

Agency of Natural Resources

Reports to the 2008 General Assembly

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Act 43 Report – Alternatives to Water Management Typing

Section 6b of Act 43 of the 2007 Legislative session required that the Agency file a report that explores how concepts in the Antidegradation rule could be employed to accomplish the goals originally established for so called “water management typing.” Act 43 reads:

Sec. 6b. AGENCY OF NATURAL RESOURCES REPORT ON BASIN PLANNING

On or before January 15, 2008, the agency of natural resources shall report to the senate committee on natural resources and energy and the house committee on fish, wildlife and water resources with a written proposal for utilizing the implementation process for the antidegradation policy required under 10 V.S.A. § 1251a to update the 17 basin plans of the state. The report shall include:

(1) A proposed, written procedure for utilizing the antidegradation implementation process to conduct basin planning;

(2) A summary of the benefits and disadvantages of utilizing the antidegradation process to conduct basin planning;

(3) An estimate of the cost to the agency of natural resources to conduct basin planning through utilization of the antidegradation process; and

(4) Any proposed amendments to the Vermont water quality standards that may be necessary to conduct basin planning using the antidegradation implementation process.

I. Background

During the 2007 Legislative session, the House Committee on Fish, Wildlife and Water Resources held several days of hearings and received testimony from a wide array of interested parties, including the Agency, regarding Basin Planning generally and Water Management Typing (WMT or WMTing) in particular. Based on the Agency’s difficulty with trying to assign WMTs in a manner that, in its opinion, was consistent with the Vermont Water Quality Standards’ (VWQS) original intent and purpose and one that was also consistent with the views of other interested parties, the Agency proposed that alternative methods for accomplishing the goals of WMTing should be explored. Act 43 required this report to facilitate this exploration.

Agency representatives met with interested parties during the spring of 2007 to begin to discuss some of these alternative methods, which included using components of the antidegradation policy of the VWQS. Additional discussions have not taken place since the spring of 2007. This report, therefore, summarizes possible methods to utilize the antidegradation rule in place of WMTing.¹ In addition, this report offers additional alternatives that merit consideration such as the creation of new classes of waters.

¹ This report does not attempt to discuss or characterize the debate about whether or not WMTing is a reasonable, feasible and practicable method for protecting existing water

This report should be viewed as a starting point for further discussion with the General Assembly, interested parties and stakeholders, and the Water Resources Panel. The Agency does not necessarily endorse one approach over another at this point in time and therefore it would be premature for this report to contain a draft procedure. The Natural Resources Board's Water Resources Panel will be beginning a complete review of the VWQS in 2008. Most of the approaches discussed herein will require varying levels of amendments to the VWQS and any proposed changes to facilitate alternative approaches to WMTing should be addressed at that time.

II. What is Water Management Typing?

In order to discuss potential new approaches to Water Management Typing, a brief explanation of WMTing is necessary. Water Management Typing was introduced into the Vermont Water Quality Standards during the last comprehensive revision to the Vermont Water Quality Standards in 1999-2000. The concept of WMTing is to assign Class B waters to one of three types -WMT B1, B2 or B3, where each type represents a more refined description of Class B waters due to more detailed water quality criteria for aquatic biota, wildlife and aquatic habitat, hydrology, boating and aesthetics.

The purposes for WMTing are set forth in the VWQS as follows:

Section 3-06.A. of the VWQS states that the purpose of WMTs is “[t]o provide for the protection and management of Class B waters in a manner that more explicitly recognizes their attainable uses and the level of water quality protection already afforded under the anti-degradation policy (see § 1-03 of these rules) . . .” In addition, Section 1-02.D.5. of the VWQS states that “...the basin plan shall propose the appropriate Water Management Type or Types based on both the existing water quality and reasonably attainable and desired water quality management goals.” These two statements indicate that WMTing has both a regulatory purpose and a goal setting purpose.

