

Water Docket
Environmental Protection Agency
Mailcode 4101T
1200 Pennsylvania Avenue, NW
Washington, DC 20460

Attention Docket ID No. OW-2002-0050

Comments of the Vermont Department of Environmental Conservation on the Advance Notice of Proposed Rulemaking on the Clean Water Act Regulatory Definition of “Waters of the United States” issued by the U.S. Environmental Protection Agency and the U.S. Army Corps of Engineers, Department of the Army, DOD (68 FR 1991).

The Department of Environmental Conservation of the Vermont Agency of Natural Resources (VT-DEC) is the primary implementer of state and federal water quality programs in Vermont. In 1974 VT-DEC received delegation from EPA to implement the National Pollution Discharge Elimination System (NPDES) permit program in the state. VT-DEC is pleased to have this opportunity to offer comments to the U.S. Environmental Protection Agency (EPA) and the U.S. Army Corps of Engineers (COE) on the jurisdiction of their programs under the Clean Water Act (CWA) in the aftermath of the U.S. Supreme Court’s decision in *Solid Waste Agency of Northern Cook County v. U.S. Army Corps of Engineers*, 531 U.S. 159, 121 S.Ct. 675 (2001) (SWANCC).

SUMMARY

These comments:

- Emphasize the urgency of resolving questions surrounding CWA jurisdiction in the wake of the U.S. Supreme Court’s SWANCC decision through new guidance rather than protracted rule making proceedings.
- Describe the negative impacts to Vermont’s natural resources, economy, and regulatory programs that would result from a radical alteration in CWA jurisdiction.
- Present evidence that NWI maps under represent the actual wetland acreage by more than 20%, which suggests that it is likely that the USFWS study of geographically isolated wetlands significantly underestimates the acreage of wetlands that might be affected by changing the definition of “Waters of the United States”.
- Provide a suggested checklist for determining whether streams, lakes and wetlands are “Waters of the United States” based on the “significant nexus” test set forth in the U.S. Supreme Court’s decision in *Riverside Bayview Homes* and elaborated in the SWANCC case.

COMMENTS

1. EPA and the COE should avoid unnecessary delay and provide definitive, unified, national guidance on CWA jurisdiction for their respective programs.

From Vermont's perspective, there are three reasons why EPA and COE need to resolve lingering questions regarding CWA jurisdiction sooner. First, Vermont designed its wetland, lakes, and river protection programs to dovetail with EPA and COE regulatory programs and minimize duplicative regulation. Depending on how the EPA and COE guidance on CWA jurisdiction is worded, important Vermont resources formerly subject to federal regulation may be left without any public oversight. Until EPA and the COE adopt definitive guidance on CWA jurisdiction the state of Vermont is unable to identify such regulatory gaps and to adopt new rules or recommend statutory changes to carry out what the CWA describes as our "primary responsibilities and rights to prevent, reduce, eliminate pollution."

Second, as regulators ourselves we are mindful of the extra expense that uncertainty and delay impose on developers. We believe that neither the original post-SWANCC guidance on CWA jurisdiction issued on January 19, 2001 nor the "joint memorandum" issued January 15, 2003 provide the development community and staff of EPA and the COE with the guidance necessary to quickly and reliably make jurisdictional calls on specific projects.

Finally, while we generally approve of the expansive interpretation of CWA jurisdiction taken by our regional office of the COE, we are dismayed by reports from other parts of the country that other COE regions are exempting resources from regulation that would be subject to COE jurisdiction in Vermont. Vermont is dependant on the protection of resources in other states in order to maintain Vermont's exceptional natural resources. Also, Vermont is in a keen race with other states for economic development and should not be disadvantaged in that competition by *ad hoc* decisions that relax regulatory requirements in other regions of the country.

2. The existing CWA jurisdictional rules "ain't broke so don't fix 'em." EPA and the COE should clarify CWA jurisdiction in a joint guidance document and not waste time in the rule adoption process.

While VT-DEC believes that CWA jurisdictional clarification is necessary, such clarification need not be done through rule making. The SWANCC decision found no fault with existing EPA and COE rules governing CWA jurisdiction. The migratory bird rule struck down in the SWANCC decision was not a rule -- it was agency guidance. Leaving existing rules in place and providing new guidance to agency staff and the public could more expeditiously resolve jurisdictional doubts than initiating a protracted and contentious round of rule making.

Adopting the guidance as a rule would be justified if it would bring an end to differing interpretations of the SWANCC case among the federal Circuit Courts of Appeal. However, a Circuit Court believing that the SWANCC decision requires a narrow reading of CWA

jurisdiction will be just as quick to void a rule as to ignore a guidance document. In other words, if the Circuit Courts won't give deference to a guidance document they won't give deference to a rule either – and either the Supreme Court or Congress will have to resolve ambiguity.

