

PART ONE: ASSESSMENT EXECUTIVE SUMMARY/OVERVIEW

Overall description

The water quality of Vermont's rivers and streams and lakes and ponds is considered good. This overall water quality rating has not changed from the overall rating level reported in the year 2004 Section 305b Report. The US Environmental Protection Agency (EPA) has requested states to also assess the state's water quality considering the fish consumption advisory for mercury which was issued by the Vermont Department of Health in June 1995 and most recently revised in June 2000. The advisory was issued as the result of fish tissue sampling that showed mercury in the tissue of all fish, particularly in walleye and lake trout, and also PCBs in lake trout¹ in Lake Champlain. Taking the fish consumption advisory into consideration, the overall water quality of all the state's waterbodies would be rated as fair. Deposition of mercury from the atmosphere is the predominant source believed to be responsible for elevated levels of mercury in fish.

For Vermont's wetlands, their water quality is believed to be generally good. This characterization is speculative as Vermont does not have a specific program of assessing and monitoring wetland water quality. Since personnel and financial resources are limited, it has been incumbent upon the state to insure important wetland functions and values are protected from being lost or compromised to development or other destructive practices.

No comprehensive studies have been completed on the quality of Vermont's groundwater. The quality of this vast resource is believed to meet drinking water standards for most of its consumers. An accurate assessment of groundwater quality, however, requires a program with sufficient staff and other resources to characterize the resource.

Assessment Findings

Water quality assessment reports for two river basins were completed by the Department of Environmental Conservation (hereafter as DEC or the Department) in the two years since the 2004 Section 305b report. An assessment report for Basin 6 (Missisquoi) was completed in 2004; and a report for Basin 17 (Lake Memphremagog, Barton, Black, Clyde) was completed in 2005. Each basin assessment report is available from DEC upon request. The water quality assessment report for Basin 8 (Winooski) is nearing final revisions as of this writing.

DEC continued to conduct its monitoring and assessment and listing of waters consistent with the Assessment and Listing Methodology. The 2006 305b Report showcases the LaRosa Environmental Laboratory - Analytical Services Partnership Program.

¹ The 1989 advisory issued for PCBs (polychlorinated biphenyls) in Lake Champlain remains in effect.

Rivers & streams

The assessment of Vermont's river and stream surface water quality and aquatic habitat conditions has been updated from the 2004 305b assessment with water quality information and data from waters monitored and assessed during the 1/1/04 to 12/31/05 reporting period. Beginning with the 2004 report and continuing with the 2006 report, DEC instituted a substantially different way to make use support determinations. As described above and in the appendix containing the Assessment Methodology, miles of rivers and streams are placed into one of four categories by degree of support to designated uses – full support, stressed, altered or impaired. This categorization differs from the categories of full support, full support/threatened, partial support, and non-support used in the 2002 and earlier 305b assessment reports. The 2006 biennial report contains rivers and streams that have been re-assigned to the new categories to the extent possible. However, the current assessment categories do not directly equate to the former categories across all rivers and streams within Vermont. The assessment category of these rivers and streams (considered to be in the minority) will be determined as DEC gets to them in the assessment rotation. *The numbers provided in use support categories as well as the miles of rivers and streams affected by different causes and sources need to be considered as transitional until a complete re-assignment and re-assessment has been done.*

Vermont has approximately 7,100 miles of perennial rivers and streams. Of the 5,491 river and stream miles assessed for the 2006 305b Report, overall approximately 88% of those miles are in compliance with the state's water quality standards and support designated uses, and 12% do not meet water quality standards or do not fully support the designated uses. About 1,609 river and stream miles (23% of total miles) were not assessed for this report. These figures do not appreciably differ from those reported in the 2004 305b Report.

Lakes & ponds

Inland lakes & ponds

All lakes and ponds within the borders of Vermont are considered as inland lakes or ponds except for the 11 segments of Lake Champlain. Moore Reservoir and Comerford Reservoir (found along the upper Connecticut River), Lake Memphremagog and Wallace Pond are transboundary waters that are reported as "inland lakes."

Of the 55,347 inland lake/pond acres that were assessed for this report, 37,522 inland lake acres support uses and 17,825 inland lake acres do not support uses. The 2004 305b Report indicated that 35,908 inland lake acres supported uses and 19,434 inland acres did not support uses.

Although all inland lake/pond waters are impacted by mercury pollution and are subject to fish consumption advisories, Vermont's assessment methodology indicates the need for waterbody-specific tissue data to indicate non-support of fish consumption. Accordingly, when assessed following the methodology, approximately 85% of inland lake acres support fish consumption use. This proportion reflects that there are only a relatively small number of Vermont lakes from which actual fish tissue data are available.

Lake Champlain

In Lake Champlain and due to the combined effects of trace metal contamination, nutrient accumulation and non-native species, none of Lake Champlain's 174,175 acres found in Vermont fully support designated uses.

No acres in the Vermont portion of Lake Champlain support fish consumption use due to elevated levels of mercury and polychlorinated biphenyls (PCB) in fish tissue.

In 2005, the Lake Champlain Basin Program issued a report entitled "*State of the Lake - Lake Champlain in 2005 - A Snapshot for Citizens.*" The special report contained several important questions frequently asked by the public regarding the lake and its contributing watershed. Answers to the questions concerned water quality, public health and safety, fish and wildlife habitat and aquatic nuisance species. The questions appearing in the report are provided below:

Can I swim in Lake Champlain?

Do blue green algae blooms pose a risk?

Who notifies the public about blue-green algae risks?

Can I drink the water?

Can I eat the fish from Lake Champlain?