In essence, WMTs were envisioned as a means to provide additional detailed explanation of the already existing Class B waters of the state because Class B waters encompass such a wide variety of our waters – flowing waters from upland mountain brook trout streams to major valley rivers to tailraces below hydroelectric facilities; ponded waters from high mountain ponds to large lakes and reservoirs. One set of Class B water quality criteria was being used to manage a huge variety of waters. The motivation for the WMTing concept was to acknowledge that although the water quality criteria for Class B waters generally did an adequate job of characterizing most Vermont waters, there were two situations where waters needed to be distinguished further.

quality and setting management goals for Vermont's waters. That debate can be gleaned from the various interested parties' filings before the Water Resources Board, which held numerous meetings of the interested parties and proposed various draft guidance documents for comment.

One of the original concepts of WMTing was to address hydropower bypass reaches and other forms of hydrologic modifications to waters, including water withdrawals and water level fluctuations in lakes, ponds and reservoirs. For example, hydroelectric projects often include so-called bypass reaches where water is diverted from a stream and run through a penstock to the powerhouse in order to be used to generate power by passing it through a turbine. This water is returned to the stream below the powerhouse, but it creates a section of the stream (the bypass) that by definition has reduced flows in it. These bypass reaches are generally not of similar quality to other reaches of the stream as a result of the reduced flows, and consequently aquatic habitat is usually also compromised to some degree, though at a minimum it must meet the VWQS. Therefore, the 2000 VWQS created WMT B3 to distinguish certain water quality criteria (aquatic biota, wildlife and aquatic habitat, boating, aesthetics, and hydrology) for hydroelectric bypass reaches and other waters with hydromodifications from other Class B waters where those criteria would be of higher quality. In other words, WMT B3 is designed to describe the lower range of Class B waters and the water quality criteria that must be met to achieve the goals for such waters.

Second, at the other end of the Class B spectrum of waters, there are waters that are of higher quality than the majority of Class B waters. The 2000 VWQS created WMT B1 to distinguish these waters from other Class B waters for the same criteria (aquatic biota, wildlife and aquatic habitat, boating, aesthetics, and hydrology) by describing the water quality criteria that must be met to achieve the goals for these higher quality waters. For example, certain Class B waters may have existing or attainable water quality characteristics that support higher designated use goals and objectives, but for which Class A goals are not reasonably attainable. Although WMTing was originally conceived of to address hydropower bypass reaches and other forms of hydrologic modifications to waters of the state, much of the implementation focus among interested parties has been on distinguishing the waters at the upper range of Class B waters, the so-called WMT B1 waters.²

So at its core, WMTing was designed to further differentiate Class B waters both at the top and bottom range of the Class B spectrum by describing with more particularity selected water quality criteria. WMTs were to be recommended for adoption by the Water Resources Panel as a result of recommendations made by the Secretary of the Agency at the completion of the basin planning process.³

² The primary criticism of the White River Basin Plan and the Agency's WMTing efforts in general was that too few waters were proposed to be WMT B1 rather than WMT B2 based on the existing data (fishery and aquatic biota) from the Department of Fish and Wildlife and Department of Environmental Conservation.

³ WMT designations require amendment of the VWQS and therefore undergo the rulemaking process as set forth in the Vermont APA. VWQS Section 3-06.A.

III. Comparing the Goals of the Antidegradation Policy and WMTing

As stated in the VWQS, Section 3-06, WMTing was in part conceived as a means to enhance those protections already afforded by the Antidegradation Policy. It therefore makes sense to evaluate the components of the Antidegradation Policy that could be used in place of WMTing.

The Antidegradation Policy's general goal is to protect and maintain water quality and it has three components to accomplish this goal. These components are the protection and maintenance of existing uses (Tier I), of high quality waters (Tier II), and of outstanding resource waters (Tier III). These are often referred to as the three tiers of the antidegradation policy.

