

**ANNUAL REPORT TO THE LEGISLATURE OF THE
TECHNICAL ADVISORY COMMITTEE
Established by Act 133 of the 2001 Adjourned Session**

**REGARDING OVERSIGHT AND IMPLEMENTATION OF THE
WASTEWATER SYSTEM AND POTABLE WATER SUPPLY
RULES**

January 15, 2012

Submitted by: 
Roger Thompson, Jr.

For Members of the Act 133 Technical Advisory Committee:

Gail Center, VT Health Department
Kim Greenwood, Water Quality Specialist
Spencer Harris, Licensed Designer
Bruce Douglas, P.E., Licensed Designer, Hydrogeologist
Craig Heindel, Hydrogeologist
Don Woods, P.E., Licensed Designer
Phil Deckert, Town Official
Rodney Pingree, Section Chief, Drinking Water and Groundwater Protection Division
Stephen Revell, Licensed Designer, Hydrogeologist
Roger Thompson, Licensed Designer
Claude Chevalier, Licensed Well Driller
Justin Willis, Licensed Designer
Denise Johnson-Terk, Licensed Designer, Town Official
Jeff Fehrs, DEC, Underground Injection Control Program
Christine Thompson, DEC, Director, Drinking Water and Groundwater Protection Division
Ernie Christianson, Regional Office Manager, Drinking Water and Groundwater Protection Div.

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TABLE OF CONTENTS

<u>ITEM</u>	<u>PAGE</u>
Purpose	1
TAC Members	1
TAC Executive Committee and Sub-Committees	1
Meetings	2
Implementation of the statute and the rules adopted under the statute:	2
TAC Recommendations to ANR in 2011:	2
1. Reports to Legislature	2
2. Revisions to Water Supply Rules	2
3. Report to Legislature on Act 145 (Re: Isolation Distances Extending onto Neighboring Properties)	2
4. S.77 an Act Related to Testing Drinking Water Supplies	3
6. Underground Injection Control Rules	3
7. TAC Sub-Committees	3
 Appendices:	
Appendix A – Meeting Minutes, 2011	4
Appendix B – Summary Tables, Alternative & Innovative Systems & Products	52
Appendix C - Summary Table of Permits	56
Appendix D – Technical Advisory Committee Members, Sub-committees, And Statutory Charge to Committee	59

Purpose: This report on implementation of the Wastewater and Potable Water Supply Rules is the annual report required by Section 1978(e)(3) of 10 V.S.A., as established by the Act, focused on the need for the technical standards to be updated immediately to include new technologies and for revisions to the technical standards to be routinely accomplished in order that the standards remain current with known and proven technologies regarding potable water supplies and wastewater systems. The Act 133 of the 2001 Adjourned Session established a Technical Advisory Committee (TAC) to advise the Vermont Agency of Natural Resources (ANR) regarding the technical standards and implementation of Act 133. This report covers the Committee work in 2011.

The annual reports of the TAC are required to include information on the following topics:

- Implementation of the statute and the rules adopted under the statute,
- Number and type of alternative/innovative systems approved for general use, approved for use as a pilot project, and approved for experimental use,
- Functional status of alternative/innovative systems previously approved for use as a pilot project or for experimental use,
- Number of permit applications received during the previous year,
- Number of permits issued during the previous year,
- Number of permit applications denied during the previous year, including a summary of the basis for denial.

Annual reports from previous years are available at the website listed below under “Minutes”.

Annual Report of the Technical Advisory Committee to the Vermont Legislature

TAC Members: Members of the Technical Advisory Committee were formally reappointed in 2010 with their appointments expiring at the end of the year so that the new administration could make their own appointments. Governor Shumlin reappointed all of the members in 2011.

TAC Executive Committee and Sub-Committees: The TAC has an Executive Committee with three members and four alternates that is available to answer questions or to provide testimony to the Agency or to the Legislature. There are also currently six subcommittees working on issues related to: hydrogeology, overshadowing of isolation distances, underground injection control rules related to geothermal wells, seasonal high water table monitoring, underground injection control rules related to the disposal of wastewater from water treatment systems, and wastewater strength effects on disposal systems. The committees and their membership are listed in Appendix D.

Meetings:

- Eleven meetings were held by the TAC in 2011, on January 4, February 15, March 22, April 19, May 24, June 21, July 19, August 23, September 20, November 1, and December 13.

Meetings were held at the state complex in Waterbury through August and then, after Hurricane Irene, met in Essex and then in Montpelier, and were generally about 3 hours in length. Some vacancies in the membership were filled and members were formally appointed or reappointed to the TAC in 2011. In addition to the currently appointed members the following individuals were regular participants:

Peter Boemig, P.E., Licensed Designer
Mark Bannon, P.E., Licensed Designer, AICP
John Beauchamp, Certified Water Treatment Specialist
Bill Zabiloski, DEC, DWGPD, Licensed Designer, Hydrogeologist
Cindy Parks, DEC, DWGPD, Underground Injection Control Program
Scott Stewart DEC, DWGPD, Drinking Water and Groundwater Protection Division
Anne Whiteley, DEC, Senior Counsel
Mary Clark, Licensed Designer

Contact information is listed in Appendix D.

Meeting attendance in 2011 increased from 2010 and ranged from 11 to 19 members.

Full minutes of each meeting are contained in Appendix A, and can also be viewed on-line at <http://www.anr.state.vt.us/dec/ww/EngServ.htm#tech> under the heading Technical Advisory Committee.

Implementation of the statute and the rules adopted under the statute:

TAC RECOMMENDATIONS to ANR in 2011 regarding statutes and rules: The TAC made the following recommendations during the course of its meetings in 2011.

1. **Reports to Legislature:** The TAC submitted its Annual Report to the Legislature on January 15, 2011, regarding its activities in 2010. The TAC also submitted a report entitled: **Report to Legislature on Act 145 (Isolation Distances from Wells and Wastewater Disposal Areas; Isolation Distances Extending onto Adjoining Properties; Notification)**. This report was discussed at the House Natural Resources Committee as members of the Committee considered draft legislation. Some changes proposed by the TAC were included in S.77 which focused primarily on establishing water testing requirements for newly construction potable water sources. This bill passed the legislature but was vetoed after the end of the legislative session.
2. **Revisions to Water Supply Rules (WSR):** The ANR continued to work on updating the Water Supply Rules during 2011 with the TAC providing review and comment. One area given particular attention was design flows. While some portions of the design flow table

were updated in 2002 it has been a long time since a comprehensive update was completed. The TAC discussed design flow issues in each meeting from May until September and has reached consensus of each of the design flow categories. Most of the categories have reduced values, with at a minimum a reduction based on the now standard use of low flow plumbing fixtures. In addition, some categories have been broken into subcategories to better allow for case specific design flows.

3. **Report to Legislature on Act 145 (Isolation Distances from Wells and Wastewater Disposal Areas; Isolation Distances Extending onto Adjoining Properties; Notification):** The TAC was disappointed that their proposed changes to reduce the paperwork requirements related to notification of potentially affected owners were not successfully adopted. The TAC realized that more rapid action is required in order to fully participate in the legislative process which may move rapidly from beginning committee work, to passing the bill in one chamber of the legislature. Once this happens, revisions may be more difficult, particularly when this happens at the end of the session and the other legislative branch has but few days to complete their committee work and pass the bill. The TAC asks that ANR and/or the legislature to bring questions to the committee as early in the process as possible so that they may receive a complete and timely review. The TAC looks forward to working with all parties during the 2012 session in order to improve the operation of Act 145. The TAC remains ready to provide comment on the existing report and to review any proposals for improvement.
4. **S.77 an Act to Require Testing of Potable Water Supplies:** The TAC worked on the issues related to this bill extensively during March, April, and May and offered several recommendations to improve the bill. As with the overshadowing issues, there was rapid action by the legislative committees which precluded a full review by the TAC. The bill was not adopted into statute but is expected to be reconsidered during the 2012 session. The TAC will be more active on this issue during the coming session and urges ANR to bring their proposals to the committee as soon as possible.
5. **Underground Injection Control Rules:** The TAC had brief discussions on topics related to geothermal wells and the disposal of filter backwash from water treatment systems. The filter backwash issues are complex for constituents such as arsenic and radionuclides. There are emerging concerns about concentration of radionuclides within the treatment system filter or chemical exchange compounds and for the disposal of filter backwash with concentrated levels of contaminants removed from the drinking water supply. Some issues are subject to federal regulation as well as under Vermont Rule and Statute. The TAC recommends a comprehensive update of the Underground Injection Control Rules to reflect the many changes in knowledge and technology since Vermont adopted rules in 1982.
6. **TAC Sub-committees:** The TAC re-evaluated its current standing sub-committees, adjusted the members on some of the sub-committees, and put some of the sub-committees on hold.

Appendix A

Approved Minutes of the Technical Advisory Committee Meeting
January 4, 2011

Attendees: Roger Thompson Craig Heindel
Anne Whiteley Don Woods
Steve Revell Bruce Douglas
Justin Willis Jeff Fehrs
Rodney Pingree Scott Stewart
Phil Dechert Spencer Harris
Christine Thompson Bill Zabiloski
Denise Johnson-Terk Gerry Kittle
Ernest Christianson

Scheduled meetings:

February 14, 2011	1-4 PM	Lincoln Room, Osgood Building
March 22, 2011	1-4 PM	Appalachian Gap Room, Osgood Building
April 19, 2011	1-4 PM	Lincoln Room, Osgood Building

Minutes:

The minutes for the December 14, 2010 TAC were circulated by e-mail on December 8, 2010. Craig responded with comments from his notes of the meeting that the updating of the various subcommittees should add Ernie Christianson to the Executive Committee as the ANR representative to replace Roger Thompson who has retired from State service and Bruce Douglas so there will be a P.E. (Professional Engineer) on the Executive Committee. Craig also noted that TAC decided he should be added as an alternative member as a backup to Steve Revell in the hydrogeologist role and to add Claude Chevalier in place of Jeff Williams as the well driller’s representative.

Craig also provided a specific statutory reference for the Groundwater Right of Action Law. Craig also noted there was agreement to edit the “Overshadowing” Report as follows:

1. Add two bullets at the end of each topic with TAC’s recommendation with one for the TAC’s recommendation for use with **new projects** and one for use for **best fix projects**.
2. In section 2.0 of the report, not yet written, explicitly state the TAC strongly supports the current isolation distances with a brief summary of the scientific reasons

and documentation that is the basis of each decision. Repeat this in section 2.2.

3. Bruce will provide a statement summarizing the 1985-1986 DEC report on nitrates in groundwater relative to density of onsite wastewater systems for inclusion in section 2.1 which might fit as a new paragraph between the current second and third.
4. In section 1.1 or section 3 add a paragraph that concludes that some overshadowing may not significantly affect the neighbor's land use options because the overshadowing occurs in areas not suitable for water or wastewater systems or in areas already developed that are not likely to be further developed.
5. Add section 5.5 addressing whether there should be separate rules to apply to pre-existing small undeveloped lots. Craig said his notes and his memory did not include a specific decision on this topic.

Jeff Fehrs also provided comments. Jeff noted that there had been a TAC discussion about the current first-in-time approach versus a public trust or correlative rights discussion resulting in general agreement that, while not perfect, the first-in-time approach should be retained.

The comments noted above were included in the approved minutes for the December 14, 2010 meeting.

Introductions

Ernie introduced Bill Zabiloski, Assistant Regional Engineer, who works in the Essex Regional Office and also reviews hydrogeologic analyses. Bill will attend meetings in the future that involve discussion of hydrogeological issues.

Annual TAC Report

Roger noted that Craig had done his usual great job of writing the body of the report. Craig asked if his draft comments related to electing or not electing a TAC Chair were correct. The TAC agreed that his draft was correct (a chair had not been elected). Roger noted that the third table in Appendix C needs to have the enforcement information for 2010 added. Bruce noted that the second table has math errors regarding the number of permits denied due to non-compliance. Roger will correct these numbers. The TAC gave unanimous approval to the draft report. Roger, Craig, and Ernie will cover the details of getting the report printed and distributed along with the appropriate cover letters. Craig said he would like to get a hard copy of the report. A few other members also requested a hard copy with the rest preferring to use an electronic copy if they need access in the future.

Overshadowing Report

The draft report was reviewed in detail with many edits for clarity and how to appropriately present the information, decisions, or conclusions. The TAC also considered whether or not to comment on the overshadowing effects related to public water supplies and decided against making any comments on this topic. Ernie asked if there should be some recommendation about the effects of unregulated wells (wells for snow-making, irrigation, and other non-drinking water uses are mostly unregulated). It was decided this is a topic for another day. The TAC considered whether to recommend a change to the Rules that would result in limiting a single family residence to a single water source, except in situations where none of the available sources was sufficient by itself to support the single family residence. This is currently shown as section 6.1 in the report. The TAC gave unanimous support for this rule change.

Scott asked that the report include information about how the term shallow well is used in the report. While shallow well has a common meaning, it is not a scientific term. It was agreed to add an explanation of the term.

Meeting Dates

It was decided to meet on February 15th, March 22nd, and April 19th. Roger will schedule meeting rooms.

Items prioritized for discussion with high, low, and medium ranking

1. Soil identification vs. perc test **medium**
2. Curtain drain with presumption of effectiveness **high**
3. Revisions to desktop hydro chart **medium**
4. Minimum amount of sand under a mound **high**
5. Grandfathered design flow and conversion of use policy **high**
6. Updating of design flow chart **high**

Executive Committee

Steve Revell, Ernest Christianson, Bruce Douglas
Alternates – Chris Thompson, Spencer Harris, Claude Chevalier, Craig Heindel

Subcommittees

Hydrogeology - Craig Heindel, Dave Cotton and Steve Revell.

Approved Minutes of the Technical Advisory Committee Meeting
February 15, 2011

Attendees: Roger Thompson Gail Center
Denise Johnson-Terk Gary Adams
Ernest Christianson Kim Greenwood
Scott Stewart Rodney Pingree
Craig Heindel Jeff Fehrs
Spencer Harris Don Woods
Steve Revell John Beauchamp

Scheduled meetings:

March 22, 2011	1-4 PM	Appalachian Gap Room, Osgood Building
April 19, 2011	1-4 PM	Lincoln Room, Osgood Building

Agenda:

The agenda was reviewed and Steve asked for a few minutes to talk about the Wetlands training and the new rules that have been adopted.

Minutes:

The minutes were accepted with a spelling correction.