3. Vermont data indicates that the USFWS study on geographically isolated wetlands underestimates by at least 20% the acreage of isolated wetlands in the state that could be affected by changing the definition of Waters of the United States.

The USFWS report entitled *Geographically Isolated Wetlands: A Preliminary Assessment of their Characteristics and Status in Selected Areas of the United States* (June 2002) is one of the most rigorous and comprehensive attempts to estimate the impact of the SWANCC decision on regulatory jurisdiction. The USFWS study is based on the National Wetlands Inventory (NWI) maps. The report includes an analysis of the “breadloaf” study area in Vermont (along the west-central slopes of the Green Mountains, near Middlebury). The report concludes that up to 40.8 % of the NWI wetlands in the breadloaf area might be classified as isolated constituting 17.4% of the area's total wetland acreage.

However, the USFWS study notes in its discussion of source data limitations, “Data sources used for this analysis do not contain every wetland and every small creek (intermittent or perennial). For example, NWI maps have limitations that are inherent in any map produced through remote sensing techniques”. This raises the question of how many wetlands were missed in the NWI mapping. A report done for the Town of Middlebury, Vermont indicates this data gap is significant, and the NWI maps missed more than 20% of Middlebury's wetland acreage.

Vermont's wetland program relies primarily on NWI maps to determine which wetlands are subject to state regulation. However, wetlands not included on the NWI maps also have important values and the state encourages its towns to plan for their protection. With funding and technical assistance from the state, the Town of Middlebury, Vermont undertook a project in 2000 to more accurately map wetlands in town and in the process determine how many acres of wetlands were missed in the preparation of the NWI maps.

The results are contained in *Middlebury Wetland Project Final Report* by George Springston (January 20, 2001, attached). The report describes the inaccuracy of the NWI maps:

Although wetland maps do already exist for this and all other communities in Vermont, the maps are based on small-scale aerial photographs taken over 20 years ago, have long been recognized as inadequate for efficient and accurate development review and planning (Sorenson, 1994). Besides the changes to roads and buildings which have occurred since the maps were made, the maps fail to show many of the smaller wetlands and the shapes of the wetlands that are shown are quite inaccurate. Also, the actual locations of the wetland polygons are often off by several hundred feet.

For the town's study, custom color infrared aerial photography of nominal 1:12,000 scale was flown on April 15, 2000. The aerial photos were interpreted and the data transferred to ArcInfo

GIS format. The report cautions that the town's study itself underestimates the actual extent of wetlands because the overhanging tree canopy at the time of the flight made it impossible to classify wetlands within forested areas.

The report sets out the differences between the NWI data and the town's more comprehensive survey as follows:

According to National Wetlands Inventory (NWI) figures cited by Borre (1989), the acreage of wetlands in the town totals 1,880 acres. The base maps for the NWI maps of Middlebury are 1:24000 scale U.S. Geological Survey quadrangle maps and the aerial photos used were 1:80,000 scale color infrared photos taken in 1978. Because of the small scale of both the photography and the base map, many small wetlands were not included in this inventory and the shapes of many wetlands are quite inaccurate (Sorenson, 1994).

This study found that there are approximately 2,250 acres of wetland in Middlebury. Although this is certainly the most complete inventory of wetlands in the town to date, if on-the-ground wetland delineation was conducted for the entire town, this figure would end up even higher.

Based on the Middlebury report, the NWI maps understated the acreage of wetlands by 20%. Significantly, the Town of Middlebury adjoins the "breadloaf" study area in Vermont that was analyzed in the NFWS report on geographically isolated wetlands.

As previously noted, the NFWS report is one of the most rigorous and comprehensive attempts to estimate the impact of the SWANCC decision on regulatory jurisdiction. However, if the Vermont data is representative of NWI mapping deficiencies in the nation as a whole then the NFWS study underestimates wetland acreage by 20% or more.

The total breadloaf wetland acreage of 698 reported in the NFWS study is actually likely to be closer to 838 acres. Similarly, the isolated wetland acreage of 121 reported in the NFWS study is likely to be at least 145 acres. In fact there is good reason to suspect that the smaller wetlands missed in the NWI mapping are actually more likely to be isolated wetlands. Moreover, the forested wetlands missed by the Middlebury mapping effort would also add to the total fragmented wetland acreage.

4. Regulation of stream channel alteration, management of wetlands and administration of the 401 water quality certification program in Vermont would be significantly affected by a narrowing of the definition of Waters of the United States. Impacts of reduced federal regulation of lakes and ponds, and management of wastewater would be less significant.