The basic purpose of the antidegradation policy is to protect existing and designated uses of our waters and to maintain water quality that supports those uses. In particular, Tier II protection of high quality waters identifies those waters whose quality is higher than the minimum level of quality for, in this case, Class B waters. This is also the basic idea behind WMTing, which is to protect uses and maintain the water quality that supports those uses. WMTing attempts to accomplish this by defining the water quality criteria for certain uses with more particularity. In other words, for WMT B1, the aquatic biota criteria sets forth a higher standard than is necessary to meet Class B standards generally in order to ensure the protection of the designated use of aquatic biota, wildlife and aquatic habitat is achieved. The same can be said about the designated use of boating. WMT B1 requires a higher standard ("to the full extent naturally feasible without degradation due to artificial flow and water level management or artificial physical impediments") than for WMT B2 ("to the extent naturally feasible with no more than minor degradation due to artificial flow and water level management or artificial impediments, and with appropriate mitigation for artificial physical impediments"). What this accomplishes is setting a higher regulatory threshold for management of a waterbody or reach that is labeled WMT B1. For example, any proposed project that would alter hydrology would not be permitted in a WMT B1 because it would conflict with the criteria stated above. It might also not be permitted in a WMT B2 if the altered hydrology would be more than "a minor degradation" and didn't have "appropriate mitigation for artificial physical impediments."

IV. Approaches Relying on the Antidegradation Policy

The two components of the antidegradation policy that could facilitate the WMTing concepts of protecting uses are Tier I (existing uses) and Tier II (high quality waters). The following section describes how Vermont could use the antidegradation policy to protect uses and differentiate between different levels of protection that are afforded to waters based on the uses that are sought to be protected and their existing water quality.

A. Existing Uses – Existing uses represent the floor of water quality protection and are those uses of the waters that have been designated by the Secretary and

have actually occurred on or after November 28, 1975, in or on waters, whether or not the use is included in the standard for classification of the waters, and whether or not the use is presently occurring. Existing uses of waters, and the level of water quality necessary to protect those existing uses, must be maintained and protected.⁴ Once an existing use is designated by the Secretary, that use cannot be eliminated. For example, if swimming at a swimming hole were designated as an existing use, a wastewater discharge that would eliminate the ability to continue to swim at that swimming hole would be impermissible.

Historically, the Agency has designated few existing uses, and those that have been designated have been swimming holes. In recent years, through the basin planning process, the Agency has become more comprehensive in its identification and designation of existing uses. For example, in the White River Basin Plan, boating was identified as an existing use along the mainstem of the White River in order to recognize and protect the boating opportunities along a river with no dams or artificial structures as impediments. Other uses such as fishing have also been recognized in the Poultney-Mettowee Basin Plan.

In order to protect existing uses, the basin planning process and the Agency's permitting processes (where appropriate) could expand both the number of and types of existing uses that are identified and designated for existing use protection. This would ensure that these uses could not be eliminated as a result of future management decisions or proposed discharges that are subject to antidegradation review.

An issue that would require discussion is what constitutes an existing use. Historically, the Agency has viewed existing uses as primarily recreational uses on or in the water (swimming, fishing, boating). Once those uses are identified, the water quality necessary to maintain and protect those uses is required. To date, the Agency has not identified aquatic biota, for example, as an existing use. The discussion would therefore center around whether existing uses are limited to actual uses on or in the water by humans, whether it includes use of the water by wildlife and aquatic biota and how that is clearly distinguished from the water quality and habitat that are necessary to support those uses.

B. High Quality Waters – High Quality Waters represent the next level of water quality protection. High Quality Waters are those waters whose quality exceeds minimum water quality standards for Class B waters. The Agency, like many other states and according to EPA guidance, applies this level of protection on a parameter-by-parameter basis. In other words, the Agency evaluates the impact of a proposed discharge that is subject to antidegradation review based on individual parameters, such as dissolved oxygen or pH.