**Review of Presentation to the House Committee on Fish, Wildlife, and Water Resources
Regarding the “Overshadowing Report”**

Ernie Christianson, Bruce Douglas, Claude Chevalier, and Anne Whiteley gave testimony. Roger Thompson also attended. Ernie reviewed the meeting which seemed to go quite well with support for the TAC report and the TAC recommendations in the report. Most members of the Legislative Committee seemed to support retaining the first in time approach though a couple of members said it was hard for them to accept that someone could develop their land in a way that would restrict what a neighbor might be able to do. This was discussed by the Legislative Committee but the TAC report analysis of the pro’s and con’s of the first in time approach seemed to result in the Legislative Committee reaching the TAC’s conclusion that any change would create more problems than retaining the existing status. Rep. McCullough asked about having a longer time period between the notification of an “overshadowing” and issuing of a permit, maybe as much as 30 days. Ernie said that he asked that any increase in time over the existing 7 day notice period be required to be prior to filing an application. Otherwise, it would greatly affect Agency operations which in recent years have achieved a fast turn around on the majority of applications.

Ernie noted that Anne had pointed out a few areas that might be clarified in the statute. One would be a change such that only a site plan showing the overshadowing is sent to the neighbor instead of a full set of plans with detail sheets. Another might be to indicate that the legislative intent was that the notification would be related to a potential impact for a single family residence with a bedrock well. Anne will be working with Legislative Council to draft possible changes to the statute, including a specific notification statement that would be used for all projects.

Gail asked about the Legislative Committee's reaction to the TAC recommendation to maintain the existing isolation distances. Ernie reported that the Legislative Committee heard testimony from Claude Chevalier who reviewed his long experience of well drilling in Vermont. Claude said that his company had installed many wells that have significantly smaller isolation distances than those required in the current rules for new projects and was unaware of any contamination problems. Bruce Douglas reviewed the TAC Report and stated that the existing isolation distances are scientifically based. Bruce noted that a nitrate contamination study done in Vermont in the 1980's actually found some drilled wells with nitrate contamination believed to come from nearby wastewater disposal systems. This demonstrates that at least some bedrock wells are subject to contamination. One member of the Legislative Committee noted that his father, a licensed plumber, had always said that protecting the groundwater was the most important thing he could do. Ernie said that his impression was that the Legislative Committee was not in favor of reducing the existing prescriptive isolation distances. Ernie said that Anne and Bruce noted that under the existing rules there is a process to reduce isolation distances on a case by case basis using a hydrogeologic analysis.

The TAC recommendation of protecting only one well per lot was discussed. Ernie commented that there will be several issues to deal with as many existing projects have more than one well and getting someone to decide which one will be protected will be difficult. In some cases the second well was not legally permitted at the time of installation but with the "clean slate" exemption taking effect on January 1, 2007 many of these wells are now considered to be legal and would need to be protected. Roger noted that the Legislative Committee did appear to support the concept of protecting only one well per project. This would need to be worked out in any proposed statutory changes.

Ernie noted that the Legislative Committee does not want to deal with spite wells because of the difficulty of determining the intent of the person proposing to install the well. Steve agreed this is true and reviewed a situation he dealt with where the neighbor placed a piece of well casing, with a cap and electrical conduit, in the ground in a location that would prevent the neighbor from developing. It turns out that the casing only extends 26" below grade and it is not a well at all. Steve asked about how anyone can deal with this as it would be a trespass to go on the neighbor's land to examine the well. The group discussed this and noted that the well needs to be registered with the state if drilled in the past 30 or so years and needs a well tag if drilled in more recent years. Neither was done in this case. One suggestion was that the Water Supply Division be contacted. They might be able to investigate why the well is not registered. It was agreed that it is difficult to deal with a situation when a landowner just refuses to cooperate.

Spencer asked if there was any discussion by the Legislative Committee of the cost of complying

with the overshadowing notification requirements or the impact of designing systems on soils that require most expensive wastewater disposal systems. Ernie said there was and there was agreement to modify the notification requirements related to sending unnecessary plans and supporting documents to the neighbor. With the sense that the first-in-time concept would be retained, any decision to relocate the wastewater system to poorer soils was not a requirement under the statute and it was up to the developer to decide how much to accommodate a neighbor's concerns.

John asked about wells that were drilled before tags were required. Craig noted that since some time in the 1980's the wells needed to be reported to the state but that the information on the actual location of the well might not be too reliable. John asked about the requirements if someone wants to add a second well when the first well does not have sufficient water. Ernie said that a state permit is needed if they will keep both wells. The replacement well exemption might apply if the old well was abandoned, at least as a drinking water source.

Denise reviewed an ongoing situation in Colchester. She noted that Colchester is not required to honor the "clean slate" exemption because the program was delegated to the Town of Colchester prior to the enactment of the exemption. There is one proposal ongoing to abandon an existing drilled well and to relocate it to a location which would have significant negative impacts on a neighboring lot. An application to relocate a wastewater force-main is pending which may or may not create a first in time situation. This appears to be a case that should be discussed with the town's attorney.

Steve asked if the Legislative Committee indicated that they may have moved too quickly last year in passing Act 145. Ernie said there was no discussion about it. Kim said that the Legislative Committee did not think they were creating something big and new, rather it was intended to be a "little fix."

Rodney asked if the proposed notification statement would include language recommending consultation between the applicant and those receiving the notification.

Disposal of Filter Backwash from Water Treatment Systems into Soil-based Disposal Systems

Ernie gave a quick review of the guidance document that was issued January 29, 2011 by Christine Thompson. This guidance deals with the acceptable discharges of filter backwash that were approved in Act 145 of last year's session. Ernie said that the guidance did not create any new methods for disposal. Spencer asked why the guidance was created and Ernie said that the regional office staff asked for something in writing for their use and to provide to applicants and designers. The guidance allows for discharge of the filter backwash from treatment systems dealing with a specific list of contaminants and allows for the waste to be discharged to existing wastewater disposal systems without obtaining a permit.

Gail said that the Health Department has been asked for years about where to dispose of the backwash and in the past did not recommend construction of a separate drywell because the drywell construction and location were not regulated. A drywell located near the water supply could

contaminate the water supply.

Spencer asked Gary and John what they specified as disposal points for the water treatment systems they design. Gary and John said they do not have a clear answer to give people. John said that NOWRA (National Onsite Wastewater Recycling Association) is working on the topic and will issue a recommendation. John says he finds systems that are discharged to floor drains and foundation drains. John said he is particularly concerned about systems that remove radionuclides such as radium and uranium. Gail said that in some cases arsenic that is removed as part of iron removal can remobilize when the chemistry changes.

Craig asked if, considering that there are treatment systems that retain arsenic and radionuclides, there should be a requirement that retention type systems be required with the disposal being handled by companies that would replace the spent filter cartridges and safely dispose of them.

Gail said that Senator Lyons is sponsoring a new bill that would require more water systems to be routinely monitored. As more testing is done, and more problems found, it is likely more treatment systems will be installed. This might support companies that would pick up and dispose of certain types of filters.

Gary said that he has never seen any ill effects on wastewater disposal systems caused by adding the filter backwash to the existing systems. He has seen wells that were contaminated when the filter backwash was discharged near the well head. John said there is also some information indicating that more contaminants may be retained in a septic tank than would be retained in a stand alone drywell system which would better protect groundwater.

Conditional Exemption for Disposal of Filter Backwash into Underground Injection Wells (I.E. not Septic Systems)

Copies of the e-mail Ernie circulated a couple of weeks ago were distributed as a starting point for a discussion. The e-mail listed 9 areas of questions related to volume of waste that might be exempt and various siting conditions such as distance to wells and amount of soil under the system. John and Gary discussed flow volumes from typical home water treatment systems. While the volume varies quite a bit from house to house, and most systems do not backwash every day, they agreed that an exemption that allows for an average daily flow of 50 gallons (350 gallons per week) would cover the majority of home systems.

It was decided that it would be beneficial to have a subcommittee work on this issue. Gary, Jeff, John, Ernie, and Roger will participate. Roger will arrange for the meetings.

Water Supply Rules

Scott is looking for help on redrafting section 11.8 which deals with pumping, storage, and distribution issues. It was decided to form a subcommittee. Don and Ernie will participate. Ernie will look into having David Swift and/or Dolores Kuhn (regional office staff) participate. Ernie will also contact Eric Blatt and see if Greg Bostock or David Webb (Water Supply Division staff) should

be involved. Ernie will arrange the meetings.

Groundwater Monitoring for Performance Based Designs

The existing rules do not give a clear statement of how the monitoring results are to be used in calculating the seasonal high water table. This issue was reviewed a couple of years ago by TAC but without any clear resolution. It was decided that a subcommittee of Steve, Craig, Bruce Douglas, Kim, Roger, Bill Zabiloski, and Ernie would work on this. Ernie will contact Dan Wilcox (regional office staff) and may ask Dan to participate. Ernie will arrange the meetings.

Wetlands Training Sessions

Steve reported that he had attended a recent session and learned about one troubling issue. Under the recently revised wetlands rules, there is now a standard related to replacement of existing wastewater disposal systems. Under the previous rules, as long as there was agreement by the wetlands staff that the proposed replacement wastewater system was located in the best available location it would be acceptable. The new requirement requires a determination that there will not be an undue adverse impact from the replacement system. While it is not clear how this will work when implemented, Steve is concerned that it might end up requiring applicants to abandon onsite wastewater disposal systems and force them to use a holding tank system. A holding tank system for a single family residence can be a very expensive system. Apparently this was not considered during the development of the new wetland rules.

Issues for Future Discussion

Craig asked that the Water Supply Rules and the Seasonal High Water Table determination be added to the list as high priorities which was agreed to.

Items prioritized for discussion with high, low, and medium ranking

1. Soil identification vs. perc test **medium**
2. Curtain drain with presumption of effectiveness **high**
3. Revisions to desktop hydro chart **medium**
4. Minimum amount of sand under a mound **high**
5. Grandfathered design flow and conversion of use policy **high**
6. Updating of design flow chart **high**
7. Water Supply Rule update **high**
8. Seasonal High Water Table determination for performance based systems **high**

Executive Committee

Steve Revell, Ernest Christianson, Bruce Douglas
Alternates – Chris Thompson, Spencer Harris, Claude Chevalier, Craig Heindel

Subcommittees

Hydrogeology - Craig Heindel, Dave Cotton and Steve Revell.
Approved Minutes of the Technical Advisory Committee Meeting
March 22, 2011

Attendees: Roger Thompson Steve Revell
Gail Center Jeff Fehrs
Craig Heindel Scott Stewart
Kim Greenwood Ernest Christianson
Bill Zabiloski Anne Whiteley
Chris Thompson Phil Deckert
Bruce Douglas Spencer Harris
Rodney Pingree John Beauchamp

Scheduled meetings:

April 19, 2011 1-4 PM Lincoln Room, Osgood Building

Agenda:

The agenda was reviewed and Steve asked for a few minutes to talk about the Wetlands training and the new rules that have been adopted. Also added was a topic on groundwater under the public trust doctrine and the status of the UIC Rules in relation to geothermal wells. Kim asked that when discussing the operation of the TAC that interaction with the legislature be added to the agenda.

Minutes:

The minutes of the February 15, 2011 meeting were accepted.

Personnel:

Jeff Fehrs announced that he is leaving his current position dealing with Underground Injection Control Permits and other issues. Jeff is moving to the Discharge Section, still within the WWMD, that regulates direct discharges to surface waters, primarily wastewater treatment facilities.

S.77:

Ernie and Matt Chapman, ANR attorney, testified at the Senate Natural Resources Committee. They asked that the list of contaminants to be tested match the list used in the failed supply section of the Wastewater System and Potable Water Supply Rules (Rules). They also asked that this issue be referred to the TAC prior to passing any legislation. The Commissioner of the Vermont Department of Health (VDH) also testified and stated that the VDH lab could handle 1000 tests per year. It was not clear if this number represents a total number of tests that the lab could run in a year or an additional number of tests that could be run. Realtors said there are about 8000 closings per year and if all systems need a test of all contaminants on the list prior to any property transfer there

would be delay in closings. It was Ernie understanding that the committee asked Matt to redraft the bill in association with the Health Department. S.77 was amended to make the testing mandatory only for new wells and just a notice to potential buyers that they have a right to ask for a full test. Roger said it is important to talk with VDH and know for certain what capacity they actually have and suggested contacting the Water Supply Division well driller's records to see how many new wells are registered each year.

The group then discussed the list of contaminants currently included in S.77. Fluoride has now been added. Fluoride was added because it has been found as a naturally occurring contaminant in parts of Vermont including in Charlotte, Westminster, and Wilmington with a highest reading of 10 mg/l which greatly exceeds the Drinking Water Standard of 2 mg/l. Lead was also added to the list. This is not commonly found as a naturally occurring contaminant but there are still old water lines and plumbing fixtures that contain lead. Ernie said that one goal of S.77 is to create a database of groundwater quality and that his testimony was that the data base should be managed by the Water Supply Division. Ernie noted that at the end of his testimony he thought the issue would be referred to the TAC.

Craig noted that S.77 appeared on the Senate Calendar today. Kim agreed and said it might pass tomorrow. The current draft does not require a time of sale test but does require testing of new wells. Steve asked what will happen when a test is done and one or more contaminants exceed the Drinking Water Standards. Anne said that if ANR knows this, then it is a violation of the Rules and ANR could move to require correction of the problem. If ANR declares there is a violation there would be a cloud on the property title until the problem is fixed. Roger said there could be a lot of time of sale problems including a delay in getting tests done if there is a heavy demand and the legislature should be fully informed before they pass any legislation. Ernie said that in the previous week or so he thought the bill was not going to be passed this session but that he had been contacted by Chris Recchia (Deputy Secretary of ANR) and told that the bill was still under consideration.

Craig suggested forming a subcommittee to prepare information to submit to the legislature identifying the problems and recommending a referral to the TAC. Anne, Ernie, Roger, John, Gail, and Chris will meet. Ernie will make the arrangements for the meeting.

Roger then asked Ernie about how the process might work under the Rules and specifically about how ANR would oversee this. Ernie said that if S.77 passed as is, it would be the landowner's responsibility to comply. Roger asked if this would be part of the permitting process and subject to a permit condition. Ernie said he was not proposing to include a permit condition. Craig said that if the legislature requires testing it would seem that ANR would need to add a permit condition and take compliance action as needed. Anne said there would need to be a permit condition.