The resources in Vermont most likely to suffer in the event of a pullback in federal regulation are smaller wetlands, forested wetlands, and smaller streams comprising some of the most sensitive natural areas. The state's 401 water quality certification program would also suffer. In contrast, the state's legal authority for regulating wastewater discharges and lakes and ponds is comprehensive and management of these resources would be less affected by a change in federal jurisdiction -- unless the federal funding helping to support their management by the state is also reduced.

Vermont's discharge program covers "all rivers, streams, creeks, brooks, reservoirs, ponds, lakes, springs and all bodies of surface waters, artificial or natural, which are contained within, flow through or border upon the state or any portion of it." (10 V.S.A. § 1251). This has been held to apply to intermittent streams as well as perennial streams. Thus, it appears that for the issuance of discharge permits the state would continue to exercise jurisdiction over isolated waters unless competitive pressures from other states economic development activities or a decrease in federal financial support for these programs causes the legislature to cut back on the state's definition.

Vermont's jurisdiction over lakes and ponds is also comprehensive. A change in federal jurisdiction would have little impact on how these resources are managed in the state.

Narrowing federal jurisdiction for isolated wetlands could have a major impact on the management of this critical state resource. Wetlands constitute approximately 5% of Vermont's acreage. The best estimate is that the state lost 50% of its wetlands prior to the adoption of the Wetlands Rules in February of 1990.

Vermont regulates wetlands that are so significant that they merit protection based on an analysis of 11 functional attributes (10 V.S.A. § 905 (7)). In a bow to pragmatism, Vermont's initial designation of regulated wetlands was based on the National Wetlands Inventory (NWI) after a 1988 study by VT-DEC concluded that 93% of the wetlands included in the NWI met the statutory definition of "significant wetlands." In a particular case the actual bounds of a wetland are demarcated through field validation and wetlands that are contiguous to a wetland on the NWI are regulated even if they are not depicted on NWI maps.

Because Vermont bases wetland regulation on NWI maps, all of the wetlands that were described in the USFWS study of geographically isolated wetlands would be subject to state regulation including the 40% that the study determined to be isolated which make up 17% of the wetland area. However, as noted in comment 3, the NWI maps do not account for 20% or more of the acreage of wetlands in Vermont. These "wetlands in-fact" are subject to the jurisdiction of the COE's 404 dredge and fill regulation. Their continued protection is in doubt if the definition of "Waters of the United States" is changed to exclude them.

Vermont's Wetland Rules, adopted by the Vermont Water Resources Board, have procedures for both permanent reclassification and temporary designation of wetlands threatened by development. In practice, however, there have been very few temporary designations to protect wetlands not on the NWI maps. There have been several "non-emergency" reclassifications of wetlands though most that have resulted in de-designation of areas improperly shown on the NWI maps rather than designation of wetlands not depicted on the NWI maps. Hence, as illustrated by the Middlebury wetlands study, there is good reason to suspect that many acres of wetlands would go unregulated if the COE abandons regulation of smaller and forested isolated wetlands.

The goal of Vermont wetlands regulation is no net loss of significant wetlands and their functions. Since the adoption of the state rules there has been no comprehensive evaluation of whether the state has met this goal. However, a review of annual reports indicates that there continues to be a net loss of wetlands acreage due to the fact that compensation for permitted wetland use has not uniformly been required. Though analysis of wetland functions is more difficult, it is probable that there has been a net loss of wetland functions as well. Without the COE 404 program as a backstop for smaller wetlands this record of wetland loss would be exacerbated.

A reduction in COE jurisdiction would also adversely impact administration of the state's wetlands program. In those cases where the jurisdiction of the COE and the state overlap, the programs divide the workload for the purpose of efficiency. For example, both the state wetlands program and the COE 404 program require applicants to demonstrate that they have no economically realistic alternatives to siting a project in a wetland. The state often defers to the federal analysis of alternatives because of the COE's greater experience and technical expertise in such matters. To lose this assistance in 40% or more of wetland permit reviews would create a need for increased staffing at the state level.

Vermont's stream alteration program regulates modifications to watercourses with a drainage area greater than ten square miles at the location of the proposed change. There are many alterations to streams with drainage areas less than ten square miles that are regulated solely by the COE under the 404 program. A number of these projects are eligible for coverage under the COE's streamlined 404 general permit program. However, significant projects in small watersheds must obtain individual 404 permits and 401 water quality certificates from the state. If the COE loses jurisdiction over waters that are not themselves navigable but merely tributary to navigable waters then many activities will go unregulated and there is great potential for degradation of these streams. Significant and potentially damaging activities such as stream crossings, stream relocation and culverting will occur with no oversight. While the state could amend its statutes to allow for regulation in smaller watersheds the net result would be to shift the costs of regulation from the federal government to the state.

