

APPENDIX A

Vermont River Basin Planning Progress (Progress in Basins with DEC-led Planning)

Basin 2 – Poultney/Mettowee Basin Progress Summary

The Poultney Mettowee Watershed Partnership

The Poultney Mettowee Watershed Partnership (PMWP) is a project of the Poultney-Mettowee Natural Resources Conservation District in Vermont and the Washington County Soil and Water Conservation District in New York with funding from the Lake Champlain Basin Program. The mission of the partnership is to bring together citizens and organizations that share the common vision of conserving, protecting, and enhancing the natural and cultural resources of the watershed. A steering committee representing various stakeholder groups makes recommendations to these conservation districts concerning the activities they should undertake.

Since the Watershed Planning Initiative commenced in the Poultney Mettowee watershed in summer 2001 with the arrival of the DEC Watershed Coordinator, the Steering Committee of the PMWP has expanded to include representatives from lake associations, river stewardship groups, municipal and regional officials, and other stakeholders.

The Partnership began in summer 1998 with a few people talking together and realizing that their organizations were working towards many of the same conservation goals. As a result, this unique, bi-state partnership began, focusing on mutual concerns for protection of natural resources and water quality. The Partnership has completed many projects throughout the watershed.

Some projects currently underway, or still in the planning stages, include:

- Water quality monitoring of the Poultney River;
- Producing stock in the native plant nursery to supply material for floodplain and clayplain forest restoration projects in partnership with The Nature Conservancy;
- A landowner outreach project that supplies trees for riparian landowners to address high water temperatures in the Mettowee River;
- Conducting a detailed geomorphic assessment of local rivers using volunteers;
- Leading environmental service learning projects for youth in the watershed; and
- Increasing nutrient management assistance to agricultural producers in the watershed.

Highlights for 2003 include riparian buffer plantings in four towns, leading summer programs for local youth, maintaining the native plant nursery in cooperation with The Nature Conservancy, volunteer work days, and scientific data collection and monitoring of water quality in the watershed's rivers with the assistance of the Vermont Agency of Natural Resources, Water Quality Division. It should be noted that the Poultney Mettowee Watershed Partnership has agreed to implement many strategies identified in the *draft* Poultney Mettowee Basin Plan where the Partnership is designated either as the lead agency and/or a primary partner.

Public Outreach and Communication

The basin planning public process included a survey of residents to identify water quality concerns held by the public throughout the Poultney Mettowee Watershed. This survey provided an assessment of landowners' knowledge, behaviors, and attitudes with respect to water quality and related land use. In the long-term, the survey findings serve as a benchmark by which to evaluate progress in addressing public concerns. Several major water quality problems, their sources, and impacts were identified from the many public meetings and focus group discussions. Major concerns regarding water quality identified in this ranking process included:

- Health risks from pathogenic bacteria runoff from agriculture, urban sources, and overflows from wastewater treatment plants;
- Nutrient enrichment from agriculture, urban runoff and eroding streambanks;
- Sedimentation from road runoff, agriculture, stream instability (resulting from channelization and dredging), urban stormwater runoff, and other activities;
- Excessively warm waters due to loss of riparian vegetation, and channel widening from streambank destabilization, road maintenance, agricultural use, and land development; and
- Waters impaired by nonpoint source pollution.

It is evident from this study that public education and outreach are critical to gaining participation in future water quality restoration. Ultimately, a public that understands water quality and related resource management problems and possible solutions make informed decisions about long-term protection and restoration. For public outreach to be effective, the messages must be clear, frequent, and identifiable. For this reason, the Partnership and District have focused on maintaining consistency throughout their public outreach efforts. When the Partnership first formed, considerable time was taken to make its existence and that of the District known. By promoting the organizations, it was correctly anticipated that the public would be aware of where to go for assistance, information and education.

Summer youth education programs

The Partnership participated in two summer educational programs. The first was Castleton's SCAMP camp. During this weeklong day camp students learned about water quality, wildlife, watersheds, and ways they could help the environment at home.

The second program was part of Poultney's Summer Recreation program. Students in Poultney helped out with projects around town and also learned about the environment. Projects included working in the educational garden at the elementary school, maintaining the Poultney Educational Trail, and picking up litter along the Poultney River.

Stream Team service learning opportunities

The Partnership is planning to form a team of area youth to complete projects around the watershed. In addition to accomplishing project goals, the formation of a youth team serves several other purposes. First, it is a great way to both reach and teach young people about the issues that affect the watershed. Through education and accomplishment, area youth will be instilled with a sense of pride in a job well done.

The team members are also likely to come away from their project work with a great deal of excitement; and will educate their peers and families with their newly acquired knowledge. Working in the watershed will give youth a sense of place as members of the watershed community and add an increased appreciation for the environment in which they live. In addition, many local youth have difficulty finding employment in this area and the Stream Team will provide additional jobs in the community. The Vermont Youth Conservation Corps will be a major partner in this project – assisting with funding and training for team leaders for corps members.

Strategies

Through focus group discussions and public forums, water quality impairments were identified. The basin planning process emphasizes collaborative efforts to correct water quality problems through voluntary cooperation with landowners and the district.

Remediation strategies currently being undertaken by the Watershed Partnership in collaboration with ANR to control non-point sources of pollution include:

- Addressing thermal pollution through projects to re-plant trees and shrubs along the river
- Controlling pathogens
- Stabilizing streambanks
- Addressing issues of channel instability where areas of concern have been identified
- Increasing public awareness of water quality concerns through outreach and education
- Addressing impact to fisheries
- Assessing the impact of agricultural runoff

Current Projects

Over the past four years the PMWP has completed many great projects, a few of which are noted below.