Steve, Kim, and Roger said the bill should specify when the sample should be collected. John said that the time of sampling is important because in some cases it takes the equivalent of three months of usage before the sediment is removed, any contamination related to the drilling is removed, and the flow through the surrounding bedrock and/or soil produces relatively consistent results for the chemical testing. In terms of value of the testing for determining the need for and the design of water treatment systems, a test conducted soon after first drilling the well may give misleading results.

Even after 3 months of usage, John noted, the results for some wells change over time with levels of contaminants increasing or decreasing in unpredictable ways.

Ernie said that the main goal of the bill is to develop a groundwater quality data base. Therefore, testing done soon after drilling the well might be adequate for defining the water quality in a particular area, even if it was not ideal for designing a water treatment system.

The TAC thinks that the issue should be referred to the TAC prior to passing a bill. Ernie said that Matt Chapman had drafted language to amend the bill to send it to TAC but it was not the version Senate Natural Resources Committee voted on. The TAC thinks a request from the TAC to send the issue to the TAC should be given to the legislature. Anne suggested using the small group approach Craig suggested. It was decided that Gail, Chris, Anne, Ernie, John, and Roger would meet on Friday, March 24th, at 9 AM to start a draft letter that would be sent by the TAC Executive Committee.

Gail said there would be a data base created for tracking groundwater quality. Ernie noted that he had told the legislature that funds to create this project would be needed. Roger said that in order for there to be a good data-base, a GPS reading would be needed for each sample point. This reading is currently taken for drilled wells, which covers most new wells, but it would have to be transferred to the new data-base.

H.271 -

Roger said that when he first saw this on the legislative website he was surprised to see a proposal that would have permits for drilling new wells expire after 3 years. Steve said he was frustrated that TAC created a really good report on Act 145, and the changes that should be made, and the legislature ignored important recommendations in the report. Anne noted that when she and Ernie testified to the House Fish, Wildlife, and Water Resources Committee that one committee member asked about expiration dates and that she had pointed out several problems with expiration dates that seemed to outweigh any gains. Most members of the TAC do not support expiration dates. The rest of H.271 tries to deal with the one well per lot issue. Anne mentioned that under the current Rules new projects are not approved with more than one well unless needed to support the project. Anne said she told Rep. David Deen that the one well per lot might not be a workable idea. Anne did go on to talk with Rep. Deen about changes to Act 145 that would make it easier to administer. The TAC reviewed draft language. Anne pointed out that it reduces the amount of paperwork that must be sent to neighbors and moves the notice period to before the application is filed. If the plans are altered after the application is filed, there will still be a notice to the neighbors with a 7 day waiting period after sending the notice to the neighbors before a permit can be issued.

Act 145 is continuing to be an issue with landowners. Anne has 4 new permit appeals, which is an unusually large number, at least one of which is a pure overshadowing appeal. Anne said there was testimony at F+W that Act 145 is not generally making people happier, instead there is more conflict. Kim noted that the only thing that had changed on the ground was that people are now aware of how they may be affecting a neighbor or how they may be affected by a proposed permit. Phil said that people have approached him about overshadowing issues. One person was sent a plan that showed

the potential overshadowing zone based on both a drilled bedrock well and for a shallow well. The first had a 200' isolation zone and the second was 500'. After looking into it, it was clear the permit application was based on a bedrock well and only the 200' distance was applicable and it only extended onto the neighbors land a short distance which Phil said would have only a small impact.

Phil asked if the neighbor's ability to install a shallow well is protected and Anne replied that the overshadowing notice is based on the neighbor installing a bedrock well. Any existing shallow wells are protected by the permit as a permit cannot be issued if the 500' isolation zone is not met unless a hydrogeologic analysis supports a reduction in isolation distance to less than 500'.

Bill said that the existing language in the guidance for drawing isolation zones around leachfields is not clear and that under strict application a larger isolation zone would be created than is necessary.

Anne said she knows this language needs to be updated and encouraged Bill to make a start on drafting proposed changes. Spencer said that his default approach is to make the isolation zone larger because it was less of a problem than if he ended up with a zone that was too small and that a detailed analysis to reduce the size added cost to the design.

Ernie asked if the new language to amend Act 145 would be specific as to what must be sent to the neighbors. Anne said that F+W had looked at her new language and liked it, however H.271 did not make crossover. Therefore, it will wait until next year unless they find some other bill to attach it to, such as S.77.

Anne said that one member of the F+W Committee felt that TAC had prejudged the issue of reducing isolation distances based on reading the TAC minutes. Ernie said he had met with this member and explained that the current Rules allow for case specific reductions in isolation distance based on a hydrogeologic evaluation. If this continues to be a problem it may be worth having a couple of TAC members make a contact and explain that the TAC did a thorough review. It did not require a lot of time as much of the material had been extensively reviewed in the past couple of years and therefore only new information in recent years needed to be reviewed. Ernie said he also lobbied the member to send the one well per lot concept back to the TAC.

A sense of the TAC was taken and there is strong support for Anne's 3/15/2011 language and strong opposition to adding expiration dates to permits for new wells.

Groundwater and Public Trust Issues -

Anne gave a quick overview starting with a court decision involving a permit issued to the OMYA Corporation that requires a public interest determination that OMYA's impact on groundwater is in the public interest. Anne said there is a petition for an interlocutory appeal to the Vermont Supreme Court from ANR. ANR's position is that the original decision applied the public trust test used for surface water which is not an appropriate basis for decisions related to groundwater. One main requirement under the surface water test is that there is a public benefit in approving a proposed use. An example might be that when constructing a marina that will create a profit for an individual, there may be a public benefit if the marina creates boat launching and holding tank pump-out facilities that

benefit other lake users. Kim says there are different opinions about what the OMYA decision actually means. Anne said that ANR is challenging the application of the specific test that the court said was to be used to determine compliance with the public trust but that ANR is not challenging that a public trust analysis should be done. This specific test she is referring to was about the impact of alterations at a marina on the use of Lake Champlain. The Agency has also formed a working group to consider how the public trust issues affect each of the Department of Environmental Conservation programs related to groundwater.

Geothermal Wells -

Craig attended the Vermont Groundwater Association Annual Meeting on March 11 where Jeff gave a presentation on UIC Rules and geothermal wells. Craig said that the Underground Injection Control (UIC) Rules appear to require a permit for a geothermal well. Jeff said this is true if there is any discharge of water back into the ground. A closed loop system would not need a permit but a standing column or recharge well does need a permit under the UIC Rules. Craig and others noted that there are hundreds of geothermal wells already constructed with many more added each year and it is a concern that all of these might be in violation of the UIC Rules. The Agency would like to amend the UIC Rules so that most geothermal wells qualify for a conditional exemption. A few very large capacity wells might still require a permit but this would be worked out during the rule revision process. A subcommittee was formed to work on this issue with Craig, Steve, Jeff, Scott, Rodney, Kim and Ernie as members.

TAC Operation -

Chris said that she had asked for this issue to be on the agenda to see if any changes are needed in how the committee works. Chris said that the TAC has its own status under statute and while there is administrative support from ANR TAC operates independently of the Agency. She asked if the committee wanted to appoint a chair. There was a TAC Chair when the committee was first appointed but the position has been vacant for a few years. Kim said that her concern is not being sure of the proper contact person when she suggests that a legislative committee contact the TAC. She also said there has been an issue relative to ANR's lack of presence at the statehouse in the past couple of years. Last year's Act 145 is one example.

Christine asked if the Committee wanted to appoint a chair and maybe a vice-chair. After much discussion the group decided to rely on the executive committee and to continue operating as it has been. Roger agreed to continue doing the meeting minutes and to facilitate the meetings. The Committee decided to add Roger to the executive committee.

Wetlands Training –

Steve said that he recently attended some wetlands training and it seemed that the wetlands program had changed their thinking about when a replacement leachfield can be allowed as opposed to requiring a holding tank. Julie Foley (Wetlands Program Staff Member) used an ortho-photo that displayed the boundaries of a Class Two wetland and a "best fix" variance replacement leachfield. Julie said that a person must demonstrate that there is no undue adverse impact. This would involve

a public process that requires at least 60 days. Ernie said there is going to be a meeting with the wetlands program staff to learn exactly how the process works. There have not been any recent changes in the wetlands rules related to leachfields so the issue may be more in the presentation than in the actual operation of the wetland decisions.

Spencer said that he had a recent situation where Alan Quackenbush was able to sign off on wetlands issues based on a sketch of the proposed replacement system and an ortho-photo. Spencer did say that the new hydric soil maps are creating concerns.

One person said that there is a rumor that wetlands can only be delineated in the spring. This is more likely a case of saying that accurate delineations cannot be done in the winter when there is snow on the ground. Ernie will check into this. Gail asked if doing a replacement leachfield will require two permits. The answer is yes, one WW Permit and one Wetland Permit.

Items prioritized for discussion with high, low, and medium ranking

1. Soil identification vs. perc test **medium**
2. Curtain drain with presumption of effectiveness **high**
3. Revisions to desktop hydro chart **medium**
4. Minimum amount of sand under a mound **high**
5. Grandfathered design flow and conversion of use policy **high**
6. Updating of design flow chart **high**
7. Water Supply Rule update **high**
8. Seasonal High Water Table determination for performance based systems **high**

Executive Committee

Steve Revell, Ernest Christianson, Bruce Douglas, Roger Thompson
Alternates – Chris Thompson, Spencer Harris, Claude Chevalier, Craig Heindel

Subcommittees

Hydrogeology - Craig Heindel, Dave Cotton and Steve Revell.

S.77 Issues – Anne Whiteley, Ernie Christianson, Roger Thompson, John Beauchamp, Gail Center,
Chris Thompson

UIC Rules and Geothermal Wells - Craig Heindel, Steve Revell, Roger Thompson, Ernie
Christianson, Scott Stewart, Rodney Pingree, Kim Greenwood

SHWT Monitoring - Craig Heindel, Steve Revell, Roger Thompson, Ernie Christianson, Bill
Zabiloski, Dan Wilcox

UIC Rules and Disposal of Wastewater from Water Treatment Systems –
John Beauchamp, Gary Adams, Roger Thompson, Ernie Christianson, Gail Center,
Jeff Fehrs

Approved Minutes of the Technical Advisory Committee Meeting
April 19, 2011

Attendees: Roger Thompson Ernest Christianson
Denise Johnson-Terk Steve Revell
Craig Heindel John Beauchamp
Gary Adams Chris Thompson
Bill Zabiloski Bruce Douglas
Spencer Harris Gail Center

Scheduled meetings:

May 24, 2011	1-4 PM	Lincoln Room, Osgood Building
June 21, 2011	1-4 PM	Lincoln Room, Osgood Building
July 19, 2011	1-4 PM	Lincoln Room, Osgood Building

Agenda:

The agenda was reviewed and topics related to the new wetlands program training and the potential of having a list of qualified water treatment designers were added.

Minutes:

The minutes of the March 22, 2011 meeting were reviewed. Craig asked that the first reference to Matt be revised to be Matt Chapman for clarity. Kim Greenwood had e-mailed some proposed changes for clarity which will be incorporated.

S.77 Update:

Ernie gave an update on S.77. Anne Whiteley had forwarded the comments prepared by the TAC Subcommittee to Rep. Deen, Chair of House F+W; Sen. Lyons, Chair of Senate NR; Mike O’Grady, Legislative Council, and Subcommittee Members on April 4th. Bruce said that he had contacted Rep. Krebs and had provided background information on how the TAC had reviewed the existing isolation distances between water supplies and wastewater systems. This review resulted in a recommendation to retain the existing isolation distances There was some concern by ANR that the statement of TAC concerns had been forwarded to legislative committees by Anne Whiteley, even

though the cover message was clear that the positions stated are those of TAC not ANR. Legislative Council and Legislators indicated that the comments were received too late in the process. TAC decided that for the future, similar messages should be forwarded by a member of the TAC Executive Committee and they should be made while a bill is still in committee where changes can more easily be made than when the bill is on the floor of the house or senate. TAC would like to meet with the DEC Commissioner or his representatives to discuss their relationship. Christine Thompson and Ernie will meet with the Commissioner to discuss his vision of the ability of the TAC to offer comments independent of ANR.

S.77 passed the Senate on April 6th and will move to the House Committee on Fish, Wildlife, and Water Resources. There will be opportunities to amend the bill and Agency and TAC concerns can be discussed with the Committee. It may be possible to add a section that would revise the Act 145 notification requirements so that only the plans depicting the potential impact must be sent to the affected landowners.

TAC discussed the tracking of water quality testing results which is required in S.77. The Health Department will run the tracking system. One question is how reliable the results will be unless the person collecting and submitting the sample is trained and reliable. John noted that the proposed language will not completely protect users because samples taken immediately upon completion may not reflect the water quality after the system has been in use for several months. TAC agrees that S.77 will provide an overall sense of groundwater quality based on the first tests which will be useful but its reliability for a specific water source is somewhat less.

TAC also discussed the issues of using water treatment system and how the disposal of any wastewater from the water treatment system would be regulated under the Underground Injection Control Rules.

1. Fluoride - there is a treatment using alumina that retains the fluoride so there would not be a disposal issue.
2. Uranium - disposal of filter backwash is an issue under both Vermont Groundwater Rules and the federal Underground Injection Control Rules
3. Radium - disposal of filter backwash is an issue under both Vermont Groundwater Rules and the federal Underground Injection Control Rules
4. Nitrate – allow a conditional exemption under the UIC Rules

John noted that in addition to disposal of wastewater from water treatment systems he has concerns about the radiation from filters that retain the radioactive particles. This might be an issue for a homeowner if there is routine exposure to the water treatment system or to those who maintain the water treatment system. Nothing is clearly established at this point but it is something to be considered as more people are likely to be treating for radioactive contaminants as more testing is required.

Ernie said that one member of the House Fish and Wildlife Committee would like to see TAC re-evaluate the well isolation distances. This was reviewed in detail by the TAC and addressed in the report supplied to the legislature in January but the TAC analysis may not have been sufficiently explained. Ernie will follow-up to see if this still needs to be done or if this issue has been resolved.

Wetland issues:

Ernie said that he had met with Alan Quackenbush who manages the Wetlands Program for the Water Quality Division. At a previous TAC meeting there were concerns that wetlands mapping could not be done in the winter, that wetlands staff will no longer do field mapping, and that no deviations will be allowed within the buffer zone. These issues are a concern if they make installing a best fix replacement septic system impossible or add significant delays to the process.