The stream alteration permit situation illustrates the point that a reduction in federal permit jurisdiction will also shrink the state's opportunity to conduct 401 water quality certificate review and to condition projects to assure compliance with state water quality standards. Loss of 401 review powers is not a major concern in the case of state-issued federal NPDES permits or activities in lakes and ponds that the state manages through its own permit programs. However, in

the case of stream alterations in small watersheds and activities in wetlands omitted from NWI maps, the loss of 401 certification powers would be a setback in the state's ability to enforce water quality standards.

It should be emphasized that degradation of small streams and wetlands often leads to violations of water quality standards, placement of waters on the state's 303(d) impaired waters list, and expensive remediation initiatives. Conversely, protecting small streams and wetlands has been found to be a cost-effective method of protecting waters threatened with impairment. The COE's 404 permit has been a major tool for assuring the compatibility of new growth and development with maintenance of high quality waters.

5. Economic losses for the state's outdoor recreation industry due to destruction of wildlife habitat in other states is likely to be the major impact on Vermont from a significantly narrowed definition of CWA regulatory jurisdiction.

Tourism is one of the pillars of Vermont's economy. Accounting for 22% of all visitors to the state, outdoor recreationists are a highly valued segment of the visiting public. They are valued because in comparison with other visitors they spend more (\$971 vs. \$645), visit and stay overnight more often (8.1 nights per year vs. 4.7), and buy more Vermont products (72% vs. 52.5%). Fully 50% of outdoor recreationists engaged in wildlife watching, 23.3% in fishing, 14% in canoeing or kayaking, and 10.2% in hunting.

Outdoor recreation is also important to Vermont's own residents. A survey conducted in 2001 by the USFWS shows that Vermonters spent \$347,420,000 on fish and wildlife related activities such as wildlife viewing, photography, fishing, hunting, trapping, canoeing, etc. Waterfowl hunting in particular contributes \$800,000 to Vermont's economy each year. There are no fewer than 4,000 waterfowl hunters in the state.

Waterfowling interests, as well as many other wildlife interests rely on the availability of suitable wetland habitat in Vermont. However, Vermont's wildlife populations are also highly dependent upon the number and quality of wetlands and isolated waters outside the state. Without a healthy Atlantic flyway and a robust Northern New England wildlife corridor Vermont's own water-related resources would be capable of sustaining only a fraction of the migratory wildlife that make our state such a desirable place in which to live and visit. Isolated wetlands and waterbodies are vitally important not only to migratory birds but also to wildlife species such as bears that rely on ephemeral springtime wetlands for food and water after a long winter in hibernation.

The potential for the loss of wetlands in Virginia, North Carolina, South Carolina, and Georgia, where state wetland regulations are weaker, is particularly troubling. The wetlands in these states are a crucial link in the Atlantic flyway the migratory bird habitat. The loss of wetlands in these states would devastate migratory bird populations and have a direct, substantial and negative impact on Vermont's outdoor recreation economy. Similarly, conversations with our counterparts in Northern New England indicate they do not have the resources in the event of a pullback in federal regulation to comprehensively manage the wetlands and isolated waters in their states that

are so critical to wildlife. Indeed, nationally two-thirds of the states have no state wetland regulatory programs. Given the deficits that all states are experiencing that is not likely to change soon.

Hence, Vermont's vital economic interest in wildlife-related outdoor recreation is at significant risk from any erosion in the coverage of federal regulatory programs in other states. Vermont cannot control its own destiny and must rely on effective, uniform regulation at the federal level to manage these out-of-state resources that significantly impact the state's economy.

6. The primary purpose of the CWA isn't to float boats, it's to restore and maintain the chemical, physical, and biological integrity of the nation's waters. In providing clarifying guidance on the existing rule, EPA and the Corps should look to basic Congressional guidance.

In deciding what guidance to adopt on the definition of Waters of the United States, EPA and COE should look first to the basic purposes of the CWA as set out in section 101:

The objective of this chapter is to restore and maintain the chemical, physical, and biological integrity of the Nation's waters.

Then EPA and COE should look to CWA section 303(c)(2)(A) where Congress provides guidance for federally mandated state water quality standards. This section makes clear that protection of navigation is more of an after thought rather than the primary thrust of the CWA:

Such standards shall be such as to protect the public health or welfare, enhance the quality of water and serve the purposes of this chapter. Such standards shall be established taking into consideration their use and value for public water supplies, propagation of fish and wildlife, recreational purposes, and agricultural, industrial, and other purposes, and also taking into consideration their use and value for navigation.

Based on the purposes of the Act, CWA jurisdiction ought to be based primarily on the potential for the misuse of a wetland, stream or lake to contribute to public health problems or interfere with the biological integrity of wildlife frequenting the site.

7. In their revised guidance document EPA and the COE should keep in mind the U.S. Supreme Court’s very narrow ruling in the SWANCC case.