Poultney River Monitoring Project

A group of high school-aged students from Middletown Springs volunteered during the summer of 2003 to help the Watershed Partnership collect water quality samples. The youth sampled at eight popular swimming areas on the Poultney River in their community and downstream in Poultney and monitored a number of different water quality

parameters including temperature, depth, turbidity, odors, algae growth, and bacterial contamination. This new water quality monitoring program is a good example of the Partnership at work. In addition to the youth group, other partners in the project are the Water Quality Division, and the Towns of Middletown Springs and Poultney.

Once the water samples were collected, they were analyzed by the DEC at the LaRosa Analytical Laboratory in Waterbury. The Watershed Partnership was awarded a laboratory services grant through a new program designed by the state to help Vermont's many volunteer watershed associations and water quality monitoring groups. Until last summer the Watershed Partnership had not been able to conduct detailed water quality monitoring because of the high cost of laboratory analyses.

Results of *E. coli* monitoring showed that the levels were widely varied by site and reached the highest levels after a heavy rain at the beginning of August. Future monitoring will look into the sites where levels were high throughout the summer and narrow down the possible sources of contamination.

Champlain Valley Clayplain Forest Restoration

Vermont's clayplain forests, now considered a rare natural community, were cleared more than 200 years ago and today cover only about 14 percent of the land in the Champlain Valley south of the Winooski River. The major limiting factor to restoration of the native clayplain and floodplain habitats has been a lack of plant material generated from local genetic stock. In 2002, the Nature Conservancy's Southern Lake Champlain Valley Program and the PMWP started a small native plant nursery, called the Poultney Mettowee Restoration Nursery. The native plant nursery is located on one of The Nature Conservancy's properties in Whitehall. Start-up funds for the nursery were provided by a collaboration of public and private sources including a grant to the Poultney Mettowee Watershed Partnership from the National Fish and Wildlife Foundation and a private grant to the Conservancy's Southern Lake Champlain Valley Program.

When grown to size, plants will be planted on riverbanks and floodplains located on Conservancy property and local farms that are enrolled in federally funded cost-share programs. In April 2003, the first seedlings grown in the Poultney Mettowee Restoration Nursery were planted onto riverbanks in Whitehall, New York and Benson, Vermont. The plantings fulfill two important goals: mitigating the impacts of agricultural practices on water quality and restoring clayplain and floodplain forest. Additional benefits of the plantings include expanding the river wildlife corridor system, stabilizing streambanks to decrease erosion and subsequent sedimentation that has an impact on native mussel and sand darter populations, and mitigating threats of invasive species by using native plant materials for restorations.

Hubbardton River Restoration Project

This restoration project is to re-establish the clayplain forest natural community along the mainstem of the Hubbardton River through long-term conservation and perpetual easements. The restoration project will also address a second goal of the Partnership: to reduce the high sediment load that characterizes the entire mainstem of the Hubbardton. Several landowners in the Hubbardton River watershed have entered into land trust agreements or enrolled in long-term conservation easements such as the Conservation Reserve Program (CRP). In addition, the USDA-NRCS is pursuing an opportunity to allow landowners currently participating in long-term conservation easements to enroll in federal cost-share perpetual easements without penalty, which would provide for long-term watershed scale restoration of the rare, clayplain forest natural community. The project will be used as a demonstration of effective stream corridor management practices for municipal officials, farmers, anglers, ecologists, business entities, and other landowners. The restoration effort will also expand the wildlife corridor along rivers and streams, lessen the impact of invasive species, and stabilize riverbanks by decreasing erosion and sedimentation that has an impact on aquatic habitat and biota, including native fish nurseries.

Other Watershed Restoration Projects: 2003

Riparian Buffer Initiative

Over 150 volunteers helped the PMWP complete important conservation projects this spring. About 70 volunteers were Green Mountain College students who planted trees to establish riparian buffers along the Poultney, Mettowee, and Hubbardton Rivers. Not only did these students accomplish high priority jobs for the Partnership, they also learned about the watershed.

Eurasian water milfoil control and spread prevention

Milfoil spread prevention efforts are underway on several lakes and ponds in the basin. The PMWP has assisted with milfoil spread prevention by installing interpretive signs about invasive species at recreational access areas throughout the basin. Vermont DEC has provided technical assistance and grants-in-aid to the Lake Bomoseen Association, Beebe Lake Association, Lake Hortonia Association, Burr Pond Association, Sunrise-Sunset-Perch Property Owners Association, Lake St. Catherine Association as well as other smaller pond owners in an effort to control the spread of this aquatic invasive exotic species within the lake and to nearby waters.

Castleton River Watershed and Gully Brook in Castleton

Gully Brook is a flashy, steep gradient tributary to the Castleton River in Castleton. Historically, the Gully Brook has had good access to its floodplain once it reached the valley floor coming down the northern flanks of Bird Mountain. In 1959, the Army Corps of Engineers straightened the Gully Brook through its alluvial fan in order to “stabilize” the dynamic sinuosity that had perpetuated itself during high flows. As a result, the brook experienced higher water velocities and a corresponding increase in sediment load that was carried down through the system until it reached the confluence with the Castleton River where it has since deposited much of this bed material. Consequently, a tremendous amount of gravel outwash has accumulated at, around, or downstream of this confluence. With the increased sediment load, there has been a corresponding instability exhibited by both the Gully Brook and the Castleton River adjacent to this confluence.

Since the 1960’s, the floodplains along the Gully Brook and Castleton River have been bermed as a result of the continuous gravel removal done to alleviate the flooding at this confluence. There are several conditions that are now self-perpetuating as a result of continually dredging these stream/river systems: (1) the bed of the Gully Brook is becoming more incised in response to higher water velocities and sediment supply, (2) a large gravel pile at the confluence of the Gully and Castleton continues to grow as an indirect effect of the gravel removal, and (3) the confluence becomes an impediment to water passage when gravel effectively dams up the river during higher flows which floods out upstream reaches of the river.