Ernie actually learned that the Wetlands Program is still doing mapping as a priority for replacement systems, that the evaluation can be done in the winter but additional test pits may be required and that replacement systems can be installed in the buffer zone when that is clearly the best that can be done. Even then, they attempt to protect as many existing trees as possible. In summary, it does not appear that the process has changed in any significant way. Ernie wrote up his notes and sent them to Alan for review. Once there is agreement the notes or a guidance document can be published for use by designer.

List of qualified designers of water treatment systems:

John said and Gary agreed that one problem in dealing with water treatment issues is that few licensed designers, including those who are professional engineers, are willing and able to deal with private water systems. Gail supported this position and said that when she is talking with a homeowner she does not have a good way help people find someone to help them. All three said it is difficult to deal with situations where there is a water contamination problem, and an owner who wants to make improvements, and no simple way to help them get started. The problem is that without any licensing requirement for water treatment designers there is no basis for putting some people on a list of providers while not adding the names of anyone who asks to be listed.

Future meeting dates:

It was decided to schedule meetings for May 24th, June 21st, and July 19th. Roger will arrange for meeting rooms.

Water Supply Rule revisions:

Ernie gave a short report of the work on this issue. Ernie is hoping to quickly complete a complete updating of Subchapter 11 of the Water Supply Rules. Steve asked if this would include looking at technical issues such as peak demand calculations. Ernie said that it would. The goal is to have this be a stand-alone chapter that could be included in the Wastewater System and Potable Water Supply

Rules so that designers of private (non-public) water systems would only need to work with one set of rules.

Items prioritized for discussion with high, low, and medium ranking

1. Soil identification vs. perc test **medium**
2. Curtain drain with presumption of effectiveness **high**
3. Revisions to desktop hydro chart **medium**
4. Minimum amount of sand under a mound **high**
5. Grandfathered design flow and conversion of use policy **high**
6. Updating of design flow chart **high**
7. Water Supply Rule update **high**
8. Seasonal High Water Table determination for performance based systems **high**

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UIC Rules and Disposal of Wastewater from Water Treatment Systems –
John Beauchamp, Gary Adams, Roger Thompson, Ernie Christianson, Gail Center, Jeff Fehrs

Approved Minutes of the Technical Advisory Committee Meeting

May 24, 2011

Attendees: Roger Thompson Steve Revell
Bruce Douglas Craig Heindel
Justin Willis Scott Stewart
Rodney Pingree Bill Zabiloski
Anne Whiteley Ernest Christianson
John Beauchamp

Scheduled meetings:

June 21, 2011	1-4 PM	Lincoln Room, Osgood Building
July 19, 2011	1-4 PM	Lincoln Room, Osgood Building

Agenda:

The agenda was reviewed and topics related to groundwater withdrawal permitting, update on response to Rep. Krebs about well isolation distances, wastewater design flows, and the disposal of compost toilet waste were added.

Minutes:

The draft minutes of the April 19, 2011 meeting were reviewed. Bruce asked that a sentence be added reflecting that he had contacted Rep. Krebs and had provided background information on how the TAC had reviewed the existing isolation distances between water supplies and wastewater systems which resulted in a recommendation to retain the existing isolation distances. Craig noted that it was Steve who had asked if the update of the Water Supply Rules would include review of technical issues such as peak demand calculations.

Update on Legislative Feedback:

During review by the House Fish, Wildlife, and Water Resources Committee Rep. Krebs stated concerns about the apparently quick decision by the TAC to recommend continuing the existing isolation distances between water supplies and wastewater disposal systems. Anne asked if TAC had discussed these concerns. The report submitted to the Legislature indicated a quick decision was made by the TAC to support the existing isolation distances but the report did not fully document all of the work that TAC had done in previous meetings to review this issue. This lack of documentation made it appear that the TAC process might not have been as thorough as it actually was. Bruce said that he had contacted Rep. Krebs and had supplied information about the process used by TAC including consideration of recent studies. Rep. Krebs said he would review this after the end of the legislative session which was drawing to a close at the time Bruce provided this information.

S.77 Update:

Ernie said that he had met with Scott to discuss what revisions would need to be made to the Water

Supply Rules in response to S.77 which includes a specific list of contaminant testing. Ernie said that under the proposed bill, the Agency needs to consult with interested parties to determine if testing for other potential contaminants should be added to the list. The list of interested parties includes realtors, attorneys, designers, water treatment specialists, and environmental interest groups.

Anne noted that ANR had submitted proposed revisions to the bill, some of which have been included in the current draft that is under consideration by the House Fish, Wildlife, and Water Resources Committee.

Roger suggested a section by section review and asked if there is an additional laboratory certification. Section 3 of the bill indicates that the Commissioner may certify labs to do the testing required in 10 V.S.A. section 1981 and requires the approved labs to submit test results electronically. Anne said that this does not require a special certification. The filing of test results was added on recommendation of the legislative council.

Steve asked about the section that allows the ANR Secretary to add new contaminants to the list of required testing. Anne indicated that there are no plans at this time to add more contaminants to the list and that it would require a rule revision to do so.

Roger asked about the timing for TAC to submit comments on the Water Supply Rule updates. Ernie said his target is the first of July to get a proposal to Anne for legal review. Ernie needs to provide some information to Scott as well. After Scott does the updates the draft will be circulated and will come to the TAC for comment.

Anne clarified that Scott is working on updating the section of the Water Supply Rules that relate to non-public water systems. The goal is a stand-alone portion of the Water Supply Rules that will eventually be included in the Wastewater System and Potable Water Supply Rules. The goal is to have a smooth transition in the requirements from non-public to public water systems so that when a project grows to the point where the number of users triggers public water supply jurisdiction it will be clear what new requirements will apply.

Roger asked if there will be a different list of required contaminant testing for single family residences than for other non-public systems. Anne said the list would be the same for all non-public systems. Roger asked about the requirement to create a database of test results because the bill does not seem to actually require it. Anne said the database will be at the Health Department even though the bill is not explicit. Bill asked about the section that states that failure to test does not create a title defect. Anne explained that the legislature is trying to collection information about groundwater quality in Vermont and trying to protect public health. Without the title defect language people could end up with a major legal claim if after the fact testing found any violation of the water quality standards.

John asked about what happens if the water is tested and the results are bad. Anne said that this would usually be worked out by the landowner but that if the results are filed with ANR it would be difficult for the Agency to just ignore the results. If the landowner did not take any action the

Agency could take action, particularly if anyone other than the landowner is potentially affected such as a multi-family dwelling.

Craig asked if there is one purchase and sales form that all realtors must use which could include all of the information about water testing requirements and the options for buyers. There is no requirement that a particular form be used but there is a standard form that is commonly used.

Craig observed that it appears that the TAC should expect to work on this again in August or September.

Steve asked if TAC would chose a member to participate in the process of formulating a rule determining who can collect the required water sample. Roger observed that with a mandate that allows a homeowner, who clearly has a personal interest in the outcome, to collect a sample it would seem that almost anyone else should be acceptable.

Water Supply Rule Update:

Ernie said that the proposed update would combine parts 11(Small Scale Rules) and 12 (Well Construction Standards) of the existing rule. There would be a logical progression of requirements from non-public systems into the TNC, NTNC, and Public Community systems. Scott is currently drafting this as 3 new sections but after determining the specifics some combining may be possible. Craig asked if there are references to the Small Scale Rules that need to be updated if the term Small Scale Rules is eliminated.

Wastewater Rule Updates:

Ernie said that he is working on updating the rules. He will use the notes that Roger had created as a starting point to write a list of things that need changes. Ernie will have his staff draft individual sections and will include work from the TAC subcommittee on groundwater level monitoring.

Roger said that Steve would like to see the rules updated to allow Class B Designers to work on drip dispersal systems.

Anne is going to work on updating the language related to determining which lots have improved lot status. This is important because it determines what requirements are imposed when change in use, such as from seasonal to year-round use, is proposed.

Justin asked about adding clarity for best fix situations, especially about when groundwater mounding calculations are required. Ernie said that he has asked for these calculations but then used his judgment on the specific design of the replacement system. Justin suggested that there should be staff training so that there is a consistent approach among all of the regional offices. Ernie said that a lot of the decisions are very site specific and the decision is often related to cases where there is room to build a very large system but there is justification under the rules to allow for a system better matched to the particular situation. Craig asked about guidance and Ernie replied Jessanne Wyman, Regional Engineer, had developed a general guide to our thought process and he will ask

if she had that document.

Steve asked if the rule update will be just housekeeping and if so, how far can you go and call it housekeeping. Ernie said there are many changes that can be made as housekeeping that would make the rules easier to use and that other than legislative mandates there may not be a need for many other changes.

Ernie said that while working on the updates to the Water Supply Rules he had looked at the revisions proposed to the design flows by the TAC. He noted that many of the proposed numbers were in increments of 11.5 gallons or 13 gallons and asked if they should be rounded up or down to units such as 10 gallons or 15 gallons. The TAC recommends staying with the proposed changes.

UIC (Underground Injection Control) Rule Updates:

Ernie started with an observation that the existing permitting requirements cost the Agency money because the application fee is \$100 while the minimum cost of posting the required public notice in newspapers is \$270. This reinforces the desire of the Agency to update the UIC Rules with a goal of moving most construction into categories that are exempt or conditionally exempt. This would be consistent with Federal Rules. Catherine Gjessing, ANR attorney, Anne, Ernie, and Christine Thompson developed a list of exemptions based on a draft that Roger wrote.

Anne said that Catherine had a rough draft of a rule update that is based on rules currently in use by the State of Maine. The Maine Rules call out many categories of injection well while Roger's draft grouped things together. Anne said that a list of conditions needs to be made for each category first and that she had identified at least 30 categories including geothermal wells and boiler blow down. She said that quarries will probably need to have their own category and will probably need individual permits. Anne will then try to group types.

Rodney asked if wells are grouped by the type of disposal system or by the type of contaminants that might be present. Roger asked if there is a request for TAC input. Anne said that after Ernie looks for categories and gets input from staff on proposed conditions for specific exemptions, Anne will clean up the list to be just a list of categories. At that point a TAC subcommittee would be helpful. Ernie would like a couple of regional office staff members and maybe some other designers, such as Peter Boemig, to be on the subcommittee.

Groundwater Withdrawal Permitting Rules:

Scott said that the proposed rules were presented to LCAR (Legislative Committee on Administrative Rules). The rules were accepted and will be effective as soon as the filing is completed with the Secretary of State. Any withdrawal with an average daily rate of more than 40 GPM will require a special permit unless it qualifies for an exemption.

Anne was asked about the public trust issues and said there is a draft out for public comment. The

comment period has been extended. The Commissioner wants to have an interim guidance until the Rule can be adopted. Judge Meredith Wright has said that compliance with the Groundwater Protection Rule and Strategies may not by itself meet the public trust requirement because these are old rules that were adopted prior to the creation of the public trust requirement for groundwater. Craig asked about the working committee that will advise the Commissioner. Rodney said it would probably be led by an attorney and be similar to the group that worked on the Groundwater Withdrawal Rules.

Wetland Rules:

Ernie said that he had met with Alan Quackenbush and had sent a summary of the meeting for Alan to review. Alan has not responded and Ernie will follow-up. Ernie is looking to get a memo of understanding signed so it can be posted for general use. Justin asked about the general permit approach but it probably will not answer the questions about how replacement wastewater systems will be reviewed under the wetland rules. Based on the meeting between Alan and Ernie it appears this will not be a major change from past practice which has worked well.

Water Treatment Systems and Radioactivity:

John said that he is concerned about the concentration of radioactive contaminants in water treatment systems and that he has discussed the issue with officials in New Jersey. There is a common filtration media (BIRM) used for iron removal that also collects radioactive particles which may be unknown to the designers and users of the systems. The level of radioactivity can be high enough to be detected by monitors along the highway and can exceed safe levels for human contact. Carbon filters may also collect radioactive particles. This may be an emerging issue with a lot of consequences for the design and maintenance of water treatment systems.

Issues for TAC Review:

Rodney asked if we are ready to go to soil identification instead of percolation tests. There is a table in the Indirect Discharge Rules that includes soil morphology as part of the site evaluation process. Apparently most states using a soil method do not use morphology but rather use the USDA methods related to grain size, structure, and consistence. This issue should be a TAC discussion.

Justin asked about licensing of installers. He said that all of those he deals with would like to be licensed. Roger reviewed the history of licensing and said that this had been proposed and widely supported in the 2002 Rule update but there was last minute concern by a legislator and it was removed. Craig said that some states started with voluntary certifications. Roger said that licensed installers would have an advantage if they could do write the installation certifications because there would be a time and expense saving for the customer.

Ernie asked about the thinking related to giving an automatic 6" of credit for installing a curtain drain. Steve reviewed his observations of how drains worked. Roger said this might work with the correct design factors which might include minimum slope, minimum hydraulic contrast between soil layers, maximum depth, and minimum upslope drainage area.

Items prioritized for discussion with high, low, and medium ranking

1. Soil identification vs. perc test **medium**
2. Curtain drain with presumption of effectiveness **high**
3. Revisions to desktop hydro chart **medium**
4. Minimum amount of sand under a mound **high**
5. Grandfathered design flow and conversion of use policy **high**
6. Updating of design flow chart **high**
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8. Seasonal High Water Table determination for performance based systems **high**

Executive Committee

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Zabiloski, Dan Wilcox

UIC Rules and Disposal of Wastewater from Water Treatment Systems –
John Beauchamp, Gary Adams, Roger Thompson, Ernie Christianson, Gail Center, Jeff
Fehrs

Approved Minutes of the Technical Advisory Committee Meeting
June 21, 2011

Attendees: Roger Thompson Gail Center

Kim Greenwood
Denise Johnson-Terk
Bruce Douglas
Bill Zabiloski
John Beauchamp

Steve Revell
Justin Willis
Scott Stewart
Ernest Christianson
Rodney Pingree

Scheduled meetings:

July 19, 2011 1-4 PM Lincoln Room, Osgood Building

Agenda:

The agenda was reviewed and a topic added related to the information John has been gathering related to the possible accumulation of radioactivity in water treatment system media.

Minutes:

The draft minutes of the May 24, 2011 meeting were reviewed. A reference to the Rules related to groundwater and public trust issues was corrected to read “Groundwater Protection Rule and Strategies.”

S.77:

Ernie gave an update on the veto of S.77 (a bill requiring water quality testing when a new water source is constructed). Ernie said that it was a surprise that the bill was vetoed as the people he had talked to were supportive of the bill. Kim said that most Realtors supported the bill.