The precise holding of the U.S. Supreme Court in the SWANCC is succinct:

We hold that 33 CFR §328.3(a)(3) (1999), as clarified and applied to petitioner’s balefill site pursuant to the “Migratory Bird Rule,” 51 Fed. Reg. 41217 (1986), exceeds the authority granted to respondents under §404(a) of the CWA.

EPA and COE guidance should not go beyond what the Court has proscribed. The court has clearly barred the COE from asserting 404 regulatory jurisdiction over a manmade, nonnavigable, isolated, intrastate pond with no wetland characteristics where the sole connection to interstate commerce is the use of the site by migratory birds. This is similar to a ruling in a Vermont wetlands case wherein the state’s Water Resources Board held that a gravel pit without wetland characteristics should not be subject to the regulatory jurisdiction of the state’s wetlands program just because it had wet soils. The EPA and COE should clearly state that gravel pits and other manmade waters without hydrologic connections to other waters and without wildlife habitat values other than as inter-state migratory bird habitat will not be regulated under the COE’s 404 program.

EPA and COE should examine other factors in the Migratory Bird Rule (which as the SWANCC court noted is not a rule but rather clarifying guidance issued in the preamble to a rule). The Migratory Bird Rule reads as follows:

EPA has clarified that waters of the United States at 40 CFR 328.3(a)(3) also include the following waters:

- a. Which are or would be used as habitat by birds protected by Migratory Bird Treaties; or
- b. Which are or would be used as habitat by other migratory birds which cross state lines; or
- c. Which are or would be used as habitat for endangered species; or
- d. Used to irrigate crops sold in interstate commerce.

Based on the facts in the case, the SWANCC court only invalidated the use of the second test – finding that the use of an isolated man made pond by migratory birds which cross state lines was an insufficient basis to find 404 jurisdiction. The court was silent on whether one of the other three factors alone might be sufficient to confer jurisdiction.

Some examples:

- Waters that are habitat for migratory birds protected by treaty ought to be treated as waters of the United States because treaties are legally superior to United States law and the CWA should be read in a manner consistent with treaties rather than in a fashion that thwarts their intent.
- Waters that are used to irrigate crops sold in interstate commerce meet all the standard tests of the “commerce clause” and certainly maintaining the quality of waters used for irrigation of goods in interstate commerce falls squarely within the CWA purpose of protecting public health.
- Similarly, Congress’s right to protect endangered species cannot be questioned. If an endangered species requires a particular aquatic habitat for survival then surely that is a waterbody that meets the explicit purpose of the Act to protect wildlife and prevent its extinction.

The court was also silent on whether two or more of the factors in combination might confer jurisdiction even if the presence of a single factor was not sufficient. EPA and COE should weigh these questions carefully before throwing out all four factors in the existing Migratory Bird Rule guidance.

8. In their revised guidance EPA and the COE should also pay special attention to the SWANCC decision’s approval of the “sufficient nexus” test in the Court’s prior decision in *Riverside Bayview Homes*.

While the SWANCC decision focused primarily on the question of what resources do not qualify as waters of the United States, the Court’s earlier decision in *United States v. Riverside Bayview Homes*, 106 S.Ct 455 (1985) provided the test for positively identifying resources that do qualify. The *Riverside Bayview Homes* case involved a parcel of freshwater wetlands near but not directly adjacent to a creek, wetlands that were not themselves subject to inundation from creek flooding. The Court began its analysis of whether these wetlands were properly classified as waters of the United States by noting that there is a continuum between open water and land and that “[w]here on this continuum to find the limit of “waters” [of the United States] is far from obvious.” (p. 462)

The *Riverside Bayview Homes* court also noted that:

In adopting this definition of “navigable waters,” Congress evidently intended to repudiate limits that had been placed on federal regulation by earlier water pollution control statutes and to exercise its powers under the Commerce Clause to regulate at least some waters that would not be deemed ‘navigable’ under the classical understanding of that term. (p. 462)

The court then stated that in determining CWA regulatory jurisdiction the COE should look to the ecological and hydrological relationships among aquatic resources:

In view of the breadth of federal regulatory authority contemplated by the Act itself and the inherent difficulties of defining precise bounds to regulable waters, the Corps' ecological judgment about the relationship between waters and their adjacent wetlands provides an adequate basis for a legal judgment that adjacent wetlands may be defined as waters under the Act. (p. 463)

The court noted that the groundwater fed wetlands in the case at bar were found by the COE to perform a number of functions interrelated with the purposes of the Act such as:

- Filtering and purifying water draining into adjacent bodies of water,
- Slowing the flow of runoff so as to prevent erosion and flooding, and
- Serving significant natural biological functions such as food chain production, general habitat, and nesting, spawning, rearing and resting sites for aquatic species.