There are several potential remedies to this situation that have been discussed among landowners and state and local officials. Recently, there has been agreement that the best alternative management scenario is to modify the channel to allow the Gully Brook to regain access to its historic floodplain along the valley floor through removal of the eastern berm and lower portion of the western berm.

Mettowee River Temperature TMDL

Relatively high water temperatures were found in an 8.2-mile segment of the river by the Vermont Fish and Wildlife Department in 1995 and again in 2001 as part of a thermal monitoring project conducted by the Vermont DEC. Due to the temperature impairment, the river did not meet water quality standards requiring the state to develop a Total Maximum Daily Load (TMDL). The TMDL allocation project was initiated in the summer of 2001 and resulted in recommendations for management action to reduce the temperature impairment. The recommendations presented for action include:

- Increase shading through riparian planting;
- Modify the channel to provide deeper, cooler pools for fish; and
- Reduce water temperatures of Flower Brook tributary.

Since public input is a requirement of the TMDL process in Vermont, the PMWP hosted several community forums and focus groups and is leading efforts to secure grant funding that supports education, riparian planting, temperature monitoring, and settling basin construction on gravel roads. A buffer outreach project is planned for riparian landowners along the Mettowee River and its tributaries. Stream channel modification projects have also been identified and scheduled to address critical areas along the river that may be contributing to the thermal impairment issue. A public meeting is also planned for early 2004 to update Mettowee River watershed residents about the thermal impairment, monitoring efforts, and buffer planting opportunities.

Regional Planning & Geomorphic Assessments

The Watershed Partnership is working on mapping projects with the help of the Rutland Regional Planning Commission, DEC, and Green Mountain College. Mapping is used in planning stream projects and assessments of

rivers. Maps are also useful to map where projects have been done and to identify gaps where work needs to be done.

The partnership will undergo a large scale mapping project of the Mettowee River next summer to help complete a Phase 2 geomorphic assessment. Phase 2 is the field assessment phase that involves the collection of data from measurements and observations at the reach or sub-reach (segment) scale. The Phase 2 assessment is ideal for flagging reaches for protection and restoration projects and the completion of Phase 3.

Municipal Planning

The Basin Planning Process has provided many opportunities to collaborate with the Rutland Regional Planning Commission and the 18 municipalities in the watershed. The Water Resources section of the Rutland Regional Plan was updated to incorporate the objectives of the basin planning process and other initiatives such as the revised Stormwater Program, Source Water Protection Program and the new On-Site Wastewater Program. This will encourage municipalities to address these issues as they update municipal plans and zoning regulations. In addition, the Watershed Coordinator worked closely with regional planners to conduct outreach and assistance to towns in the basin. As part of this outreach, technical assistance has been provided and/or is planned for specific municipal projects including stormwater runoff assessment (Castleton), agricultural lands assessment (Middletown Springs), source protection planning for public water supplies (Danby and Castleton), transportation projects that relate to water quality (Poultney and Castleton) and assessment of potential landfill leachate to surface waters (Fair Haven and Poultney). The Watershed Coordinator and the District Manager of the Poultney Mettowee Natural Resource Conservation District also have visited every town planning commission and/or selectboard in the basin to discuss the management goals of the classification and typing process and assist these towns in identifying the water resources they wish to protect.

Plans for 2004

- Submit draft Basin Plan for public review and comment (April 2004)
- Continued outreach with towns and the Regional Planning Commission (ongoing)
- Continued efforts to secure grants and move forward on proposed projects.
- Continued collaboration with all partners in the basin on priority issues.
- Ongoing education and outreach with residents of the watershed.
- Adopt Poultney Mettowee Basin Plan and submit proposed Water Quality Management Types and Classes as a petition to the Water Resources Board.

Basin 3 - Otter Creek Basin Progress Summary

The Upper Otter Creek Watershed Council

In November and December of 2002, the Rutland Natural Resources Conservation District (RNRCD) in cooperation with DEC sponsored five meetings for the general public to assist in identifying the existing potential causes and sources of pollution that can influence surface waters of the Otter Creek basin. Since February of 2003, the RNRCD and ANR have sponsored meetings with a group interested in prioritizing the issues and concerns that were identified at these public meetings. This group is called the Upper Otter Creek Watershed Council (UOCWC). The Council is currently meeting every third Wednesday of the month.

A strategy will now be developed through a continuing public process for restoring the quality of waters identified by the public and the state.

The UOCWC is a project of the Rutland Natural Resources Conservation District and DEC with funding provided by the Natural Resource Conservation Council. The Watershed Council represents various stakeholder groups and makes recommendations to the conservation districts for priorities and activities. The mission of the UOCWC is to bring together citizens and organizations that are committed to improve water quality of the Otter Creek Watershed.

The Council began meeting when it was recognized that there was a lack of opportunity to discuss water quality issues in the Rutland County portion of the Otter Creek basin. At the same time it was recognized that organizations were working toward many of the same conservation goals. As a result, this collaborative effort began focusing on mutual concerns for protection of natural resources and water quality.

Some projects currently underway, or still in the planning stages, include:

- Water quality monitoring of the Otter Creek and its tributaries;
- Enhancing public access to water-related recreation;
- Working with towns to conduct erosion inventories of their back road infrastructure;
- Collaborating with Rutland City and surrounding municipal officials to help monitor and assess the stormwater-impaired Moon and Mussey Brooks; and
- Coordinating with UVM's Watershed Alliance and schools in the watershed to develop water quality monitoring programs and related curricula.

Highlights for 2003 include the completion of a comprehensive assessment of East Creek, investigations of high levels of pathogenic bacteria at swimming holes, collaboration with Smokey House in Danby with water quality assessment of Mill Brook, and coordination with stakeholder groups in the Addison County portion of Otter Creek to initiate a basin-wide coordinating committee to oversee basin planning for the Otter Creek.