Gail noted that a study of arsenic concentrations of drilled wells in the Taconic Mountains (a major range of peaks that extend from southwestern Vermont northward to Brandon) was done by Jon Kim, a geologist with the Vermont Geological Survey, in cooperation with study at Middlebury College. 25% of the wells tested were found to have concentrations of more than 10 PPB which is the current Federal Drinking Water Standard. Gail said that Jon does a very good presentation of this study to interested groups. This study may have been one reason why the legislature passed S.77 because the legislation would have resulted in a statewide data base that could have been reviewed to determine if there are certain geologic settings where more detailed water quality testing would be important.

Water Supply Rule Update:

Ernie said that he sent Scott a draft design flow table having added his updates for marinas and deli/catering operations. He also proposed changes for schools with high schools at 12 GPD/Person, middle schools at 9 GPD/Person, and elementary schools at 8 GPD/Person all of which were based

on not having gyms, showers, or food service. He also proposed adding a category for skating rinks with design flows for participants and for spectators. He also suggested changes for veterinary clinics. Ernie will send a copy of the draft to the TAC.

Steve asked about design flows for gas stations. Ernie said he proposed 50 GPD/per pump with two hoses per pump. Ernie also said that the proposal clarifies that for institutional housing and hospitals, the per bed space design flow includes employees and support services. Ernie also updated design flows for stores and supermarkets with and without meat, fish, and bakery departments. Roger suggested that some flow meter information might be collected for large stores as they are mostly on municipal water systems. Ernie said that the Commissioner and Dick Valentinetti suggested a partnership with UVM which could result in interns collecting desired information.

Ernie said he would circulate to TAC draft documents on well casing storage calculations and isolation distances in addition to the one on design flows.

Wetland Issues:

Ernie has sent a draft MOU to Alan Quackenbush that outlines the process of designing replacement wastewater systems when a wetland or wetland buffer might be affected by the replacement system. Alan has not responded yet to Ernie's follow-up e-mail. Ernie will check on this.

UIC Rule Update:

Ernie is working on a list of uses that might qualify for a conditional use exemption. Ernie will be talking with Scott about standing column geothermal wells with large flows. Ernie will send a draft list of possible conditional exemptions to the TAC. There are concerns about how to cover floor drains in residential garages. Ernie will also be talking with people at the Department of Agriculture, at the Water Supply Division, and at the Waste Management Division. Kim said that various interest groups would want to have input as there would be some types of wells that they are particularly concerned about and would want to have a chance to comment on prior to approval. Ernie asked the group if they had suggestions about wells that might be considered for a conditional exemption. He also asked if all conditionally exempt wells should be registered with the Agency. The consensus was that not all wells should be registered and the decision would be category by category.

Radionuclides:

Gail gave an update on changes at the Health Department. She is now working for Dr. Irwin who is a radiation expert. Dr. Irwin is willing to work on the issues related to concentration of radiation in water treatment system media which may be an issue for both public water systems and individual residential systems. Gail asked if the licensed operators of public systems can be contacted. Steve

said he works for two public water systems.

John said that he had contacted Mr. Lowry, a consultant in Maine who designs water treatment systems with an e-mailed list of questions. The answers were that gamma radiation is minimal and is not removed by backwashing carbon and BIRM filters when treating for radon and radium. It was also noted that high levels of manganese might tend to collect radium in the treatment system.

Next Meeting:

Work on soil identification/perc testing questions and radionuclides.

Items prioritized for discussion with high, low, and medium ranking

1. Soil identification vs. perc test **medium**
2. Curtain drain with presumption of effectiveness **high**
3. Revisions to desktop hydro chart **medium**
4. Minimum amount of sand under a mound **high**
5. Grandfathered design flow and conversion of use policy **high**
6. Updating of design flow chart **high**
7. Water Supply Rule update **high**
8. Seasonal High Water Table determination for performance based systems **high**

Executive Committee

Steve Revell, Ernest Christianson, Bruce Douglas, Roger Thompson
Alternates – Chris Thompson, Spencer Harris, Claude Chevalier, Craig Heindel

Subcommittees

Hydrogeology - Craig Heindel, Dave Cotton and Steve Revell.

S.77 Issues – Anne Whiteley, Ernie Christianson, Roger Thompson, John Beauchamp, Gail Center,
Chris Thompson

UIC Rules and Geothermal Wells - Craig Heindel, Steve Revell, Roger Thompson, Ernie
Christianson, Scott Stewart, Rodney Pingree, Kim Greenwood

SHWT Monitoring - Craig Heindel, Steve Revell, Roger Thompson, Ernie Christianson, Bill
Zabiloski, Dan Wilcox

UIC Rules and Disposal of Wastewater from Water Treatment Systems –
John Beauchamp, Gary Adams, Roger Thompson, Ernie Christianson, Gail Center, Jeff
Fehrs

Approved Minutes of the Technical Advisory Committee Meeting
July 19, 2011

Attendees: Roger Thompson Gail Center
Larry Becker John Beauchamp
Steve Revell Ernest Christianson
Jon Kim Rodney Pingree
Bill Zabiloski Chris Thompson
Scott Stewart Craig Heindel
Anne Whiteley

Scheduled meetings:

August 23, 2011	1-4 PM	Mad Tom Room, Osgood Building
September 20, 2011	1-4 PM	Lincoln Room, Osgood Building
October 25, 2011	1-4 PM	Mad Tom Room, Osgood Building

Agenda:

The agenda was reviewed and accepted.

Minutes:

The draft minutes of the June 21, 2011 meeting were reviewed and corrected to reflect that a system supervised by Steve Revell does not use disposable resin filters and that Mr. Lowry, a water treatment specialist from Maine, indicated that backwashing of carbon and BIRM filters does not remove the accumulated radioactive material.

Arsenic in Vermont Groundwater:

Jon Kim, a geologist with the Vermont Geological Survey, presented the results of a collaborative study with Middlebury College entitled **Deciphering Elevated Arsenic Levels in Groundwater Wells from Southwestern Vermont**. This talk built on previous work done by Middlebury Students in an Environmental Seminar (Arsenic Contamination in Vermont's Private Wells) that was led by Professor Peter Ryan and was supported by the Vermont Geological Survey, the Vermont Department of Health, and State Senator Ginny Lyons. The report and associated documents are posted on the Vermont Geological Survey website at:

<http://www.anr.state.vt.us/dec/geo/HealthMain.htm>

Jon said that while the study concentrated on the Taconic Mountain portion of Vermont, and found the largest number of wells with high arsenic concentrations in Rutland and Bennington Counties, high levels of arsenic were also found in northern and eastern portions of Vermont. Some

concentrations were much higher than the federal drinking water standard of 10 PPB. The maps developed with the study (see the website) are a start at developing a process that would give some guidance on where water quality testing for arsenic should be a priority.

This presentation led to a discussion of S.77, the bill that proposed to require water quality testing of all new private water sources. The bill was passed by the Legislature but was vetoed by the Governor. Larry Becker, Vermont State Geologist, said that DEC Commissioner David Mears appears to be supportive of water quality testing as described in S.77 which was passed by the Legislature but not signed by the Governor.

Steve noted that one problem with S.77 was that the TAC was not involved early in the process and as a result there was a rush at the end of the session to fix some problems that the TAC would have recognized and fixed at the beginning. This might have built more support for the bill. Anne said that she has heard that the bill will be back in the next session.

Ernie asked Jon if there is a correlation between arsenic and uranium.

Rodney asked if there is evidence of organic complexing. Jon said that this is occurring and it creates a reducing environment which can mobilize arsenic and uranium.

Scott asked Jon about well driller education. They agreed that it would make sense to make a presentation at the next well driller's meeting. Gail said that the province of Quebec is dealing with an arsenic rich formation north of Newport. She noted that Quebec had done some province wide education with poor results which was the same result that the Vermont Department of Health had with a statewide approach. She said that a town by town approach seems to be more effective at getting people's attention.

John asked if there are soil types that are better at retaining radioactive particles. It appears that uranium is mobile under most non-reducing environments.

There was discussion about collecting a data base of information that would include information not currently collected by the Vermont Department of Health or DEC. John said that water treatment specialists do a lot of water testing. Jon said this would be useful if the source locations can be accurately determined. Craig said that his personal well is high in sulfur and volunteered to provide samples.

TAC Appointments:

Roger asked if everyone had gotten their appointment letters from the Governor's Office. John has not received his letter. Ernie or Chris will check on this.

Design Flows:

The TAC is working on a full review of the design flows table to bring it up-to-date. Ernie said that he and Anne had reviewed a list of design flows based on Roger's last draft of TAC work and had along with his staff proposed some edits. Anne noted that the review document does cover all design flows for potable water systems based on the definition in the Wastewater System and Potable Water Supply Rules.

Craig asked if the term zero design flow should be used when there actually is a flow associated with the described activity, such as home catering. Craig asked about the science of not adding design flow for home catering. Ernie explained that it had been decided that while a home catering operation would involve some water usage it seemed that it was a small enough amount in most cases that it would be covered by the allowance for a single family residence. Anne said that a footnote could be added to make it clear that zero means the increase in design flow not that there is no flow for the activity. Craig asked about the difference between home and commercial catering. Roger said that the type of equipment was used to differentiate the two operations.

After discussion of design flows related to kennels it was decided the design flow should be per animal enclosure.

Next Meeting Dates:

It was decided that the next meetings would be August 23rd, September 20th, and October 25th.

Items prioritized for discussion with high, low, and medium ranking

1. Soil identification vs. perc test **medium**
2. Curtain drain with presumption of effectiveness **high**
3. Revisions to desktop hydro chart **medium**
4. Minimum amount of sand under a mound **high**
5. Grandfathered design flow and conversion of use policy **high**
6. Updating of design flow chart **high**
7. Water Supply Rule update **high**
8. Seasonal High Water Table determination for performance based systems **high**

Executive Committee

Steve Revell, Ernest Christianson, Bruce Douglas, Roger Thompson
Alternates – Chris Thompson, Spencer Harris, Claude Chevalier, Craig Heindel

Subcommittees

Hydrogeology - Craig Heindel, Dave Cotton and Steve Revell.

S.77 Issues – Anne Whiteley, Ernie Christianson, Roger Thompson, John Beauchamp, Gail Center, Chris Thompson

UIC Rules and Geothermal Wells - Craig Heindel, Steve Revell, Roger Thompson, Ernie Christianson, Scott Stewart, Rodney Pingree, Kim Greenwood

SHWT Monitoring - Craig Heindel, Steve Revell, Roger Thompson, Ernie Christianson, Bill Zabiloski, Dan Wilcox

UIC Rules and Disposal of Wastewater from Water Treatment Systems –
John Beauchamp, Gary Adams, Roger Thompson, Ernie Christianson, Gail Center, Jeff Fehrs

Approved Minutes of the Technical Advisory Committee Meeting
August 23, 2011

Attendees: Roger Thompson Gail Center
Kim Greenwood Peter Boemig
Bruce Douglas Ernest Christianson
Anne Whiteley Rodney Pingree
Scott Stewart Justin Willis
John Beauchamp

Scheduled meetings:

September 20, 2011	1-4 PM	Lincoln Room, Osgood Building
October 25, 2011	1-4 PM	Mad Tom Room, Osgood Building

Agenda:

The agenda was reviewed and accepted.

Minutes:

The draft minutes of the July 19, 2011 meeting were reviewed. Roger received some revisions from Jon Kim that will be included in the approved minutes. Gail added that the family that had testified to the legislature about their exposure to arsenic has contacted the Vermont Department of Health complaining about the lack of notification. Gail said that the Department is looking for any good ways to improve their education process. Anne said to add a note that the TAC has begun another full review of the design flow table to bring it up-to-date.

WWMD Reorganization:

Roger said that DEC is reorganizing its divisions. The Regional Office functions, the Indirect Discharge Program, the Underground Injection Control Program, and the Licensed Designer Programs are going to be combined with the existing Water Supply Division to make a new larger division to be known as the Drinking Water and Groundwater Division. Chris Thompson will be the Director of the new division. The Direct Discharge Section and the Residuals Management Section will be combined with the existing Water Quality Division to make the new Watershed Management Division. Pete LaFlame will be the Director. There will be physical relocations of staff to bring them closer to their new supervisory structure.

Brian Kooiker is retiring at the end of the month and will be moving to Michigan immediately thereafter.

Groundwater as a Public Trust:

Kim asked about the status to the Agency response to the Environmental Court Decision that in order to determine whether a groundwater public trust resource was being protected, simply complying with the Groundwater Rules is not sufficient. Anne said that the interim guidance document on how the Department will apply the public trust to groundwater that was circulated for comment included a recommendation of a major update of the Groundwater Rules. ANR Attorney Matt Chapman is working on this and Waste Management Division Director George Desche has the lead on coordination between DEC Divisions on development of regulatory language on the public trust in the Groundwater Protection Rule and Strategy.

Peter asked for a summary of the public trust concept. And Anne gave an overview. The public trust concept comes from English common law. It was originally applied to surface water to maintain the ability to use surface water for transportation. The concept was adopted by courts in the United States. A case in Chicago determined that land that was created by a railroad company by filling into a lake could not just be sold for other use unless the new use had a general public benefit. The Vermont Supreme Court first applied this concept in a case related to the control of lake levels by a mill on Lake Morey. This was also used in rail yard case on the Burlington waterfront where the Supreme Court determined that the filled land was subject to the public trust concept. The Vermont Legislature recently passed a bill that said that groundwater was also held in public trust which was applied by the Environmental Court. The interim guidance was written to help define what DEC would do to apply the groundwater public trust in various permit programs.

Design Flow:

The committee spent a lot of time with a detailed discussion of design flows for various types of stores. One point of concern with the current rules is the concept of small and large drygoods stores and whether a gallons per square foot of floor space approach could be used for all sizes of stores.

Ernie said that he had looked at what other states use for numbers but had not found something that covered all of the situations he encounters. Roger said that the existing rules had created a small store category to try and deal with small stores such as gift shops that are run almost as home businesses with only one or two employees and no bathroom facilities provided to the customers. Peter noted that with a stand-alone store with its own water and wastewater systems a minimum design flow requirement, such as 100 GPD, would not be a major burden as the cost of construction would not be reduced much to build a system with a 15 or 30 GPD (one or two employees) design flow. The committee supports a concept that the rules should be based on typical types of uses and sizes and then have the staff and designers use a case by case approach for the more unusual cases.

