

Appendix A

Progress Report on Basin Planning During 2005

**To the House and Senate Committees on Agriculture and
Natural Resources and Energy**

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**Vermont Agency of Natural Resources
Department of Environmental Conservation**

Table of Contents

INTRODUCTION..... 1

THE CHALLENGE..... 1

DIFFICULTIES ENCOUNTERED..... 2

DETAILS OF EACH PLANNING PROCESS 3

WATERSHED INITIATIVE STATUS FOR ALL BASINS AS OF DECEMBER 2004 4

POULTNEY METTOWEE BASIN PROGRESS REPORT – BASIN 2 5

INTRODUCTION..... 5

WATERSHED INITIATIVES..... 5

RIVER AND STREAM RESTORATION PROJECTS 6

CONCLUSION AND PLANS FOR 2006 7

OTTER CREEK BASIN PROGRESS REPORT – BASIN 3..... 8

INTRODUCTION..... 8

WATERSHED INITIATIVES..... 9

RIVER AND STREAM RESTORATION PROJECTS 10

CONCLUSION AND PLANS FOR 2006 11

NORTHERN LAKE CHAMPLAIN BASIN PROGRESS REPORT – BASIN 5 12

INTRODUCTION..... 12

WATERSHED INITIATIVES..... 12

RIVER AND STREAM RESTORATION PROJECTS 13

CONCLUSION AND PLANS FOR 2006 14

MISSISQUOI BAY BASIN PROGRESS REPORT-BASIN 6..... 16

INTRODUCTION..... 16

WATERSHED INITIATIVES..... 17

RIVER AND STREAM RESTORATION PROJECTS 17

CONCLUSION AND PLANS FOR 2006 18

LAMOILLE RIVER BASIN PROGRESS REPORT – BASIN 7..... 19

INTRODUCTION..... 19

WATERSHED INITIATIVES..... 20

RIVER AND STREAM RESTORATION PROJECTS 21

PLANS FOR 2006..... 22

WINOOSKI RIVER BASIN PROGRESS REPORT – BASIN 8 23

RIVER AND STREAM RESTORATION PROJECTS 23

PLANS FOR 2006..... 23

WHITE RIVER BASIN PROGRESS REPORT – BASIN 9..... 24

INTRODUCTION..... 24

WATERSHED INITIATIVES..... 24

RIVER AND STREAM RESTORATION PROJECTS 25

PLANS FOR 2006..... 25

WEST, WILLIAMS, SAXTONS RIVERS BASIN PROGRESS REPORT – BASIN 11 27

INTRODUCTION..... 27

WATERSHED INITIATIVE STATUS 28

RIVER AND STREAM RESTORATION PROJECTS DUE TO WRWA/WRC/WCNRC D WATERSHED PLANNING INITIATIVE* .. 31

PLANS FOR 2006..... 34

CONCLUSION..... 34

WELLS, WAITS, STEVENS AND OMPOMPANOOSUC RIVER BASIN PROGRESS REPORT – BASIN 14 35

INTRODUCTION..... 35

WATERSHED INITIATIVES	35
RIVER AND STREAM RESTORATION PROJECTS	36
CONCLUSION AND PLANS FOR 2006	37
CONCLUSION.....	38

Introduction

In 2005, the Vermont Agency of Natural Resources, Department of Environmental Conservation (DEC) and its municipal, regional and watershed partners were fully engaged in the basin planning process in eight of Vermont's 17 basins.

The overall goal of each plan is to establish strategies that will:

- maintain, improve, or restore the surface waters of the basin,
- ensure full support of uses of the waters, and
- engage the many diverse parties in a watershed who are needed to reduce or eliminated pollution and protect high quality waters.

The Vermont DEC Watershed Coordinators (or Basin Planners) have engaged members of the public, non-profit organizations, landowners, farmers, foresters, loggers, local officials, government agencies and others in the basin planning/watershed initiative process.

The Challenge

The Lake Champlain Phosphorus TMDL, for example, established phosphorus load allocations for each major lake watershed and included an implementation plan describing the major, basin-wide program efforts that will be needed to achieve these allocations. Through the DEC Watershed Planning Initiative strategies are developed by a public process to achieve goals and objectives identified for each major river basin statewide.