Public Outreach and Communication

Five public forums were held in various locations in the Rutland County portion of Otter Creek to solicit ideas and involvement from constituents and stakeholder groups with an interest in water quality issues during the winter of 2002 and 2003. From these forums, a list of water quality issues and concerns were compiled and ranked by the participants of each public forum. The ten highest ranked issues were (in order of highest listed first):

- Streambank erosion,
- Stormwater runoff and impacts from erosion in the Moon Brook watershed,
- The need for greater education and awareness regarding water quality issues,
- Conservation/protection of water resources,
- Agricultural nonpoint source pollution,
- Sedimentation,
- Regulatory permitting and enforcement,
- Dams and hydropower facilities,
- Flooding,
- Fisheries

Public relations efforts have expanded recently to promote the organization and keep the public informed. A website was created for the UOCWC and District. It is updated monthly to include meeting announcements as well as the notes from previous meetings (refer to <http://www.vacd.org/rutland/uocwc.html>). The District Manager of the Rutland NRC and the ANR Watershed Coordinator have appeared on a local radio program to promote the basin planning initiative underway for the Upper Otter Creek, as well as the activities of the District. Also, articles, meeting announcements, and press releases are submitted regularly to *The Rutland Herald*.

Summer youth education programs

The UOCWC participated in a summer 2003 educational program. The Year End Studies Program (YES) of the Rutland High School provides students with an opportunity to enrich their learning beyond what has traditionally been offered through the regular school year. The program director, George Hooker (Rutland NRC Conservation Teacher of the Year), chose East Creek, a tributary to the Otter Creek, as the subject of an intensive water quality monitoring and assessment project. Members of the UOCWC assisted with this project, and later enjoyed several presentations by YES regarding the assessment and findings. Results of this effort led to additional assessment and monitoring conducted by the UOCWC with sample analysis provided by the Rutland Wastewater Treatment Facility. The 2004 YES project will supplement project assessment and monitoring.

Strategies

Through focus group discussions and public forums, water quality issues and concerns were identified and ranked. The basin planning process emphasizes collaborative efforts to correct water quality problems through voluntary cooperation with landowners and the district. The Council anticipates the development of strategies to address water quality concerns in the basin through a collaborative process that will be reflected in the basin plan.

Current Projects

Over the past year, the Upper Otter Creek Watershed Council has initiated two projects.

Otter Creek Water Quality Monitoring Project

Members of the UOCWC completed a water monitoring program on some tributaries to the Otter Creek in the summer of 2003. The project samples were analyzed through a partnership with the Rutland Wastewater Treatment Facility. The Watershed Council collected samples for six weeks starting in early August 2003 from Furnace Brook, East Creek and the Mill River. The samples were tested for *E. coli* bacteria, phosphorus and nitrate concentrations. The results of these tests showed water qualities that met or were better than state and federal standards for contact recreation like swimming or wading. Only the Mill River showed slightly elevated *E. coli* counts. This water quality monitoring program is only the first of many projects that this group plans to undertake in its efforts to improve the health of the Otter Creek watershed.

Moon Brook Assessment & Restoration Project

The UOCWC met with representatives from the Rutland City Department of Public Works to offer support for assessment and monitoring of the stormwater impaired Moon Brook and to develop a restoration plan for Moon and Mussey Brooks that flow through Mendon, Rutland, and Rutland City. DEC and local school groups monitored the water quality (chemical and biological) of Moon and Mussey Brooks in 2003 and plan to continue this assessment in 2004. A preliminary assessment of the Moon/Mussey watershed has revealed many potential sources of sediment as well as areas that would benefit from riparian corridor restoration. Strategies to address these issues include riparian buffer plantings, stormwater diversion and retention, and general education and outreach. One proposal would fund the Vermont Youth Conservation Corps to initiate restoration projects on Moon Brook in the summer of 2004. Cleanup of debris west of Route 7 would be a first task followed by riparian plantings and other riparian corridor restoration activities. UOCWC will provide logistical support, and will continue to conduct assessment and monitoring for water quality conditions in partnership with the UVM Watershed Alliance.

Plans for 2004

- Continued development of strategies to address top-ranked issues and concerns through panel discussions, focus group discussions, and general meetings.
- Continued outreach with towns and the Regional Planning Commission (ongoing)
- Continued efforts to secure grants and move forward on proposed projects.
- Continued collaboration with all partners in the basin on priority issues.
- Ongoing education and outreach with residents of the watershed.

Basin 5 - Northern Lake Champlain Basin Progress Summary

The Watershed Planning Process and Public Participation

A watershed council met for the first time on April 29, 2003. The DEC Watershed Coordinator and the watershed council committed themselves to developing the watershed plan and assisting in the implementation of watershed restoration projects. The council supported the coordinator's proposal to hold three public meetings to identify the communities' most prominent concerns. The council also agreed that local groups would develop the first draft of strategies for each of the community's concerns.

The three public meetings in May and June 2003 were scheduled. Meeting summaries can be found at the Water Quality Division's web site <http://www.vtwaterquality.org>.

The second watershed council meeting was held on July 31, 2003. The meeting summary can be found at the web site noted above. Discussions resulted in the following consensus decisions regarding the planning process:

- Concerns from public meetings that would be addressed in the basin plan:
 - Algal blooms
 - Aquatic nuisance species
 - General water quality (toxins and pathogens)
 - Maintaining and improving the lake as a drinking water supply
 - Restriction of flows through Islands that result in water quality problems
 - Health/stability of river corridors
- The watersheds of the Rock and Pike Rivers will be included in the Missisquoi River Basin planning process instead of Northern Lake Champlain if citizens of these watersheds agreed. Subsequently, the Franklin County Natural Resource District met with the Missisquoi River Basin Association to discuss the option. The group agreed with this approach. The Rock River and Pike River communities are more closely tied with those of the Missisquoi River.
- The Champlain Water District and the DEC Water Supply Division representatives would discuss the possibility of including water supply as a separate topic in the plan. The discussion included different approaches for including concerns about water supply in the basin plan.
- Fishing opportunities along rivers and streams should be investigated as a concern based on information from Trout Unlimited. Subsequent conversations with the organization revealed that the streams on which TU was interested in securing access were not in this basin.