Are there any new toxins to be concerned about?

Are phosphorus levels too high in the Lake?

Has water clarity improved?

How do increases in population and land use changes influence water quality?

Is it important to protect and restore wetlands and rivers?

Is the biodiversity of Lake Champlain changing?

Do cormorants have an effect on fish, birds and habitats?

Are fish populations changing?

Do sea lamprey threaten salmon, trout and other fish?

Do zebra mussels affect the ecosystem and human use?

Does Eurasian watermilfoil impair the Lake?

Is water chestnut still a problem?

What aquatic nuisance species pose future threats?

What are some cultural heritage and recreation opportunities in the Basin?

Are educational efforts making a difference?

Are local communities helping the cleanup?

The entire *State of the Lake* report can be inspected at the Lake Champlain Basin Program's web site: www.lcbp.org.

Wetlands

The Vermont Wetlands Program within the Department administers the Vermont Wetland Rules which regulate most palustrine wetlands that have been mapped on the Vermont Significant Wetland Inventory maps. Mapped wetlands have a higher level of protection than unmapped wetlands.

Some years ago, the Vermont Agency of Natural Resources digitized all the National Wetland Inventory (NWI) maps for the state. This effort identified a statewide total of 232,000 acres of palustrine wetlands. These wetland areas are considered significant and are designated as Class

Two wetlands under the Vermont Wetland Rules. Wetland inventories conducted in selected towns around Vermont indicate there is considerably more acres of wetland than identified by the NWI project. The wetlands that do not appear on the NWI maps are considered Class Three by the Vermont Wetland Rules. The area of Class Three wetlands is estimated as 90,000 acres.

The Wetland Section logged in 512 new projects during 2004. In addition to the 512 projects logged in during 2004, approximately 96 projects were continued from previous years. In 2004, the Wetlands Section received 88 new Conditional Use Determination (CUD) applications and 84 CUDs were issued, one was denied, and one was terminated. Of the 84 CUDs issued in 2004, a total of 4.2 acres of Class Two wetland were lost, 0.83 acres of wetland were permanently impaired and 0.45 acres of wetland were temporarily impaired. The CUDs issued in 2004 approved approximately 18.93 acres of permanent buffer zone impairment and 0.9 acres of temporary buffer zone impairment. A number of impacts permitted through the CUD process undergo some form of mitigation. Portions of the wetland and buffer zone may be restored from a previously impacted condition or enhanced through plantings. Wetlands can be created from an area that was not previously wetland, or simply protected through a conservation easement. Wetland gains can be the result of mitigation for permits, restoration for wetland violations, or the voluntary action of willing landowners, or a combination of these factors.

Groundwater

During the reporting period, a variety of groundwater concerns were addressed. These concerns included the occurrence of naturally occurring arsenic and radionuclides. The wastewater disposal issue regarding radionuclides at public drinking water systems is particularly problematic. MTBE (an additive by refiners to gasoline) is also of major concern regarding groundwater and about 75,000 private wells near hazardous waste sites have been sampled for MTBE. More than 250 wells have MBTE detections across the state.

Groundwater is currently used for drinking water by approximately 70% of Vermont's population. About 46% of the population is self-supplied while about 24% is served by public water systems using groundwater. Over the reporting period there were 29 new or modified groundwater sources that required a source permit from DEC.

About 87% of the public community water systems in the State have their corresponding Source Protection Areas or aquifer recharge areas mapped. The remaining public community water systems are using 3,000 foot radius circles as their Source Protection Areas.

In 2002, the on-site sewage statute was reformed to provide universal jurisdiction over all on-site sewage (septic) systems. While this reform may have occurred prior to the 2006 reporting period, it is still considered a major event in the on-going protection and improvement of Vermont's groundwater quality.

Listings of Waters

Development of the Year 2006 List of Impaired Waters in need of a Total Maximum Daily Load (a reporting requirement under Section 303d of the Clean Water Act) is a process that runs

concurrent to the development of the 2006 Section 305b report. Consequently, the final 2006 303d List of Impaired Waters has not been included in this report. The 2006 303d List of Impaired Waters, ultimately needing approval by EPA, will be finalized and made available separately. DEC will also make available separately the several other listings of priority waters which are considered to fall outside the scope of Section 303d.

Vermont's 2004 303d List of Impaired Waters was approved by the New England regional office of EPA during the reporting period (approval on July 19, 2004). The 2004 303d listing identified a total of 155 waters as being impaired (111 river/streams and 44 lakes/ponds).

Vermont's 2004 listing of other priority waters outside the scope of 303d was also finalized in 2004. This consists of a number of listings and includes: impaired waters that do not need a TMDL; waters in need of further assessment; waters with completed and EPA-approved TMDLs; and, waters altered by exotic species, flow regulation and channel alteration.

During the 2006 Section 305b reporting period, the New England regional office of EPA approved seven Total Maximum Daily Load determinations completed by DEC. This brings to fifty (50) the total number of TMDLs that have been approved by EPA since 2001.

Concerns & Recommendations

There are several concerns and recommendations which relate to the management and improvement of Vermont's water quality and water resources. Concerns and recommendations which have been prepared for the following topics are more fully described in Chapter 7:

Atmospheric deposition of pollutants

Hydrologic modifications in lakes and rivers

Exotic aquatic species as pollutants

Eutrophication of lakes

Nutrient criteria

Alteration of littoral habitat & effects of shoreline development on inland lakes

Emerging contaminants

E.coli contamination & microbial source tracking

Lack of strategic statewide vegetated buffer requirements

Road salt and water quality

Polluting discharges from large farms

Groundwater