Now that the committee has spent much of two meetings working on the current draft revisions the committee asked Ernie to update the draft to reflect the work already done and to propose a uniform approach for drygoods stores. Ernie will have this ready for the next TAC meeting.

Items prioritized for discussion with high, low, and medium ranking

1. Soil identification vs. perc test **medium**
2. Curtain drain with presumption of effectiveness **high**
3. Revisions to desktop hydro chart **medium**
4. Minimum amount of sand under a mound **high**
5. Grandfathered design flow and conversion of use policy **high**
6. Updating of design flow chart **high**
7. Water Supply Rule update **high**
8. Seasonal High Water Table determination for performance based systems **high**

Executive Committee

Steve Revell, Ernest Christianson, Bruce Douglas, Roger Thompson
Alternates – Chris Thompson, Spencer Harris, Claude Chevalier, Craig Heindel

Subcommittees

Hydrogeology - Craig Heindel, Dave Cotton and Steve Revell.

S.77 Issues – Anne Whiteley, Ernie Christianson, Roger Thompson, John Beauchamp, Gail Center, Chris Thompson

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SHWT Monitoring - Craig Heindel, Steve Revell, Roger Thompson, Ernie Christianson, Bill

Zabiloski, Dan Wilcox

UIC Rules and Disposal of Wastewater from Water Treatment Systems –
John Beauchamp, Gary Adams, Roger Thompson, Ernie Christianson, Gail Center, Jeff
Fehrs

Approved Minutes of the Technical Advisory Committee Meeting
September 20, 2011

Attendees: Roger Thompson Denise Johnson-Terk
Steve Revell Mark Bannon
Justin Willis Anne Whiteley
Chris Thompson Bill Zabiloski
Cindy Parks Craig Heindel
Ernest Christianson

Scheduled meetings:

October 25, 2011	1-4 PM	Liquor Control Conference Room in Montpelier
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Agenda:

The agenda was reviewed. Bill asked for time to distribute a draft revision of the guidance document related to drawing the septic isolation zones that are needed as part of the notification of potential impacts on neighboring properties.

Introduction:

Ernie introduced Cindy Parks to the group. Cindy is now working for the Wastewater Management Division and is replacing Jeff Fehrs as the lead person for the Underground Injection Control Program. Cindy previously worked for the Agency issuing contracts for construction of WWTF. Cindy later earned a degree in engineering from the University of Massachusetts and then worked at Metcalf and Eddy in Boston before returning to Vermont.

Minutes:

The draft minutes of the August 23, 2011 meeting were reviewed and approved.

Hurricane Irene:

Chris reviewed impact of the flooding on the Waterbury Complex noting that the flooding was severe with ground floor offices having several feet of water inside. The conditions were actually dangerous when some employees went to the powerhouse to shut down the boilers and ended up having to go through chest deep water to get back to safe ground. Much of the Complex includes

a mostly below grade level (AKA the tunnels) along with the cafeteria and utilities. Even some of the computer system servers were located in these low lying portions of the buildings. The whole complex is closed to the public and the staff with very limited access to obtain belongings and to establish which of the file cabinets should be put in cold storage with a view to saving certain files using a freeze drying technique. This will be used sparingly as it costs about \$500 per file drawer. The staff will be relocated into other spaces at the VSAC building in Winooski as well as space in Waitsfield and Barre. The regional offices are in good shape except that the computer systems, which all depend on the central office network as a time and money saving approach, are currently not functioning. This should be fixed quickly. It is unknown how quickly the folks from the Waterbury Office will have new office space with phones and computers. Many of the staff are working from home or various temporary spots they can find.

There was only a small impact on the Wastewater Management operations from the storm, though people are slowly coming forward to deal with wastewater systems that were washed away or have had their isolation to surface waters greatly reduced by the storm actions.

Justin asked if phone numbers are the same. Chris said yes for the moment with the staff checking their voicemail frequently.

Wastewater treatment facilities were mostly OK with most of the damage being to pump stations and collection lines. Most plants realized the magnitude of the flooding and bypassed the treatment systems. The plants operated with primary separation chlorination to reduce the contamination to the extent possible. Considering the amount of water flowing and the contamination from all of the other sources, the chlorinated effluent posed only a small risk.

It is not clear if the state employees will move back to the Waterbury Complex. The ranges of options include moving back but also selling the property for other development and looking for space closer to Montpelier.

WWMD Reorganization:

The WWMD division staff will move to the VSAC building in Winooski and this relocation will speed the physical reorganization by co-locating the staff in accord with the reorganization plan. The change in supervisors has not yet happened but is on track to happen when things are better organized.

Design Flows:

Ernie, as requested by the TAC at the last meeting has updated the design flow list putting the categories in alphabetical order and making all of the changes that had been accepted by the TAC. Ernie circulated the most recent draft and Jessanne Wyman, Dan Wilcox, and Steve Rebillard submitted comments.

Ernie started to review the revised document and Anne asked if we could start with the sections not recently reviewed beginning with the section on laundry design flows. Craig asked if “per

manufacturer's specifications" is a dangerous approach. Anne said this approach was included to deal with extra-large machines. Mark asked if the Agency had collected any metered flow data. Ernie said that he did not have much data but agreed it could be collected by talking to municipalities. It is important to consider the location of the operation as two businesses with a similar amount of washer/dryer capacity can vary a great deal in the amount of water they use depending on the number of customers. It was decided to go with a minimum flow of 450 GPD and to deal with unusually large machines on a case by case basis.

Ernie reviewed the design flows for marinas, noting that most of the waste from onboard holding tanks is pumped to onshore holding tanks rather than being discharged to a leachfield. The TAC accepted the flows as proposed.

Massage office flows were considered and there was discussion about the portion of flow for the patrons. It was decided to set a minimum flow that would allow for toilet flows for patrons which would not be reduced even if the applicant proposed to not provide toilets for the patrons, which might not be acceptable under other applicable regulations such as the Vermont Plumbing Rules.

Hotels, motels, bed and breakfast operations were considered to be one group and a design flow of 50 GPD per bed space was assigned. This allows for convenience kitchens in the individual rooms. If the laundry is washed onsite additional flows are assigned using the design flows for laundries. An operation serving breakfast to overnight guests is also allowed without requiring an increase in design flow. Mark said this was another category where it would be possible to collect information from municipal treatment plants that would help understand the flows actually being generated.

Items prioritized for discussion with high, low, and medium ranking

1. Soil identification vs. perc test **medium**
2. Curtain drain with presumption of effectiveness **high**
3. Revisions to desktop hydro chart **medium**
4. Minimum amount of sand under a mound **high**
5. Grandfathered design flow and conversion of use policy **high**
6. Updating of design flow chart **high**
7. Water Supply Rule update **high**
8. Seasonal High Water Table determination for performance based systems **high**

Executive Committee

Steve Revell, Ernest Christianson, Bruce Douglas, Roger Thompson
Alternates – Chris Thompson, Spencer Harris, Claude Chevalier, Craig Heindel

Subcommittees

Hydrogeology - Craig Heindel, Dave Cotton and Steve Revell.

S.77 Issues – Anne Whiteley, Ernie Christianson, Roger Thompson, John Beauchamp, Gail Center, Chris Thompson

UIC Rules and Geothermal Wells - Craig Heindel, Steve Revell, Roger Thompson, Ernie Christianson, Scott Stewart, Rodney Pingree, Kim Greenwood

SHWT Monitoring - Craig Heindel, Steve Revell, Roger Thompson, Ernie Christianson, Bill Zabiloski, Dan Wilcox

UIC Rules and Disposal of Wastewater from Water Treatment Systems –
John Beauchamp, Gary Adams, Roger Thompson, Ernie Christianson, Gail Center, Jeff Fehrs

Approved Minutes of the Technical Advisory Committee Meeting
November 1, 2011

Attendees: Roger Thompson Gail Center
Cindy Parks Bill Zabiloski
Rodney Pingree Ernest Christianson
Scott Stewart Peter Boemig
Craig Heindel Anne Whiteley
Mary Clark Bruce Douglas

Scheduled meetings:

December 13, 2011	1-4 PM	NRCS Conference Room- Montpelier
January 10, 2012	1-4 PM	Liquor Control Conference Room- Montpelier
February 14, 2012	1-4 PM	Liquor Control Conference Room- Montpelier

Agenda:

The agenda was reviewed and accepted.

Minutes:

The draft minutes of the September 20, 2011 meeting were reviewed and approved.

Recovery from flooding:

Ernie said that people have designated spaces but that not all have phones and computer hookups at their desks. Both are supposed to be completed soon. New phone numbers are available for some of the staff and a fax line is on the way. Some of the DEC staff are still working from home

or on the road until they have full access available at their new space.

WWMD Reorganization:

Anne said that the NPDES program will be transferred to the new Watershed Management Division which consists of the former Water Quality Division and the NPDES programs. The remainder of the WWMD will be combined into a new Drinking Water and Groundwater Protection Division with Christine Thompson as the Director. This is on hold for the moment while everyone deals with the relocation and all of the work required to clean up after Hurricane Irene.

S.77:

S.77 was the bill that was passed in the last legislative session which would have required water quality testing of all new potable water sources. This bill also included some language to reduce the burden of notifying neighbors when isolation distances from a proposed program extend onto neighboring properties. This bill was vetoed after the end of the legislative session. It appears that the legislature will revisit these issues in the 2012 session and the TAC may want to be involved early in the process. TAC was only involved late in last year's work and was not able to help form and support the bill as much as the members hope will occur in the next session.

Ernie said that he is working with Gail and others at the Health Department to develop handouts that explain the reasons why water should be tested and the Health Department program for doing the tests. Gail said that the Health Department is looking at the impact if a successor to S.77 is passed, particularly with respect to the data management issues. The bill calls for development of a data base of all test results that could start to inform people of geologic areas within the state where various contaminants are frequently found. Gail said that the Health Department Laboratory believes they have the capacity to test the increased number of samples that would be submitted if all new potable water sources are required to test at the time of construction.

Anne said that at least two legislators are looking into the overshadowing issues. They are getting complaints from constituents who get the notice that isolation distances will extend onto their property and then learn that they have no right to prevent this from happening. Ernie said that he has received a few calls from neighboring landowners and must explain that the existing statutory language does not grant any additional rights to the neighboring landowners except that they receive notice. In practice many landowners learn that there is little or no adverse impact from the overshadowing and in some cases landowners have negotiated with the developer to redesign the project to reduce or eliminate the impact. However, when this does not occur the neighboring landowner may be very unhappy. Ernie said that a couple of people have filed a request for reconsideration of a permit which he must deny if the only basis is the overshadowing impact. One of Ernie's decisions has been further appealed, first administratively within DEC and now to the Environmental Court.

Design Flow:

Ernie reviewed the draft that he had circulated earlier. Ernie had updated the draft with the comments from the previous TAC meeting and since then had received a few comments from the Regional Office Staff. Jessanne Wyman had commented about the design flows for the various categories of catering operations. Roger said the transition from caterers with seats to restaurant seating should be adjusted so it would be a smooth curve. Craig agreed, noting that anytime there is an unexpected transitional step in design flows the client always wants to know why and unless there is a good, easy to express reason, it is best to have a smooth progression in the design flow with an increase in use. One suggestion was to remove the proposed categories for catering operations with up to 10 seats and just assign restaurant flows for the seating capacity. This was acceptable to the Committee but Ernie will contact Al Burns at the Health Department to determine how the food licensing program regulates caterers with limited seating to make certain there will be no conflicts between programs.

Peter asked if the pipeline infiltration design flow, which was not proposed to be changed, is still appropriate. Roger said that during an earlier revision he had contacted the Facilities Design Division which permits large municipal wastewater collection systems and was told that even with the changes in construction materials the number is still appropriate. Apparently, even with plastic pipe and modern joints, the system deteriorates with age with the concrete manholes in particular developing leaks over the years.

Bruce and Mary said that in their recent work with failed wastewater systems they realized that wastewater strength is one of the key factors in whether or not a system will fail. They asked if the design flow table should include some factor related to wastewater strength. After some discussion it was decided that wastewater strength is a separate issue from volume of water used and should be addressed in a different area in the rules. It was also agreed that a subcommittee to work on this topic should be formed with Mary, Bruce, Cindy, Peter, Bill, and Roger as members. John Akielaszek, will be invited to join the subcommittee as his Indirect Discharge Permit Program includes wastewater strength as a part of his permitting decisions. Ernie will contact John. Waste strength was added to the topic list, design flows were removed from the topic list, and membership was updated on the subcommittees.

The TAC then gave unanimous approval for the revised design flow table once Ernie adds the changes agreed upon earlier in the meeting.

Drawing Isolation Zones:

Bill had circulated a draft revision to the existing guidance at the previous meeting. Bill said that the goal is to have a process that accurately defines the isolation zone so that a proposed well located anywhere outside of the isolation zone would be approvable. The Committee supported revising the guidance to meet this goal. Craig said that based on his preliminary review the revised language looked good.

Table of Isolation Distances:

The TAC had reviewed and revised this table a year or more ago but Ernie and Anne have made further revisions. Anne said that an updated copy of the proposed changes needs to be circulated to the TAC and the Regional Office Staff.

Next Meeting Dates:

The TAC agreed to meet on December 13th, January 10th, and February 14th. Roger will schedule meeting rooms.

Conditional UIC Exemptions:

Scott asked about the proposed revisions to the Underground Injection Control Rules that would create condition exemptions for some uses such as groundwater heat pump return wells. Anne said that is a task the Cindy has started working on. Cindy will give an update at the next meeting.

Water Supply Rule Revisions:

Scott asked about WWMD feedback on the proposed language related to water storage in the well casing. Ernie said that the proposed language had been reviewed by David Swift and David Webb and is acceptable.

Items prioritized for discussion with high, low, and medium ranking

1. Soil identification vs. perc test **medium**
2. Curtain drain with presumption of effectiveness **high**
3. Revisions to desktop hydro chart **medium**
4. Minimum amount of sand under a mound **high**
5. Water Supply Rule update **high**
6. Seasonal High Water Table determination for performance based systems **high**
7. Wastewater Strength

Executive Committee

Steve Revell, Ernest Christianson, Bruce Douglas, Roger Thompson
Alternates – Chris Thompson, Spencer Harris, Claude Chevalier, Craig Heindel

Subcommittees

Hydrogeology - Craig Heindel, Bill Zabiloski, and Steve Revell.