Development of Strategies To Date

River stability

On October 27, 2003, the DEC coordinator developed draft strategies for the LaPlatte River based on the LaPlatte River Partnership's goals and objectives and their recent work. The Partnership revised the strategies which will next be reviewed by the watershed council.

Managing aquatic nuisance species

October 22, 2003, Pelots Bay Association set up a meeting with the DEC watershed coordinator to discuss overall goals and strategies based on its members' experiences. The coordinator developed a first draft of strategies for further discussion with the watershed council.

Drinking water supply

The DEC watershed coordinator worked with the Champlain Water District (CWD) and the DEC Water Supply Division to develop a process for addressing water supply concerns in the basin plan. CWD's concern is the disconnection between source water protection plans and watershed plans.

Addressing pathogens

The DEC watershed coordinator and the Town of Colchester's Director of Public Works agreed that the first draft of strategies should be based on the Town's water quality strategic plan which was developed by a citizen board. The Green Mountain Institute for Environmental Democracy has a grant to help organize additional discussions with the community where the strategies could receive additional review. The Town would like to see these discussions occur in spring 2004.

Agricultural Issues

On October 23, 2003, the Natural Resources Conservation District, USDA-NRCS and the Vermont Agency of Agriculture, Food and Markets organized an agricultural meeting in Swanton with assistance and participation by the St. Albans Area Watershed Association and the DEC watershed coordinator. The meeting resulted in an airing of concerns regarding agriculture and water quality from both the agricultural community and the watershed group. The NRCD will invite the coordinator to discuss strategies for the basin plan at the agricultural community's next quarterly meeting.

Surface Water Typing and Classification

As required by Vermont statute, surface water typing and classification will be proposed as part of the basin planning process to set management goals for all of the Northern Lake Champlain basin's surface waters. Existing, attainable, and desired water quality criteria will be used to develop the proposal. Chittenden County RPC staff is assisting DEC to determine desired water quality criteria in Chittenden County based on town plans and zoning.

Watershed Assessments

Geomorphic assessment of the LaPlatte River

The DEC watershed coordinator is working with community-led watershed groups, the LaPlatte River Partnership, Chittenden County RPC and towns to complete a geomorphic assessment of the LaPlatte River. The group has hired a consultant to complete Phase I of the assessment. A grant application is pending to complete Phase II in the Hinesburg area. The assessments will be used to target unstable stream segments for flood remediation and infrastructure protection and to identify reference stream segments for protection.

Carry Bay hydrodynamic and water quality modeling

DEC coordinated the review of proposals with the Carry Bay Advisory Committee to conduct a legislatively funded study to model the hydrodynamics and water quality of the causeway removal at Carry Bay in Lake Champlain. Binkerd Environmental, Inc. received the contract and presented preliminary findings of the study to the public on December 18, 2003. The advisory committee will make recommendations regarding any revisions to the report by the end of the year. The report should be finalized and released in February 2004.

Watershed Restoration Projects

Pesticide and fertilizer reduction in residential lawn care

On December 4, 2003, the DEC watershed coordinator organized and facilitated a meeting with groups and individuals interested in leveraging existing resources to educate the community about lake-friendly lawn and garden practices. The coordinator worked with the group to develop a grant proposal to the Lake Champlain Basin Program to do a neighborhood education and outreach project on lawn and garden-related pollution in the St. Albans Stevens Brook watershed.

Aquatic nuisance species control projects in St. Albans Bay

During the summer 2003, DEC worked with the St. Albans Area Watershed Association to determine the extent of the aquatic nuisance species problem and provided advice as to how to best manage the problem. On July 30, 2003 the DEC watershed coordinator organized and the St. Albans Area Watershed Association hosted a meeting to discuss possible solutions to problems. DEC and Lake Champlain Basin Program staff participated. On September 15, 2003, DEC and St. Albans Area Watershed Association representatives toured St. Albans Bay by boat.

Reducing phosphorus concentrations/algal blooms in the water of St. Albans Bay

The DEC watershed coordinator and other DEC staff have participated at St. Albans Area Watershed Association meetings to explain the reasons behind the algal blooms in the bay. The association expressed appreciation for DEC's summary of research on phosphorus loading in St. Albans Bay.

The coordinator and other DEC staff have also participated on the Stevens Brook and Ruggs Brook watershed steering committee to review studies and proposed actions to alleviate flooding and improve water quality in the area. The coordinator has used the resulting study to support a grant application to study the hydrology of the

brooks. The coordinator also helped the Association obtain a grant to pay an expert on nutrient issues to speak at a public forum and an agricultural meeting.

Plans for 2004

- Continued outreach with watershed groups, towns, regional planning commissions and other stakeholders in a basin planning process and development of a watershed council.
- Completion of a water quality assessment for the basin.
- Continue to secure grants and move forward on projects in the basin.
- Continued collaboration with all partners in the basin on priority issues.
- Ongoing education and outreach with residents of the watershed.
- Development of a typing and classification proposal.

Basin 7 - Lamoille River Basin Progress Summary

The Watershed Planning Process and Public Participation

A Watershed Council was formed representing a diverse mix of stakeholders within the watershed. The Council members represent watershed constituents from various backgrounds including farmers, foresters, loggers, business owners, municipal officials, anglers, local watershed organizations, environmental groups, teachers, utility companies, regional planners, and a ski area. The DEC watershed coordinator and the Watershed Council developed the watershed plan and will assist in the implementation of watershed restoration projects. The Watershed Council met monthly to formulate a collaborative approach to resolving water quality issues of high priority. Council membership and attendance at these meetings was continually open to the public. Technical advisors provided the Council and watershed coordinator with information necessary to develop strategies to be included within the watershed plan.