The Agency must maintain and protect high quality waters in a manner that ensures that minimum standards will continue to be achieved and allow a lowering of water quality

⁴ Existing Uses are designated during the basin planning process or on a case-by-case basis during the Agency's evaluation of permit applications that are subject to the antidegradation policy of the VWQS. Section 1-03.B.1.

only when the Secretary determines that on balance the adverse impacts of not allowing the lowering of water quality exceed the benefits of maintaining it. In all cases involving an analysis of high quality waters, the level of water quality necessary to maintain and protect all existing uses must also be maintained.⁵

Conceptually, WMTing set out to ensure that our highest quality Class B waters, those typed as WMT B1, were not allowed to be degraded from very high quality down to a level that was just meeting minimum standards. To do this, WMT B1 sets a new floor below which water quality could not be lowered and represents the minimum standards necessary to maintain WMT B1 status. Again, using the boating example from above, the general Class B standard for boating is “a high level of quality that is compatible with boating.” For a WMT B1 water the standard for boating is “to the full extent naturally feasible without degradation due to artificial flow and water level management or artificial physical impediments.” This new, more specific standard for WMT B1 establishes a higher floor for management and permit evaluation within Class B waters.

There are two approaches that should be evaluated that could provide the higher level of protection for waters that are of high quality and protect the high level of use that has been attained.

1) Additional High Quality Water Identification for Certain Uses. First, in addition to evaluating high quality waters on a parameter-by-parameter basis, high quality waters can alternatively be designated on a waterbody by waterbody basis.⁶ Many states create specific designations of High Quality waters that correspond to a use that is to be protected for a given type of waterbody.⁷

For example, Pennsylvania designates high quality waters based on meeting certain thresholds for wild trout fisheries, for water quality, and for water chemistry.⁸ Very specific thresholds for determining which waters qualify for these heightened levels of protection are developed to distinguish them from other waters. These waters are then protected as high quality waters due to their designation. In other words, if a waterbody

⁵ In most cases, if the high quality of a waterbody is maintained, any existing uses that have been identified should also be adequately protected. There may be exceptions where rare, threatened or endangered species occur that require water quality conditions that are higher than those necessary to meet minimum standards for Class B waters.

⁶ EPA Water Quality Standards Handbook, Chapter 4.

<http://www.epa.gov/waterscience/standards/handbook/handbookch4.pdf>

⁷ The creation of a new or additional approach toward the protection for high quality waters would require an amendment to the Vermont Water Quality Standards Antidegradation Policy, Section 1-03. As currently written, the Policy implies that Vermont has adopted only the parameter-by-parameter approach for Tier 2 protection. The Policy should be amended if Vermont seeks to identify particular high quality waters based on uses to be protected.

⁸ Pennsylvania Water Quality Antidegradation Implementation Guidance, November 29, 2003. Document No. 391-0300-002.

is protected because it is considered high quality for its wild trout population, then activities that potentially impact that waterbody are reviewed to ensure that the level of water quality necessary to maintain the wild trout population is sustained. This approach essentially raises the bar for waterbodies that are so designated to protect each use, which in this example is the wild trout fishery.

2) Creating a Tier 2.5 Level of Protection for Certain High Quality Waters. Second, many states have created a Tier 2.5 as part of their antidegradation policy.⁹ This creates a level of water protection that is higher than Tier 2 for waters that meet certain characteristics, but is not as restrictive as Tier 3 (Outstanding Resource Waters). Although federal law does not require this level of protection, EPA has supported its use by states to create a higher level of water quality protection that is tailored to each state's desire to go beyond the protection afforded under Tier 2.¹⁰

For example, Delaware and Rhode Island use this approach to protect waters that are of exceptional recreational or ecological significance. The designation as a Tier 2.5 water is not necessarily based on exceptional water quality, but instead focuses on the particular use that is to be protected. Similar to the example above, the presence of an important recreational resource (wild trout fishery) or presence of an endangered species could be a basis for Tier 2.5 protection.