S.77 Issues – Anne Whiteley, Ernie Christianson, Roger Thompson, John Beauchamp, Gail Center,

Chris Thompson

UIC Rules and Geothermal Wells - Craig Heindel, Steve Revell, Roger Thompson, Ernie Christianson, Scott Stewart, Rodney Pingree, Kim Greenwood, Cindy Parks

SHWT Monitoring - Craig Heindel, Steve Revell, Roger Thompson, Ernie Christianson, Bill Zabiloski, Dan Wilcox

UIC Rules and Disposal of Wastewater from Water Treatment Systems –
John Beauchamp, Gary Adams, Roger Thompson, Ernie Christianson, Gail Center, Cindy Parks

Wastewater Strength - Mary Clark, Bruce Douglas, Cindy Parks, Peter Boemig, Bill Zabiloski, Roger Thompson, John Akielaszek,

Approved Minutes of the Technical Advisory Committee Meeting
December 13, 2011

Attendees:	Roger Thompson	Bruce Douglas
	Mark Bannon	Peter Boemig
	Scott Stewart	Cindy Parks
	Kim Greenwood	Bill Zabiloski
	John Beauchamp	Gail Center
	Spencer Harris	Steve Revell
	Denise Johnson-Terk	Craig Heindel
	Justin Willis	Ernest Christianson
	Rodney Pingree	Anne Whiteley
	Christine Thompson	

Scheduled meetings:

January 10, 2012	1-4 PM	Liquor Control Conference Room- Montpelier
February 14, 2012	1-4 PM	Liquor Control Conference Room- Montpelier

Agenda:

The agenda was reviewed and accepted.

Minutes:

The draft minutes of the November 1, 2011 meeting were reviewed. Rodney asked that the name of the new division be corrected to read “Drinking Water and Groundwater Protection Division.”

Annual Report to the Legislature

Roger said that it is time to start working on the annual report for the legislature. After many years of extraordinary work, Craig asked if he could be excused from being the lead person drafting the report. Steve suggested that Roger do the draft which he agreed to. Roger will contact Ernie to run the computer queries for the reports on the number of permits issued, denied, etc.

Ongoing Impacts of Hurricane Irene

Ernie said that he had checked the number of permits issued for failed systems in the last two months and the 99 permits had been issued. 15 of these were directly related to the flooding. Craig asked if any of the failed systems had been previously permitted by the State and Ernie did not know. Craig asked if the tracking system included information on why the systems failed. This information is not tracked and the TAC members said that the reasons for failure are often uncertain. While washing away in a flood would be clear, things such as too much grease, leaking plumbing fixtures, etc. are pretty hard to determine. Ernie said that something informal might be possible with a short checklist prepared by the staff and sent to him just to see if there are any trends. Roger said that one factor that might be useful is to know, when replacing a previously permitted system, is whether the original soil determinations were accurate.

Ernie also said that the folks from Presby Environmental Company were making a claim that mound systems often fail when a secondary bio-mat forms between the native material and the sand fill and that use of the Enviro-Septic[®] System prevents these failures. This was briefly discussed with the consensus being that this type of failure is seldom seen in Vermont. There was also a claim that Vermont's requirement that an outlet filter be installed interferes with air flow that is intended to be from an inlet pipe at the leachfield with an exit from the plumbing vent on the roof.

Anne commented on the Irene Task Force that was established to learn from what happened and to plan for the future. Anne said that a group of attorneys and legislators has been looking at many issues grouped into housing issues, planning issues, flood plain management strategies, and property law.

The property law group is working on what happens when rivers move. The Governor suspended stream alteration permitting requirements so that emergency work could be done immediately. A number of septic systems were damaged or totally destroyed and in order to allow rapid repairs a number of systems were granted oral approval to begin reconstruction. This approval was subject to future submission of an application, plans, and fees so that the paperwork record would be complete. Failure to do this will result in a cloud on the property title. No legislative changes are proposed relative to septic system repair. There are other groups looking at adding some statutory language related to future emergencies that specifically allow for waivers under emergency situations. There are concerns about maintaining public records. Land records are recorded and stored by individual towns. Some have good systems to protect their records and others are subject to hazards such as the recent flooding. Some legislative action to require and support the preservation of these key records may be needed.

Roger asked how the property law applies when a river changes course. Anne said it depends on whether the change occurs suddenly or gradually. There are court decisions that make it clear that gradual movement of streams, which is always occurring at least when the stream is not contained in a bedrock channel, results in the property line moving as the stream moves. In this case some people gradually lose land, some people gain land, and some just have their land move to the other side of the stream. In all cases, if the stream is designated as the property boundary, the ownership moves with the stream. The law, when there is rapid change, such as occurred during Hurricane Irene, is different. The boundary does not move so on paper the landowner may own land that is now under the stream or on the other side of the stream. The use of the land under a stream may be restricted because of public trust rights so it may not be possible to fill in or redirect the stream in order to restore the property to its former status. During the immediate aftermath of the storm, there was a significant amount of work done to return streams to their previous bed, to remove gravel from a streambed, and to restore roads. This was done under the waiver granted by the Governor which is supported to some extent by existing statutory language. Whether some of this work exceeded what the waivers allowed and whether remediation will be needed in some cases is still being determined on a case by case basis. Peter said that many people did not know that permits were required for flood repair work or that they might need to file at a later date to avoid clouding their title. Anne said the title concerns are limited to those people who need a permit for the replacement of a failed septic system.

Roger said that his local newspaper mentioned possible plans to have floodplain development regulated at the state level. Anne said that another group is looking at this with some people thinking the regulation would be more consistent and effective if done at the state level. One thing everyone agreed on was the need to get all of the towns that do not currently participate in the Federal Flood Insurance Program enrolled and participating. Anne said there is talk of increasing the requirements that would limit or reduce construction in a floodplain and ensure that development in the floodplain had less potential for creating damage during a flood event. One example might be tying down propane tanks. FEMA is also working on a limited program to buyout people who had buildings in the flood plain. One concern about this is that the land will eventually be transferred to the towns and there will be a loss of property tax for the town.

John said that he has been dealing with wells that failed the test for coliform after the flood. People are now in the process of chlorinating and retesting. John said he was wondering about the impact of stream relocation on the underlying aquifer feeding the wells. He also noted that a number of fuel oil tanks floated away and then leaked which created a potential for contamination. Gail said that after the flood the Vermont Health Department sent out about 3,200 water test kits. About 1,000 were returned for testing and about ½ show the presence of coliform. Some wells have been chlorinated and retested several times. When people ask about what they should do, Gail said she tells them, to be on the safe side, put in a treatment system. She tells them this may require a water softener or pre-filter to be installed as well in order to have the disinfection system work properly.

Reorganization of WWMD

Chris said that December 14th was the official date of the reorganization that will combine the

Regional Office operations with the Water Supply Division into the new Drinking Water and Groundwater Protection Division. Chris has been delegated the authority to sign water supply permits since November so the transition tomorrow will be smooth. The Regional Offices will not be greatly affected by the reorganization for now. Chris will evaluate the new division and make changes as needed for efficiency and consistency. Chris said that under the temporary plans, the Division is expected to remain in the Winooski office location for at least two years.

Proposed Prohibition of Hydrofracturing for the Production of Hydrocarbons

Cindy said that Sen. Galbraith and Rep. Kline and Peltz are working on legislation that would prohibit hydrofracturing in Vermont for the purpose of hydrocarbon recovery. The existing Vermont Underground Injection Control Rules prohibit injection wells used for oil and gas production but these rules could be revised or the program returned to the Federal Government which does not prohibit this use. EPA is looking at the hydrofracturing process both for the chemicals and additive that are injected to break up the rock and for the potential of creating connections to and contamination of potable water aquifers. While most of Vermont is not known to include areas likely to produce hydrocarbons, at least one well was drilled into a shale formation the runs through Vermont and into Canada. There is some activity in Canada evaluating the potential for hydrocarbon extraction. DEC/ANR will have proposed legislation that will be reviewed by the TAC. The concerns are mostly with the sand and ceramic particles used to prop open the rock fractures after the pressure is released along with the chemicals used to facilitate their injection into the rock fractures. These chemical mixtures are often considered to be proprietary by the company but they contain materials that may be mutagens, carcinogens, and teratogen. There is an Oil and Gas Board authorized in Vermont Law but it is not active.

Roger asked about the reason for pursuing legislation when there did not seem to be much prospect for development in Vermont. Anne said that there was actually discussion of a project in Southern Vermont which had caught the attention of some Legislators. Cindy noted that it was not only the materials used in the process and the disposal of the wastewater but also the use of fresh water. A large volume of water is required in the process of hydrofracturing. State Geologist Larry Becker has been asked about the potential for hydrocarbon development in Vermont and responds that it depends on the price of energy. If the price goes high enough it might become feasible. Craig said his understanding is that the potential in Vermont shale is related to the degree of metamorphism that has occurred. A high degree of metamorphism reduces the likelihood that hydrocarbons would still be present. The bedrock of Eastern and Central Vermont is generally fairly highly metamorphosed but the shale in westernmost Vermont is less so and therefore might contain viable hydrocarbon resources, which is the reason that they have been explored at various times in the past.

Rodney asked about Vermont's authority to regulate hydrofracturing if there is a Federal Exemption that allows for it. Anne said a state that has been delegated operation of the Underground Injection Control Program, such as Vermont, can impose more restrictive limits than contained in the Federal Rules. Kim noted that regulation of the use of groundwater is subject to

NAFTA (North American Free Trade Agreement) with foreign companies arguing that they cannot be restricted from developing a groundwater resource under state law. Anne said this depends on whether the law was proposed before or after the foreign company is involved.

Bruce Douglas – Going Beyond the Minimum Isolation Distance

Bruce gave a version of his presentation to the Northeast Private Water Well Symposium that he made on November 15th in Southbury, Connecticut. A copy of the presentation is attached to these minutes. This talk is based on work that Bruce and DEC have done over many years and the work of others that demonstrates a hydrogeologic connection between drilled drinking water wells and shallow sources of nitrate contamination. The sources include domestic wastewater disposal systems and surface application of fertilizer. The studies found that in situations where the bedrock was not protected by a layer of soil with low permeability such as clay or silt, the nitrate could move into the bedrock aquifer and then to the bedrock well at distances much greater than 100'. This demonstration of flow to wells at larger distances was, in part, the basis for considering how far wells should be located from sources of pathogens, such as domestic wastewater disposal systems. Approximately 20 years ago, when Bruce worked for DEC a literature review of pathogen travel in groundwater determined that the two-year time of travel standard, based on viral die off rates at Vermont groundwater temperatures, was appropriate, but there was a need to prioritize where to apply the two-year time of travel. Further review of the literature indicated a significant decrease in the probability of bacterial contamination of drilled wells separated from leachfields by more than 200 feet. The current drilled well isolation zone was developed using this information. Craig said that when Bruce first mentioned use of the two-year time of travel standard some of the audience gasped. Others gasped when Bruce said that the isolation zone, in Vermont at least, can extend on neighboring properties. Bruce noted that the two-year time of travel concept, first implemented in Vermont in 1982, was re-evaluated by the Vermont Technical Advisory Committee last year, and the consensus remained the same.

Peter noted that New Hampshire has a 75 foot well isolation distance and that several other states have smaller isolation distances than does Vermont without reports of contaminated wells. Peter suggested there should be a risk based approach to defining the well isolation distances.

Anne reviewed the status of overshadowing complaints she is dealing with. In several cases, after discussion by phone or with a face to face meeting, the neighbor was reassured that there was little or no actual impact on their ability to develop.

Mark said that in his experience almost every neighbor getting a notice calls his office to ask questions or complain. On average four to five neighbors must be notified for each application submitted. On one project over a dozen notifications were sent and each made calls to his office. The calls and inquiries in some cases seemed very legitimate such as some neighbors requests to have the area flagged out. However, flagging requires expensive survey work which the neighbor feels should be paid by the applicant. Almost all neighbors request face to face meetings with the

designer to explain details. All of this adds significant cost to the project, in some cases thousands of dollars. Spencer noted that he has laid out some projects in a way that he normally would not in order to avoid having to send notice to a neighbor and that in some cases the design, while complying with the rules, might be more expensive or otherwise less desirable. Anne said that there will be legislation proposed this year related to overshadowing due to the number of complaints.

Some of the new legislation might look at ways to reduce the well shield as a means to reduce the notifications. Mark asked rhetorically if the legislature would ask the TAC for an opinion on reducing Vermont's well shield distance to match New Hampshire's 75' isolation distance would they object. The group responded that they would object to reducing Vermont's isolation distance to 75' or even a 100' distance. Mark asked rhetorically whether the group's responses would change if the applicants were required to purchase easements from affected neighbors as compensation for the portion of the shield or shadow extending onto a neighbor's land. The groups answer was no, noting that the TAC has reviewed the isolation distances several times in a lot of detail, including last year, and deciding that that the existing approach using a fixed radius of 100' around a bedrock well, with an extension of the isolation to 200' in the upslope direction remains scientifically valid.

Roger said that the committee had spent time on discussion of site specific evaluation methods, that on a case by case basis can allow for reductions in isolation distance, which Craig noted could be to a little as 50' under ideal conditions. Scott stated that there are some simple hydrogeological tests that can be done to reduce the isolation distances in some cases. In some situations a few test pits, dug deeper than needed for the septic system evaluation, demonstrate that the deeper layers are slowly permeable to an extent that a reduction in isolation distance can be approved.

Mark asked if it was appropriate for some of these procedures to be drafted into a guidance document similar to that used for the "desktop hydro chart" to aid both designers and regulators. The group was in favor of developing such guidance. The TAC decided to delegate the task to the Hydrogeologic Subcommittee. Steve asked that Mark be added to the subcommittee to provide an engineering perspective and Mark agreed to join the committee. The subcommittee includes Mark, Peter, Craig, Steve, and Bill to write a guidance document.

Craig said that the reduction in isolation distance question seems to be similar in nature to the evaluation that TAC made of proposed regulations that would allow wastewater systems to surface under some conditions. The TAC made a scientific evaluation of what was needed, in the group's opinion, to provide adequate public health protection and proposed what was believed to be the minimum requirements. Any reduction beyond that would be a policy decision.

Craig asked if there should be a policy advisory subcommittee that could be a resource for the Agency and Legislature.

Guidance for Drawing Well Isolation Zones

The next step will be for Bill, Anne, and Ernie to discuss the new procedure. Justin and Spencer will help with the CAD illustrations needed for the document.

Groundwater Monitoring Subcommittee

Steve asked if there was going to be a resolution for this topic. Craig said that after the last meeting there did not seem to be a consensus. After a short discussion it was decided that the committee should meet again and try to move forward in some fashion.