The court summarized its discussion of the COE's use of these ecological and hydrological factors as follows:

In short, the Corps has concluded that wetlands adjacent to lakes, rivers, streams, and other bodies of water may function as integral parts of the aquatic environment even when the moisture creating the wetlands does not find its source in the adjacent bodies of water.

Again, we cannot say that the Corps' judgment on these matters is unreasonable, and we therefore conclude that a definition of "waters of the United States" encompassing all wetlands adjacent to other bodies of water over which the Corps has jurisdiction is a permissible interpretation of the Act. (p. 463)

Hence, in determining what wetlands and other resources are properly defined as waters of the United States, EPA and COE should employ the same kind of functional analysis to determine whether the resource is integrally related to other waters through hydrology or ecology.

In an important footnote, the Court in *Riverside Bayview Homes* emphasized that not every parcel need satisfy the functional analysis test. It is sufficient if a majority of similar parcels meet the test. In other words, the functional analysis should be applied to an entire class of resources rather than on an *ad hoc*, case-by-case basis.

Of course, it may well be that not every adjacent wetland is of great importance to the environment of adjoining bodies of water. But the existence of such cases does not seriously undermine the Corps' decision to define all adjacent wetlands as "waters." If it is reasonable for the Corps to conclude that in the majority of cases, adjacent wetlands have significant effects on water quality and the aquatic ecosystem, its definition can stand. ... (Footnote 9, p. 463)

The SWANCC Court, (121 S.Ct. 675) in commenting on its prior decision in *Riverside Bayview Homes* summarized this functional analysis as determining whether there is a “significant nexus” between the resource in question and other waters.

But our holding was based in large measure upon Congress' unequivocal acquiescence to, and approval of, the Corps' regulations interpreting the CWA to cover wetlands adjacent to navigable waters. We found that Congress' concern for the protection of water quality and aquatic ecosystems indicated its intent to regulate wetlands "inseparably bound up with the 'waters' of the United States”.

It was the *significant nexus* between the wetlands and "navigable waters" that informed our reading of the CWA in *Riverside Bayview Homes*. (Citations omitted, emphasis added, p. 680)

The SWANCC Court concluded that the man made pond, which was the subject of the case, did not meet the significant nexus test. The quarry’s only connection to open water was its use by birds in interstate migration. There was no other hydrological, recreational or ecological connection to other waters or to the purposes cited by Congress in adopting the CWA.

9. In summary, EPA and COE should base their revised, post-SWANCC guidance on the existing rules (33 CFR 328.3) and the “significant nexus” test first announced in *Riverside Bayview Homes* and elaborated by the SWANCC court.

The EPA/COE jurisdictional checklist ought to look like the following:

As guidance in implementing 33 CFR § 328.3, a manmade or natural wetland or waterbody will be deemed to be waters of the United States for the purpose of the regulatory jurisdiction of the CWA, including section 404, if at least one of the following criteria are met:

- ___ 1. The waterbody is, was, or in the future may be used in interstate or foreign commerce, including all waters that are subject to the ebb and flow of the tide.
- ___ 2. The waterbody or wetland is interstate in nature.
3. Other waters and wetlands such as intrastate lakes, rivers, streams (including intermittent streams), mudflats, sandflats, sloughs, prairie potholes, wet meadows, playa lakes, or natural ponds, shall be considered waters of the United States if:
 - ___ a. Its use, degradation or destruction could affect interstate or foreign travelers for recreational or other purposes.
 - ___ b. Its use, degradation or destruction could affect fish or shellfish that are or could be taken and sold in interstate or foreign commerce.

- ___ c. Its use, degradation or destruction could affect the production of industrial products or irrigation of agricultural products that are or could be sold in interstate or foreign commerce.
 - ___ d. Its use, degradation or destruction could affect the habitat of birds protection of which is required by migratory bird treaties.
 - ___ e. Its use, degradation or destruction could affect the habitat of endangered species dependent on aquatic conditions.
 - ___ f. The water or wetland has a significant nexus to other waters of the United States, based on surface or subsurface hydrology or ecological connection.
- ___ 4. All impoundments of waters otherwise defined as waters of the United States.
 - ___ 5. Tributaries of waters identified in paragraphs 1 through 4.
 - ___ 6. The territorial seas.
 - ___ 7. Wetlands adjacent to waters (other than waters that are themselves wetlands) identified in paragraphs 1 through 6.

Waters of the United States do *not* include:

- Converted cropland as determined by EPA.
- Isolated, manmade gravel pits, with no wetland characteristics notwithstanding the fact that they may provide habitat for migratory birds crossing state lines.
- Any isolated, intrastate natural or man-made water body or wetland that does not have a significant hydrologic or ecological nexus to other waters of the United States identified in paragraphs 1 through 7 above.

