and 5PM;
- washing of vehicles other than by means of a commercial car wash,
  - except as necessary for operator safety; and
- washing of exterior building surfaces, parking lots, driveways or sidewalks,
  - except as necessary to apply paint, preservatives, stucco, pavement or cement.

Examples of **acceptable** outdoor water uses outside the hours of 9 AM and 5 PM include:

- irrigation to establish a new lawn during the months of May and September;
- irrigation for the production of food and fiber or the maintenance of livestock;
- irrigation by plant nurseries as necessary to maintain stock;
- irrigation by golf courses as necessary to maintain tees and greens only; and
- irrigation of public parks and recreational fields.

### II. Accessing Mean Daily Streamflows for the West Groton Gauge Via the USGS Website

The USGS Streamflow website default shows Massachusetts streamflows in real time, i.e., the most recent periodic, usually quarter hour, readings made at each USGS stream gauge. This real-time data can vary widely over the course of a day and is not used to trigger the Water Management Permit Summer Limits on Withdrawals.

To trigger the Summer Limits on Withdrawals, the Department relies on the mean daily streamflows. The mean daily cannot be calculated until after midnight each day when USGS computes the hourly data into a mean daily streamflow.

To find the mean daily streamflow at the West Groton Gauge:

1. Go to <http://waterdata.usgs.gov/ma/nwis/current/?type=flow> and scroll down to the Merrimack River Basin listings. Click on 0109600 Squannacook River at West Groton, MA;
2. The “Available data for this site” box at the top of the page will indicate “Real-time”. Use the drop down menu arrow in the box and click on “Recent daily”;
3. Scroll down to the “Available Parameters/Output format/Days” table. In the “Output format” column use the drop down menu arrow and click on “Table”, then click on “get data”;
4. Scroll down to the “Date/Streamflow/Precipitation” table. The column labeled “Streamflow (ft<sup>3</sup>/s) (DD02) (Mean)” shows recent mean daily streamflow values in cfs for the West Groton Gauge.

## **Appendix D – Wetland and Vernal Pool Monitoring**

West Groton Final Environmental Impact Report

Prepared by Dufresne-Henry, Inc.

### 7.2.2 LONG-TERM VEGETATION AND WETLAND HYDROLOGY MONITORING

To document the occurrence of any changes to the wetland species composition and structure, two vegetation monitoring plots will be established within the wetland near the production well to document baseline vegetation conditions and to monitor any changes in wetland characteristics due to the pumping of groundwater. The principal criteria for the selection of the monitoring plots are listed below. These criteria have been developed in coordination with the Massachusetts Department of Environmental Protection for wetland monitoring at more than 12 other public water supply wellfields. The monitoring has typically been completed over a five year period, after which the requirements have been dropped from the permit.

- Plots should be located within the zone of influence of the wells under normal pumping conditions.
- Plots should be located entirely within a wetland to avoid sampling upland vegetation. This requires that plot centers be located at least 30 feet from a wetland boundary (because the canopy layer sampling radius is 30 feet).
- The number and spacing of the monitoring plots should correspond with each of the production wells so correlations between groundwater level changes and vegetation fluctuations will be accurate.
- The wetland plots should be centered in the dominant cover type, and should avoid the canopy layer of the wetland/upland fringe. This will allow for the monitoring of the influx and growth of tree seedlings/saplings which could ultimately be responsible for changing the wetland community structure.
- The herbaceous stratum should be sampled within a 15-foot radius plot since it is the herbaceous species which can react quickly to changes in hydrology.
- The sampling should be conducted during the growing season, and successive sampling events should be completed on or about the same date in order to avoid the effects of seasonal changes on vegetation.

Based upon these criteria, two observation plots will be established the summer before the well goes online to obtain one year of baseline vegetation data for the wellfield (summer 2006). The plot centers shall be marked with iron bars, and surveyed onto the project base plan. They will be located in the wetland immediately south of the proposed well since this is the only wetland that was within the impact radius as determined by the monitoring of groundwater wells during the pump test.

Wetland species, particularly herbaceous species categorized by an obligate wetland indicator status, are expected to quickly respond to any reduction in soil moisture. A net change from obligate and facultative-wetland indicator species within the herbaceous stratum to facultative and facultative-upland species over three years may indicate a possible hydrological impact on the wetland due to the pumping of groundwater. However, since abnormal weather conditions such as drought or flooding can also affect vegetation conditions, it may take several years before vegetation trends that are the result of either weather patterns or groundwater pumping could be determined. Recent precipitation data for the Groton regional area will be collected and included in any future reports.

Vegetation data will be collected at each observation plot within two concentric circles of 15-foot and 30-foot radii. Measurements of basal area or percent cover of foliage/branches will be used to identify dominant species in each stratum as directed by both state and federal wetland delineation methodologies, a detailed explanation of which can be found/ in the Federal Manual for Identifying and Delineation Jurisdictional Wetlands (1987). The edge of each of the concentric circles will be marked with surveyor's flagging so that the same sampling limits are used for each successive sampling period.

The diameter of each tree within the 30-foot radius circle will be measured and used to calculate basal area. Within the 15-foot radius circle, the percent cover of each species in the sapling, shrub and herbaceous strata will be estimated. The percent dominance of each species in each vegetative stratum will then be calculated using the methods described in the Federal Manual. Typically, the herbaceous stratum is evaluated within a 5-foot radius circle; however, since it is this stratum which will provide the fastest response to the impacts of the groundwater pumping, the size of the sample area will be increased to a 15-foot radius circle. These data will be collected once a year for five years. The discussion section of each report will focus on any changes in species composition, and will also discuss changes in community structure such as the loss/gain of tree saplings in each plot.

The results of the sampling at each observation will be reported on the Department of Environmental Protection Field Data Forms. Each form will be marked with the observation plot number and the sampling results will be separated into the various vegetative strata. In addition, photographs will be taken at each observation plot to record the conditions at the time of the sampling. Photographs for future reports should be taken from the same angle and distance as those collected for the baseline report, so that an accurate visual comparison can be made.

During the same period, surface and groundwater level monitoring of the wetland to the south of the well will also be conducted. An existing piezometer in the wetland near the well (P1/SG1 as shown on the plan in *DEIR Appendix 3*) will be fitted with a water level data logger (Mini-troll by In-Situ, Inc.) to obtain constant groundwater readings in the wetland from June 1<sup>st</sup> through November 15<sup>th</sup> of each monitoring year. Additionally, a surface water level staff gauge will be installed adjacent to the piezometer and calibrated to the topographical baseline used to develop the plan set. The surface water levels will be obtained twice per week from June 1<sup>st</sup> through November 15<sup>th</sup>. During this same period, rainfall data and well pumping data will be obtained. These data will all be included in the annual report to the DEP during the five year monitoring period. A copy of each report will also be provided to the Groton Conservation Commission.

Where wetland impacts are determined to result from the well pumping based on the collected data, the West Groton Water District will work with the DEP to identify measures to reduce or eliminate the impact. Measured impacts will be considered in optimizing the use of the site 18 well and the existing tubular wellfield. Each annual report will contain a conclusions section that provides an analysis of the data and determines whether wetland impacts have occurred and whether there is a direct correlation between the impacts and the well usage.