Bruce Douglas

Bruce said that he has a new job in New Jersey with the Natural Systems Utilities Company that is doing advanced work on water reuse and treatment. Bruce asked to resign from the committee as he will not have time to fully participate.

Hydro Subcommittee

Scott and Mark will be added to the subcommittee.

Items prioritized for discussion with high, low, and medium ranking

1. Soil identification vs. perc test **medium**
2. Curtain drain with presumption of effectiveness **high**
3. Revisions to desktop hydro chart **medium**
4. Minimum amount of sand under a mound **high**
5. Water Supply Rule update **high**
6. Seasonal High Water Table determination for performance based systems **high**
7. Wastewater Strength

Executive Committee

Steve Revell, Ernest Christianson, Roger Thompson
Alternates – Chris Thompson, Spencer Harris, Claude Chevalier, Craig Heindel

Subcommittees

Hydrogeology –

Craig Heindel, Bill Zabiloski, Mark Bannon, Scott Stewart, and Steve Revell.

Overshadowing of Isolation Distance Issues –

Anne Whiteley, Ernie Christianson, Roger Thompson, John Beauchamp,
Gail Center, Chris Thompson

UIC Rules and Geothermal Wells -

Craig Heindel, Steve Revell, Roger Thompson, Ernie Christianson, Scott Stewart, Rodney
Pingree, Kim Greenwood, Cindy Parks

SHWT Monitoring –

Craig Heindel, Steve Revell, Roger Thompson, Ernie Christianson, Bill Zabiloski, Dan
Wilcox

UIC Rules and Disposal of Wastewater from Water Treatment Systems –

John Beauchamp, Gary Adams, Roger Thompson, Ernie Christianson,
Gail Center, Cindy Parks

Wastewater Strength -

Mary Clark, Cindy Parks, Peter Boemig, Bill Zabiloski, Roger Thompson,
John Akielaszek,

Appendix B

SUMMARY TABLES OF ALTERNATIVE AND INNOVATIVE SYSTEMS AND PRODUCTS
 Approval letters and contact information for each technology are available at the Agency web site:
<http://www.anr.state.vt.us/dec/ww/innovative.htm>

SUMMARY TABLE: INNOVATIVE/ALTERNATIVE SYSTEMS AND PRODUCTS STATUS AS OF DECEMBER 31, 2010		
Product	Description	Status
Advanced Treatment Systems		
Intermittent sand filter	attached growth aerobic process	Allowed in the Rules
Recirculating sand filter	attached growth aerobic process	Allowed in the Rules
Advantex	textile treatment system	Approved for General Use
Ecoflo Biofilter	peat treatment system	Approved for General Use
SeptiTech	recirculating fixed film treatment system	Approved for General Use
Bioclere	fixed film trickling treatment system	Approved for General Use
Puraflo	peat fiber biofilter treatment system	Approved for General Use
Bio-Microbics FAST	fixed film aerated treatment system	Approved for General Use
Singulair	suspended growth extended aeration	Approved for General Use
Advanced Wetland Treatment System	aerated subsurface-flow wetland	Approved for Pilot Use
Enviro-Guard	combined process wastewater treatment	Approved for General Use
Aqua-Aire	aerobic treatment system	Approved for General Use
Aqua-Safe	aerobic treatment system	Approved for General Use
Chromaglass	sequencing batch reactor	Approved for General Use
The Clean Solution	aerobic treatment system	Approved for General Use
Other Devices		
Flout	floating outlet distribution box	Approved as substitute
Orenco Hydro-splitter	mechanical distribution	Approved as substitute
Juggler	septic tank pumping truck	Determined not subject to Rules
Miller septic tank liner	septic tank liner	Determined not subject to Rules
Roth MultiTank polyethylene tanks	polyethylene septic tanks	Approved for General Use
Polylok Effluent Filter PL-122, PL-68, PL-525	effluent filters	Approved for General Use
Orenco Outlet Filters	effluent filters	Approved for General Use
Orenco Fiberglass Septic Tanks	fiberglass septic tanks	Approved for General Use
Tuf-Tite Effluent Filters	effluent filters	Approved for General Use
Zoeller Filters	effluent filters	Approved for General Use
Bio-Microbics SaniTEE	effluent wastewater screen	Approved for General Use
EZflow	replacement for crushed stone	Approved for General Use
Zoeller TRU-FLOW Splitter	flow splitter	Approved for General Use
Xactics polyethylene tanks	polyethylene septic tanks	Approved for General Use
Presby Advanced Enviro-Septic Pipe	gravel-less distribution pipe	Approved for General Use

Appendix B

SUMMARY TABLE: INNOVATIVE/ALTERNATIVE SYSTEMS AND PRODUCTS CHRONOLOGY OF REVIEWS AND APPROVALS		
Prior to 2002		
Advanced Treatment Systems		
Product	Description	Status
Intermittent sand filter	attached growth aerobic process	Allowed in the Rules
Recirculating sand filter	attached growth aerobic process	Allowed in the Rules
Advantex	textile treatment system	Approved for General Use
Other Devices		
EnviroSeptic (Presby)	gravel-less distribution pipe	Approved as substitute
Flout	floating outlet distribution box	Approved as substitute
Orenco Hydro-splitter	mechanical distribution	Approved as substitute
Juggler	septic tank pumping truck	Determined not subject to Rules
Miller septic tank liner	septic tank liner	Determined not subject to Rules

New in 2002		
Advanced Treatment Systems		
Product	Description	Status
Ecoflo Biofilter	peat treatment system	Approved for General Use
SeptiTech	recirculating fixed film treatment system	Approved for General Use

New in 2003		
Advanced Treatment Systems		
Product	Description	Status
Bioclere	fixed film trickling treatment system	Approved for General Use
Puraflo	peat fiber biofilter treatment system	Approved for General Use
SpecAIRR	reactor treatment system	Approved for General Use
Other Devices		
FRALO SEPTECH polyethylene tanks	polyethylene septic tanks	Approved for General Use
Polylok Effluent Filter PL-122	effluent filter	Approved for General Use

Appendix B

SUMMARY TABLE: INNOVATIVE/ALTERNATIVE SYSTEMS AND PRODUCTS CHRONOLOGY OF REVIEWS AND APPROVALS		
New in 2004		
Advanced Treatment Systems		
Product	Description	Status
Bio-Microbics FAST	fixed film aerated treatment system	Approved for General Use
Other Devices		
Enviro-Septic (Presby)	request for increase in application rate	Approved for General Use
Polylok Effluent Filter PL-68	effluent filter	Approved for General Use
Orenco Fiberglass Septic Tanks	fiberglass septic tanks	Approved for General Use

New in 2005		
Advanced Treatment Systems		
Product	Description	Status
Singular	suspended growth extended aeration	Approved for General Use
Advanced Wetland Treatment System	aerated subsurface-flow wetland	Approved for Pilot Use
Enviro-Guard	combined process wastewater treatment	Approved for General Use
Other Devices		
Enviro-Septic (Presby)	request for increase in application rate	Approved for General Use
Polylok Effluent Filter PL-525	effluent filter	Approved for General Use
Orenco Fiberglass Septic Tanks	fiberglass septic tanks	Approved for General Use

New in 2006		
Advanced Treatment Systems		
Product	Description	Status
Aqua Aire	aerobic treatment system	Approved for General Use
Aqua Safe	aerobic treatment system	Approved for General Use
Bio-Microbics RetroFAST	fixed film aerated treatment system	Approved With Renewal
Ecoflo Biofilter	mixed media biofilter	Approved With Renewal
Other Devices		
Infiltrator	request for increase in application rate	Approved for General Use

Appendix B

SUMMARY TABLE: INNOVATIVE/ALTERNATIVE SYSTEMS AND PRODUCTS CHRONOLOGY OF REVIEWS AND APPROVALS		
New in 2007		
Chromaglass	sequencing batch reactor	Approved for General Use

New in 2008		
The Clean Solution	Aerobic Treatment System	Approved for General Use

New in 2009		
No Systems or Products were approved in 2009		

New in 2010		
Other Devices		
Product	Description	Status
Advanced Enviro-Septic Pipe	Gravel-less distribution system	Approved for General Use
ADS Biodiffuser Chambers	Aggregate Free Leaching Chamber	Approved for General Use

New in 2011		
No Systems or Products were approved in 2011		

Appendix C

DEC OFFICE	Applications Received					Permits Issued				
	2007	2008	2009	2010	2011	2007	2008	2009	2010	2011
	Barre	893	784	649	652	514	885	839	636	651
Essex	693	737	634	565	535	708	767	637	559	525
Rutland	664	627	493	488	454	681	633	497	488	442
Springfield	920	730	521	581	472	938	774	536	576	474
St. J.	514	413	396	347	321	534	422	385	347	312
Totals	3684	3291	2693	2633	2296	3746	3435	2691	2621	2289

Note: The permits issued by the delegated towns of Charlotte and Colchester are not included

DEC Office	Permits Denied														
	Denials Issued					Reasons for Denial									
						Insufficient Information					Non-compliance with Standards				
	2007	2008	2009	2010	2011	2007	2008	2009	2010	2011	2007	2008	2009	2010	2011
Barre	10	7	1	1	0	8	7	1	1	0	2	0	0	0	0
Essex	8	21	4	2	2	5	15	3	2	2	3	6	1	0	0
Rutland	2	0	2	1	0	2	0	1	1	0	0	0	1	0	0
Springfield	11	11	6	2	4	11	11	5	1	4	0	0	1	1	0
St. Johnsbury	3	3	3	2	3	3	3	3	2	3	0	0	0	0	0
Totals	34	42	16	8	9	29	36	13	7	9	5	6	3	1	0

Appendix C

DEC Office	Enforcement Cases				
	2007	2008	2009	2010	2011
Barre	2	3	1	0	3
Essex	1	0	0	0	2
Rutland	2	3	3	0	0
Springfield	3	1	3	0	0
St. Johnsbury	0	0	0	0	0
Totals	8	7	7	0	5

Performance Standards for Permits Issued During 2007 - 2011

	# of Permits Issued	Average DEC Days	Average Total Days	% Meeting Standards	# Permits That Exceeded Stds.
2007	3746	16.8	48.2	98.5%	55
2008	3435	12.3	62.1	99.5%	17
2009	2691	11.8	41.6	99.3%	19
2010	2621	11.9	35.2	99.2%	21
2011	2289	13.2	29.8	99.6%	10

Note: Performance standards for DEC days are 30 days for one lot subdivisions and projects of 500 GPD or less. The standards are 45 days for larger projects.

Appendix C

DEC OFFICE	Permits Issued for Failed Wastewater Systems						
	7/1/2007 to 12/31/2007	2008	2009	2010		2011	
				Permits	AVG. DEC Days	Permits	AVG. DEC Days
Barre	79	113	104	115	10.8	100	9.8
Essex	66	135	148	137	8.6	107	10.5
Rutland	53	89	103	79	8.3	95	5.3
Springfield	62	131	116	106	3.7	110	3.8
St. J.	21	38	31	57	6.4	58	3.4
Totals	281	506	502	494	6.5	570	6.6

Note 1: The Barre Regional Office was not fully staffed in 2010 or most of 2011. The Essex Regional Office has not been fully staffed since November of 2010.

Note 2: Regional Engineers have the option to grant oral permission to allow construction of a replacement wastewater system while processing the application so that construction is not delayed in urgent situations.

Appendix D

Technical Advisory Committee: Members as of December 2011, Executive Committee, Sub-Committees and Statutory Charge

Technical Advisory Committee to the Secretary of the Agency of Natural Resources regarding Environmental Protection Rules (Wastewater System and Potable Water Supply Rules)

Members and statutory charge (Updated to December 1, 2011)

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Executive Committee

Steve Revell, Ernest Christianson, Roger Thompson
Alternates – Chris Thompson, Spencer Harris, Claude Chevalier, Craig Heindel

Subcommittees

Hydrogeology –

Craig Heindel, Bill Zabiloski, Mark Bannon, Scott Stewart, and Steve Revell.

Overshadowing of Isolation Distance Issues –

Anne Whiteley, Ernie Christianson, Roger Thompson, John Beauchamp,
Gail Center, Chris Thompson

UIC Rules and Geothermal Wells -

Appendix D

Craig Heindel, Steve Revell, Roger Thompson, Ernie Christianson, Scott Stewart, Rodney Pingree, Kim Greenwood, Cindy Parks

SHWT Monitoring –

Craig Heindel, Steve Revell, Roger Thompson, Ernie Christianson, Bill Zabiloski, Dan Wilcox

UIC Rules and Disposal of Wastewater from Water Treatment Systems –

John Beauchamp, Gary Adams, Roger Thompson, Ernie Christianson, Gail Center, Cindy Parks

Wastewater Strength -

Mary Clark, Cindy Parks, Peter Boemig, Bill Zabiloski, Roger Thompson, John Akielaszek,

**Statutory composition of the Technical Advisory Committee
and the charge to the committee:**

Section 1978 of 10 V.S.A., as established by Act 133 of the 2001 Adjourned Session, established a Technical Advisory Committee (TAC) to advise the Vermont Agency of Natural Resources regarding the technical standards and implementation of Act 133. The TAC's charge is:

The secretary shall periodically review and, if necessary revise the rules adopted under this chapter to ensure that the technical standards remain current with the known and proven technologies regarding potable water supplies and wastewater systems.

The secretary shall seek advice from a technical advisory committee in carrying out the mandate of this subdivision. The governor shall appoint the members of the committee and ensure that there is at least one representative of the following entities on the committee: professional engineers, site technicians, well drillers, hydrogeologists, town officials with jurisdiction over potable water supplies and wastewater systems, water quality specialists, technical staff of the agency of natural resources, and technical staff of the department of health. Administrative support for the advisory committee shall be provided by the agency of natural resources.

The technical advisory committee shall provide annual reports, starting January 15, 2003, to the chairs of the house and senate committees on natural resources and energy. The reports shall include information on the following topics: the implementation of this chapter and the rules adopted under this chapter; the number and type of alternative or innovative systems approved for general use, approved for use as a pilot project, and approved for experimental use; the functional status of alternative or innovative systems approved for use as a pilot project or approved for experimental use; the number of permit applications received during the preceding calendar year; the number of permits issued during the previous calendar year; and the number of permit applications denied during the preceding calendar year, together with a summary of the basis for denial.

The annual reporting shall end as of January 15, 2007.

Note: The reporting requirement was extended in the 2009 Legislative Session.