Comments submitted electronically April 16, 2003 by:

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ATTACHED: Middlebury Wetland Project Final Report

Middlebury Wetland Project

Final Report

**Submitted to the Town of Middlebury
Conservation Committee**

by

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This Project funded in part by the Vermont Conservation License Plate.

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Executive Summary

Aerial photo interpretation has been used to produce improved wetland maps for the Town of Middlebury. Custom 1:12,000 color infrared aerial photographs were flown for the project. Wetlands were delineated on the photos using a stereoscope and the results were transferred onto 1:10,000 scale base maps. The wetlands were then digitized and converted into an ArcInfo Geographic Information System coverage.

The wetland maps and digital products produced in this project are the result of limited field work, careful photo interpretation, and consultation of the best available sources of additional information. These maps are intended to indicate approximate wetland boundaries at no larger than 1:5,000 scale for planning purposes only. They are not intended to be substitutes for on-the-ground wetland delineations by trained wetland experts. Appropriate local, state, or federal officials should be contacted to determine if any wetland regulations apply.

Introduction

This report describes the methods used to produce improved wetland maps for the Town of Middlebury, Vermont. The maps were made under contract with the Town's Conservation Committee. The maps are intended to be used for general planning and for development review at scales of 1:5,000 or smaller (less detailed scales).

Although wetland maps do already exist for this and all other communities in Vermont, the maps, which are based on small-scale aerial photographs taken over 20 years ago, have long been recognized as inadequate for efficient and accurate development review and planning (Sorenson, 1994). Besides the changes to roads and buildings which have occurred since the maps were made, the maps fail to show many of the smaller wetlands and the shapes of the wetlands that are shown are quite inaccurate. Also, the actual locations of the wetland polygons are often off by several hundred feet.

The maps produced in this project are intended to remedy these defects. The base maps are digital orthophotos produced from 1995 aerial photography so the infrastructure of the town is reasonably up-to-date. The color infrared aerial photos are even more recent, having been taken in April of 2000. Finally, the new photos are of a large enough scale that small wetlands can be accurately identified and located.

Methods

The methods used in this project generally follow those outlined in Springston (1993). As no existing aerial photography was considered adequate, custom color infrared aerial photography of nominal 1:12,000 scale was flown on April 15, 2000 by James W. Sewall Company under contract with the Town of Middlebury.

The photos were prepared for delineation by placing transparent polyester film overlays on alternate photos and pin-registering the photos and overlays. Work area boundaries were marked on each overlay to ensure complete coverage of the town.

Two sets of maps were produced for the project by the Addison County Regional Planning Commission: field maps and base maps. The field maps were four sheets on a 1:10,000 digital orthophoto base from the Vermont Mapping Program (source aerial photos taken in April of 1995) and showed roads, hydric soils, wetlands from the Vermont Significant Wetlands Inventory, 20 foot contours, and a grid in the Vermont State Plane Coordinate System (1983 North American Datum, in meters). The four base maps covered the same areas as the field maps but showed only the digital orthophotography and the State Plane Coordinate grid.

Five field visits were made during the fall of 2000. The site checks included representative wetlands as well as unusual signatures and sites where the location of the wetland boundary was obscure. At detailed check sites soils, vegetation, and evidence of hydrology were examined. Besides the detailed check sites, all major roads and many minor roads were driven over and brief map notes were made about visible wetlands.

Wetland delineations were made using a mirror stereoscope and a 4 X 0 technical drawing pen to delineate on the overlays. The delineations include the outer boundaries of wetland polygons, internal subdivisions, and upland inclusions. Reference marks, such as road intersections and buildings, were also delineated. These were used in the transferring described below.

The delineations were transferred onto the base maps by first enlarging the overlays to provide the best possible fit of each to the base map, then placing the overlay and base map on a light table and shifting the two to line up exactly. The wetland delineations for each area of a few square inches were traced onto the base map and then the next area was lined up and the process was repeated. The delineations and grid reference marks from each 1:10,000 base map were then traced to produce four mylar wetland maps. These mylar base maps are the master wetland maps and should be carefully archived by the Town.

The four mylar wetland maps were converted to ArcInfo GIS format by Information Visualization Services (IVS) of Burlington, Vermont. The overlays were scanned, converted from raster to vector format, and formed into a seamless ArcInfo GIS coverage. Polygons were coded based on the abbreviated codes used on the mylar maps (Field "Type" in the database).

After delivery of the digital ArcInfo coverage from IVS, National Wetlands Inventory (NWI) codings were added by joining the coverage with a file entitled "wetype.dbf" and those wetlands which appeared to be Class Two wetlands under the Vermont Wetland Rules were identified. The designation as Class Two was based on an examination of the Vermont Significant Wetland Inventory maps and on conversations with Peter Keibel of the ANR Wetlands Office. These codings are shown in Field "VSWI Class" in the database.