Surface Water Typing and Classification

The basin plan must recommend surface water typing and classification to set management goals for all of the Lamoille basin's surface waters. Existing, attainable, and desired water quality criteria have been used to in the draft proposal. The Lamoille Watershed Council assisted DEC in developing a proposal for all waters within the watershed. DEC's watershed coordinator presented the proposal and updated Lamoille watershed planning activities to 16 selectboards within the watershed to solicit their recommendations.

Formation of a Volunteer Lamoille Watershed Organization

A grant was secured from the Lake Champlain Basin Program to hire a part time coordinator to form and lead a volunteer-based Lamoille Watershed Association.

Assessments

Stream Stability Assessments

Stream stability assessments have been completed for Lamoille, Caledonia, and Orleans County portions of the Lamoille River watershed sponsored by FEMA Project Impact and the four Natural Resource Conservation Districts located within the watershed. The assessments will be used to target unstable stream segments for flood remediation and infrastructure protection and to identify reference stream segments for protection. A watershed-wide stream stability assessment is also underway in the Browns River watershed (see below).

Lamoille River Buffer Inventory

Inventories of woody buffers were completed for the entire 85-mile Lamoille River. The inventory of buffer conditions will assist in future stream restoration and protection projects. The Lamoille, Chittenden, Northwest and Northeast Regional Planning Commissions with 604(b) funding conducted the inventories.

Erosion Hazard Map for the Towns of Wolcott and Craftsbury

A FEMA Project Impact-sponsored stream stability assessment has been completed in the Wild Branch watershed. The watershed stream stability assessment has determined the causes of stream instability and will prioritize protection, management, and restoration efforts. The Vermont Geologic Survey undertook this assessment to develop an erosion hazard map for the Towns of Wolcott and Craftsbury for future town planning guidance. The Wild Branch has been severely affected by flood events in the 1990s causing extensive damage to private and public infrastructure as well as aquatic habitat.

Bridge and Culvert Surveys

DEC's watershed coordinator provided training and project oversight for bridge and culvert surveys in the upper Lamoille (Caledonia and Orleans County portions of the watershed), Kenfield Brook, and Browns River sub-watersheds. Bridges and culverts were mapped and crossing structures assessed for structural integrity, fish passage, water quality, stream stability, and fish and wildlife habitat values. Several structures have been identified for replacement or upgrades. The Northeast Development Association, Vermont Fish and Wildlife Department, the Lamoille River Anglers Association, and Winooski Natural Resources Conservation District conducted the surveys.

Watershed Restoration Projects

Johnson State College Dam Removal and Stream Restoration

DEC's watershed coordinator assisted the college in removal of an in-stream dam located on campus. The dam was structurally unsound, hindered fish passage, and was responsible for sediment discharges. The dam removal project included the re-construction of the former natural stream channel.

Trees for Streams

DEC's watershed coordinator participated in several riparian buffer establishment projects along the Lamoille River and tributaries assisting the Lamoille River Anglers Association and Lamoille County Natural Resources Conservation District in its *Trees for Streams* program.

Wildlife Habitat Improvement Program

Two sites along the Lamoille River were enrolled in the WHIP program after site evaluations by DEC's watershed coordinator, the DEC River Management chief and NRCS district conservationist for Lamoille County. The team will design both passive and active stream restoration projects using the principles of natural channel design.

Impaired Waters Remediation Efforts

Deer Brook (Georgia)

Numerous site visits and meetings were held to identify and reduce nonpoint source pollutants to Deer Brook, which is an impaired stream. Georgia and Milton town officials, VTrans staff, and DEC technical staff from Wetlands, Stormwater, Planning, and Hydrology have been involved in this process. Stormwater best management practices and erosion control measures have recently been implemented to divert stormwater runoff to an intermittent stream and stabilize an eroding gully. VTrans has completed temporary repairs to an interstate culvert that has contributed to a discharge of iron to the stream. DEC is working with VTrans to secure funding for replacement of the failing structure. Additional sites were monitored for chemical and biological criteria in an effort to better bracket pollutant sources.

Mill Brook (Fairfax)

Mill Brook is impaired by sediment and nutrient pollutants. Sediment and nutrients from agricultural and industrial park activities and several gravel pit operations within the watershed appear to be the cause of the water quality impairment. Additional sites were monitored for chemical and biological criteria in an effort to better bracket pollutant sources.

A collaborative partnership has been developed between DEC and all relevant agricultural partners to formulate strategies to improve water quality in the impaired waters of Mill Brook due to agricultural activities. The Franklin County Natural Resources Conservation Districts hosted a public forum for watershed farmers discussing the impairments and voluntary cost share programs that are available.

The Composting Association of Vermont (CAV) and its partners were recently awarded a 319 grant to initiate a pilot-composting project. Initially, project partners will hold a series of local meetings to educate farmers in the Lamoille River basin on the benefits of composting their manure and managing their nutrients. Recruited farms will receive technical composting assistance throughout the project period. A special focus area, Mill Brook, with a relatively small watershed, has been chosen to enlist two to five farmers for on-farm composting.

Browns River (Chittenden County)

Two and a half miles of cropland will be converted to a filter strip along the Browns River through the Conservation Reserve Enhancement Program. Two grants, totaling \$16,000, have been secured from the Lake Champlain Basin Program to undertake two levels of stream stability assessments of the entire watershed. A watershed assessment using the Agency of Natural Resources Phase 1 protocols was recently completed to identify existing stream conditions at the watershed scale using GIS tools and ground truthing methods. Partners include DEC, Williston NRCS staff, Winooski Natural Resource Conservation Districts, and Vermont Agency of Agriculture, Food and Markets, Chittenden County RPC, and municipal officials.