V. An Alternative Based on Creating a New Classification of Waters

A third approach to further differentiate Class B waters would be to create a new class(es) of waters in Vermont that is tailored to describe our highest quality B waters. One of the debates about WMTing from the time the concept was conceived was whether or not it created a new class of waters, and if so whether it was authorized by the General Assembly. This debate was once again raised during the past few years before the Water Resources Board (now Panel), before the Legislative Committee on Administrative Rules, and before the House Committee on Fish, Wildlife and Water Resources. Therefore, as an alternative to using the antidegradation policy as the mechanism to replace WMTing, or in addition to it, the creation of a new class(es) of waters should be considered.¹¹ A review of other state water quality standards illustrates that most states

⁹ EPA Water Quality Standards Handbook, Chapter 4.

<http://www.epa.gov/waterscience/standards/handbook/handbookch4.pdf>

See also EPA Region VIII Guidance: Antidegradation Implementation, Requirements, Options, and EPA Recommendations Pertaining to State/Tribal Antidegradation Programs, August 1993.

¹⁰ The creation of a Tier 2.5 level of protection for high quality waters would require an amendment to the Vermont Water Quality Standards Antidegradation Policy, Section 1-03.

¹¹ The creation of additional classes of waters would require an amendment to Chapter 47 of Title 10 by the General Assembly.

have many more classes of waters to describe their diverse water resources with greater particularity.

VI. Hydropower and Other Forms of Hydrologic Modification – WMT B3

This report has focused on alternatives to WMTing for B1 waters thus far. As stated earlier, one of the original motivation for creating WMTing was to address those situations that would fall into WMT B3, namely hydropower bypass reaches and other forms of hydrologic modification, including water withdrawals and water level fluctuation in lakes, ponds and reservoirs. In the nearly ten years that has passed since the last comprehensive VWQS revisions, new concerns regarding these issues have been raised. For example, withdrawals of groundwater and spring water and their associated potential impacts on surface waters were a significant topic of debate regarding the White River Basin Plan and are the subject of current proposed legislation. In particular, the impact of a water bottling operation in Randolph on Blaisdale Brook raised the issue of what the appropriate WMT is for a waterbody that is hydrologically modified yet is permitted to meet the VWQS and maintains a wild brook trout fishery.

In addition, there is current interest among hydropower advocates in reviewing Vermont's approach to setting minimum instream flows for hydropower projects, particularly for so called small hydropower, to facilitate the development of new renewable energy sources. This topic is also currently being discussed in the General Assembly.

Both of these issues, hydropower and groundwater/spring water withdrawals, and their associated impacts on surface waters merit discussion and should be addressed during the Water Resource Panel's upcoming comprehensive revisions to the VWQS beginning in 2008, provided that they are not addressed or need additional consideration after the 2008 session of the General Assembly concludes.

VII. Conclusion

This report has offered several alternative approaches to WMTing to protect high quality waters and uses of particular importance to Vermont, that rely on the expansion of existing authority and the creation of new authority under the Antidegradation Policy and the creation of new classes of waters by the General Assembly. These approaches were identified to serve in place of WMTing, which has proven to be confusing and highly contentious. What was once considered a good idea nearly ten years ago has received very little support as the Agency has attempted to implement it.

WMTing has also had the unintended but very real effect of severely slowing down the Agency's basin planning efforts. In fact, the WMTing component is the single most time consuming aspect of the basin planning process and it has turned a largely locally driven, community based planning process into a bureaucratic, regulatory focused quagmire. Act 43 recognized this and authorized the Agency to adopt two basin plans that are nearing completion without including recommendations for WMTs. The House Committee on

Fish, Wildlife and Water Resources, in particular spent considerable time reviewing the purpose and content of the Agency's basin plans and recognized that WMTing was but a small component of the basin plans themselves. In fact, WMTing was piggybacked onto basin planning simply as a means of ensuring that WMTing would be done in a coordinated manner. WMTing is not substantively a necessary component of basin planning and the Agency is moving ahead with basin planning efforts despite the uncertainty of the WMTing debate.

The approaches outlined for discussion in this report attempt to simplify matters by relying on core principles of the VWQS that have been in use for decades and are widely accepted nationally by EPA and other states. The Agency looks forward to continuing to discuss these approaches with the General Assembly, interested parties and stakeholders, and of course, the Water Resources Panel.