Although the primary sources of information for this project were the new 1:12,000 aerial photographs combined with my field observations, I also gathered and reviewed existing information and maps, including U.S. Geological Survey topographic maps, Vermont Significant Wetland Inventory maps, Soil Survey information, digital orthophotography, 1:40,000 National Aerial Photography Program color infrared photos from the early 1990's, 1960's black-and-white aerial photographs, and records at the Agency of Natural Resources Wetlands Office.

Wetland Classification

In the databases included in the ArcInfo coverage the wetlands cover types are classified in three ways: first by brief codes to facilitate drafting and digitizing (Field "Type"), second by NWI code (Field "Nwi"), and finally by a simplified classification (Field "Simple").

The NWI classification is based on Cowardin *et al.* (1979). The most common classifications used in this study are listed below: PEM1 (Palustrine emergent), PFO1 (Palustrine forested, broad-leaved deciduous), PFO4 (Palustrine forested, narrow-leaved evergreen), PFO5 (Palustrine, forested, dead), PSS1 (Palustrine scrub-shrub, broad-leaved deciduous), PUBF (Palustrine unconsolidated bottom, semipermanently flooded), PUBF (Palustrine unconsolidated bottom, permanently flooded). Mixes of two types are shown by fraction symbols such as PSS1/EM1. Special modifiers: h = impounded by humans, x = excavated, b = impounded by beaver. Internal upland polygons within wetlands are designated as "upland".

The wetlands in the town have also been classified using the following simplified system:

- M Shallow marsh, deep marsh, wet meadow, or fen (all combinations dominated by emergent vegetation such as PEM1, PEM1/SS1, etc.).

- OW Open water areas (PUBHx, PUBFb, etc.). Includes areas of forested wetland flooded by beaver (PFO5Fb) and possible vernal pools (PUBC).

- SS Shrub swamps (all combinations dominated by shrubs, such as PSS1, PSS1/FO1, etc.)

- W Wooded swamps (PFO1, PFO4, PFO1/SSI, etc.)

In this stripped down classification the areas of dead trees flooded due to beaver have been placed in the open water category. Internal upland polygons within wetlands are designated as "U".

Several small probable wetlands within forested areas were encountered. Because of the overhanging tree canopy it was impossible to classify them accurately using aerial photo interpretation alone. The areas certainly appear to be wetlands and may well be vernal pools. For convenience the areas are coded in the database as open water bodies (PUB) but with a seasonal

water regime (C), indicating flooding for only a part of the growing season. Further field work is needed to verify that these sites are wetlands and/or vernal pools.

Classification of Wetlands According to the Vermont Wetland Rules

An attempt was made to identify those wetlands in the town which correspond to the wetlands which are known as "Significant" wetlands in the Vermont Wetland Rules (Water Resources Board, 1990). Significant wetlands are shown on the current Vermont Significant Wetland Inventory (VSWI) maps. Those wetlands mapped during this study which clearly correspond to the Significant wetlands have been indicated by a value of 2 in the field labeled "Vswi class" in the attribute table.

Unfortunately, it is not possible to trace out all of the possible connections between wetlands during a study of this sort. In consequence, the maps produced in this project should not be used to make decisions as to whether or not a particular wetlands is contiguous with the Significant or Class Two wetlands regulated under the Vermont Wetland Rules. In order to make such determinations, it is necessary to undertake on-the-ground wetland studies and/or review the Vermont Wetland Rules, decisions of the Vermont Water Resources Board, and policies of the Vermont Wetlands Office. Contact the Vermont Wetlands Office for more information.

Accuracy

The methods used were very effective for identifying and mapping most of the wetlands in open areas. Many wetlands smaller than 0.05 acres were mapped. In forested areas however, it was very difficult to identify wetlands and define boundaries. The accuracy of identification of forested wetlands is therefore considerably lower. In cases where wetlands occur in open areas and the wetland boundaries can be seen on the digital orthophotos, wetland boundaries appear to be shown within 30 to 40 feet of their correct positions.

Wetland Acreage

According to National Wetlands Inventory (NWI) figures cited by Borre (1989), the acreage of wetlands in the town totals 1,880 acres. The base maps for the NWI maps of Middlebury are 1:24,000 scale U.S. Geological Survey quadrangle maps and the aerial photos used were 1:80,000 scale color infrared photos taken in 1978. Because of the small scale of both the photography and the base map, many small wetlands were not included in this inventory and the shapes of many wetlands are quite inaccurate (Sorenson, 1994).

This study found that there are approximately 2,250 acres of wetland in Middlebury. Although this is certainly the most complete inventory of wetlands in the town to date, if on-the-ground wetland delineation was conducted for the entire town, this figure would end up even higher.

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