Unnamed tributary to the Brewster River (Cambridge)

Smugglers Notch Resort completed underground well monitoring to determine possible sources of pollutants to an impaired tributary to the Brewster River in Cambridge. Iron bacteria are having an impact on the waterway. The assessment has determined that the source of the iron discharge is from the adjacent road. A meeting between the resort, DEC's watershed coordinator, and VTrans took place last winter to proceed with remediation efforts. DEC's watershed coordinator assisted Smugglers Notch consultants in designing a small dam removal, stream restoration, and stream buffer establishment near the resort's main entrance.

Lamoille Rail Corridor

DEC's watershed coordinator and stream alteration engineer visited several sites along the Lamoille River adjacent to the Lamoille Rail Corridor with a VAST representative. They provided technical assistance for projects that will improve stream stability, remove flood plain encroachments, re-establish flood plain connection, increase woody riparian buffers, and provide for waterway crossings that effectively transport both stream flow and sediment for the proposed conversion of the former rail line to a recreational path.

Lakes and Ponds Issues

Eurasian water milfoil control and spread prevention

Milfoil was recently discovered on Lake Elmore. DEC has provided technical assistance to the Lake Elmore Association in an effort to control the spread of this aquatic nuisance species. The lake association has initiated an aggressive milfoil control program consisting of hand pulling techniques and the installation of bottom barriers.

Elimination of lake and pond draw downs

DEC's Watershed Coordinator, Hydrology Section, and Lakes and Ponds Section Chiefs negotiated with a municipal utility company to eliminate current water level fluctuations and draw downs on three lakes and ponds in the upper watershed. Reduction and elimination of these drawdowns will enhance aquatic biota and habitat.

Plans for 2004

Formation of a Volunteer Lamoille Watershed Organization

The formation of such a volunteer watershed organization was proposed in the spring of 2003. A part time, local Watershed Coordinator was hired to lead this organization.

Bridge and Culvert Assessments

Bridge and culvert assessments will continue at the sub-watershed level to identify structures that impede fish passage or contribute to stream instability.

Browns River

Initiate Phase 2 rapid geomorphic assessments throughout the watershed to determine the sources of instability and prioritize stream protection and restoration efforts. The stream stability assessment will begin in spring of 2004 using data collected during the recently completed GIS-level assessment. The condition of 30 stream reaches will be evaluated on the Browns River and major tributaries.

Mill Brook

Initiate targeted agricultural best management practices to improve water quality in cooperation with local landowners, DEC, AAF&M, NRCS, and Franklin County Conservation District.

Unnamed tributary to the Brewster River in Cambridge

Implement a remediation project on this waterway. Possible solutions include injections of lime into the soils to reduce acidity in which iron bacterium flourishes. DEC will continue assisting Smugglers Notch with removing a dam on this stream to further improve its water quality.

Riparian Buffer Initiative

The Lamoille County Natural Resources Conservation District's *Trees for Streams* buffer initiative has been funded for spring of 2004. Several thousand riparian tree seedlings have already been ordered for buffer plantings in the Lamoille River Watershed. The program will be expanded to include buffer implementation along lakes and ponds.

Eurasian water milfoil control and spread prevention

DEC will assist local lakes and ponds organizations, utilities, and state park employees in the implementation of invasive species watcher programs, outreach, spread prevention, and control efforts.

Watershed Plan Completion, Public Comments, Distribution and Submittal

The watershed plan will be completed, presented to the public, and submitted to the Secretary of ANR and the Water Resources Board for final approval. The Watershed Coordinator will work closely with the Watershed Council and various partners during this process. The surface water typing and classification management goals will be forwarded to the Water Resources Board for consideration and codification of proposed water classifications and water quality management types. Presentation of these proposals to most selectboards within the watershed will be completed as part of this process.

Morristown's Lamoille River Oxbow Park Initiative

DEC's watershed coordinator will work closely with the Morristown Conservation Commission in funding and developing a natural resource plan for the management of the Oxbow Park that will address streambank erosion, buffer plantings, possible re-location of recreation fields and the snow disposal site, outreach and education, and the initiation of a pilot composting project. The collaborative effort will also work together to the preserve access to Terrill Gorge, and initiate the replacement or upgrade of stream crossings in the Kenfield Brook watershed.

Basin 9 - White River Basin Progress Summary

The Watershed Planning Process and Public Participation

Background

DEC did not form a watershed council in the White River basin, but instead, based the plan on its collaborative work with the White River Partnership. The concept of a separate watershed council guiding the planning process in each watershed did not develop until after the work on the White River Basin Plan was well underway.

The White River Partnership formed in 1995 as a group of local citizens interested in preserving the quality of life in the White River Basin. It has become a forum for bringing together the community, local, state, and federal government agencies, and their resources to protect common interests.

To identify common interests or concerns in the community, the Partnership held a series of public forums in 1996. The public forum results and public input during the basin planning process provided the primary local concerns addressed in the White River Basin Plan. The primary concerns were as follows:

- Stream channel instability and streambank erosion
- Lack of awareness of water quality problems
- Extent and quality of public access to recreational opportunities on the water
- Impacts to fisheries

Public input during the basin planning process included four public forums on basin planning hosted by the White River Partnership in November/December 2000. During the forums, the basin planning process was discussed and over 125 attendees were asked to identify water quality problems in the basin and propose solutions. In January 2001, the DEC Watershed Coordinator summarized the input received and sent the summary to all attendees and town governments in the basin. A meeting with the agricultural community was also held in December 2000 in Randolph at the initiation of the planning process.

In the spring of 2001, individuals who attended the public forums, state agencies, federal agencies, local governments, and non-government entities participated in five focus groups based on the local concerns previously identified during the public forums in 1996 and 2000. The goal of each of the groups was to review and revise goals, objectives and strategies for resolving water quality problems.

DEC incorporated the work of the focus groups in the White River Basin Plan Working Draft. In September 2001, the draft was distributed widely to further engage the public in the continuing development of strategies.

Based on the public input, including four public hearings, the White River Basin Plan was revised, approved by the Secretary, and released in December 2002. A link to an electronic version of the plan can be found at the following address on the Water Quality Division's web site (<http://www.vtwaterquality.org>). In 2003, DEC formally submitted the typing and classification proposal for the basin to the Vermont Water Resources Board. Action on the proposal is pending.

Watershed Restoration Projects

River Restoration

The DEC River Management Program continues to work with the Partnership and the US Forest Service to assess and develop restoration plans for rivers in the basin.

Hartford Conservation Commission's Work

The DEC watershed coordinator continued to assist the conservation commission in drafting a water resources overlay district for the town's zoning regulations and provided technical information in support of the overlay district at two public hearings. DEC and the Department of Fish and Wildlife presented information on the importance of riparian buffers at a conservation commission sponsored workshop.

White River Partnership Water Quality Monitoring Project

The DEC watershed coordinator provided information to the White River Partnership to help develop an article on the results of the Partnership's *E. coli* testing program in the basin.

Outstanding Resource Waters

The DEC watershed coordinator provided information to an interested town official on the process for developing an Outstanding Resource Water proposal for a section of the White River and DEC's commitment to assist.

Buffer Restoration

The Department of Fish and Wildlife planted trees along portions of its riparian properties in the basin. DEC also plans to locate signs identifying these properties as state lands.

Erosion Hazard Maps

The Vermont Geologic Survey continues to work on erosion hazard maps for towns on the Third Branch. In addition, it has worked with the White River Partnership and the Two Rivers-Ottawaquechee Planning Commission to discuss the process for helping towns use the maps.

Spawning Habitat Restoration

The Connecticut River Watershed Council is continuing its efforts to restore fish passage and spawning habitat to 2.5 miles of the First Branch of the White River by removing the Lower Eaton Dam.

Impaired or Altered Waters - Remediation Efforts

Cold Brook & Open Meadow Brook

The DEC watershed coordinator, NRCS, Vermont Agency of Agricultural, Food and Markets, and the White River Partnership discussed a process for addressing water quality problems in these two brooks. Staff from the Agency of Agriculture, Food and Markets and NRCS met with landowners in the basin to discuss opportunities to implement water quality improvement projects.

Adams Brook

The Natural Resource Conservation Service continues to work with several farmers on improvements in the formerly impaired Adams Brook watershed. Water quality monitoring indicates that the work with Vtrans and farmers has paid off. The stream now has met Vermont Water Quality Standards on two occasions and is a candidate for removal from the 2004 Section 303d list.

Plans for 2004

- Continued outreach with towns and the Regional Planning Commission.
- Continued efforts to secure grants and move forward on strategies in the basin plan.
- Continued collaboration with all partners in the basin on priority issues.
- Ongoing education and outreach with residents of the watershed. The focus will be on river dynamics and impacts from dams.
- Preparation and presentation to the Water Resources Board of the classification and typing proposal.

Basin 14 - Wells, Waits, Stevens and Ompompanoosuc River Basin Progress Summary

The Watershed Planning Process and Public Participation

Public Participation

Two public forums were held in the basin in late fall 2003 to discuss DEC's upcoming watershed planning initiative and recruit watershed stakeholders in forming local Watershed Councils.

Watershed Council Formation

A meeting of key stakeholders was held to make preliminary decisions on how Watershed Councils will be formed in the basin. Four separate Watershed Councils will be formed, each representing one of the four sub-watersheds within basin 14. Stakeholders included include, among others, NRCS St. Johnsbury and Berlin field office staff, Caledonia and White River NRCD directors, the Connecticut River Joint Commissions, Connecticut River Watershed Council, and Two Rivers, NVDA, and Upper Valley Regional Planning Commissions.

Assessments

Bridge and Culvert Survey

Funding has been secured to undertake a comprehensive bridge and culvert survey of structures within the Caledonia portions of the watershed. Assessments will identify structures that are impeding fish passage or contribute to stream instability. An educational component will be included using Lyndon State College engineering students. Lead partners also include DEC, Vermont Fish and Wildlife staff, and NVDA.

Plans for 2004

Watershed Councils and Watershed Plan Development

DEC's watershed coordinator and the four Watershed Councils within basin 14 will develop water quality improvement and protection strategies that will be incorporated into a single watershed plan.

Dam Inventory and Assessment

DEC's watershed coordinator will work with local partners to secure funding to undertake a comprehensive dam inventory and assessment. The results of the assessment will prioritize dams for removal or upgrades to enhance fish passage, water quality, and mitigate catastrophic failure during flood events.

Stafford Buffer Initiative

DEC's watershed coordinator will assist the Town of Stafford in the implementation of stream buffer initiative for the West Branch of the Ompompanoosuc River.

Watershed GIS-level Assessments

DEC will secure funding to initiate GIS-level stream stability assessments at the sub-watershed level. The GIS level assessment will delineate sub-watersheds and stream reaches, determine reference stream types and identify anthropogenic disturbances to the river channels and corridors.

Agricultural Best Management Practices (BMP's)

DEC will work closely with the Agency of Agriculture, Natural Resource Conservation Districts, and NRCS offices in identifying priority areas for agricultural BMPs within the Harveys Lake and Ticklenaked Pond sub-watersheds.

Junk Cleanup

DEC's watershed coordinator and various partners will initiate a cleanup of un-designated junkyards along river corridors throughout the basin. This issue has already been identified as a top priority at the preliminary public meetings.

Preservation of the Working Landscape

DEC's watershed coordinator will work with area regional planning commissions, land trusts, Vital Communities, Agency of Agriculture, and Natural Resource Conservation Districts in protecting working farm and forestlands through easement purchases. Agricultural lands and forests discharge far less non-point source pollution when compared to developed lands.