Translating TMDL load allocations and river basin plans into real, “on-the-ground” actions requires a locally coordinated implementation process. Watershed Coordinators play a critical role in turning these plans into reality. Their job in a watershed is not finished until the goals derived through the public consensus process are implemented and water quality is improved.

Watershed Coordinators lead the development of individual basin plans based on a public involvement process. They serve as a vital communication link between all the various state and federal agencies and local organizations that are contributing to water quality improvement efforts. They help educate and persuade individual landowners and business owners to prevent or abate nonpoint source pollution from their property. They facilitate the completion of projects, large and small, that correct locally identified problems and restore water quality. Watershed Coordinators are needed in each major basin as a long-term local presence to ensure successful follow-through and implementation of the Lake Champlain Phosphorus TMDL and other water quality plans throughout the state.

The planning process and associated watershed projects are in varying stages in the different basins: one basin plan is in a restoration phase and a typing and classification petition is under consideration by the Water Resources Board (White River); a second basin plan has been approved by the Secretary and is awaiting instructions by the Water Resources Board on the correct manner in which to propose typing and classification petitions (the Poultney Mettowee basin); another basin plan is in final draft form with numerous specific river and stream assessments and restoration projects underway (the Lamoille basin); four basin plans are in development with the respective councils and watershed coordinators holding meetings and prioritizing issues (the Otter Creek, Northern Lake Champlain Basin, West, Williams, Saxtons and the Ompompanoosuc, Waits, Wells Rivers basins); one basin plan is underway with the introductory meetings completed and remedial projects planned (Missisquoi River).

DEC's watershed initiative involves two parallel tracks of work, based on published Guidelines for Watershed Planning. The first is the planning process track. Watershed planning activities use the grass roots approach and include: holding public forums to identify issues and concerns; forming a Watershed Council and facilitating Council meetings; ranking issues in order of priority; holding panel discussions on watershed topics of interest; formulating strategies to address the issues with the public and the council; developing surface water management goals; and with the public, collaboratively writing the watershed plan. The process also lays the groundwork for implementing projects by: raising public awareness of issues and solutions so that people are engaged and willing to act; bringing potential project partners together; identifying projects; determining funding sources; and coordinating the implementation. Although time-consuming, the planning track is essential to effective project implementation in the second track.

The second track of the watershed initiative involves on-the-ground watershed assessment, protection, and restoration projects to improve water quality. Examples of assessment projects include Phase I and II geomorphic assessments that identify physical conditions and health in rivers and streams; bridge and culvert inventories that review the adequacy of these structures for both road and stream protection; dam inventories; and the overall watershed assessment that integrates known physical, biological, and chemical information. Protection and restoration projects can include: riparian buffer re-establishment, stream channel restoration and habitat improvement; selective dam removal; stormwater and agricultural best management practice implementation; securing easements; educating landowners; and working with municipalities on local protection strategies.

Difficulties Encountered

The Watershed Initiative has made significant improvements to the water quality of rivers, their tributaries and lakes in the initial years that three watershed coordinators have served the people of the state. Today we have six state funded watershed coordinators and one part-time contractual coordinator who are able to accelerate the initiative and put more remedial and protective projects in place. Many dollars have been leveraged directly by grant writing and by the rationale and weight of the adopted basin plan.

To date, two noteworthy problems have been encountered in the watershed planning process.

#1. The biggest challenge encountered in the watershed planning process is that it takes more time than anticipated to carry out an inclusive process involving the many stakeholders in a watershed to produce a watershed plan that the public will identify with and implement. This truly grassroots effort in some watersheds starts from square one with no existing watershed organization in place. The watershed coordinator forms a diverse and inclusive watershed council, holds many public forums, conducting numerous panel discussions to provide the Council with the technical information necessary to formulate water quality remediation strategies, the "typing and classification" process, and the information needed for drafting of the plan. Although this takes a far greater amount of time than originally scheduled, it is absolutely essential to have the participation of all stakeholders and land owners who are all responsible for reaching solutions that contribute to the larger goal to restore our waters. The January 2006 deadline required by statute to complete basin plans for the entire state will not be met at the current DEC staffing level. Our best estimate for the time of completion of the plans at the projected staffing will be 2010 to 2011.

#2. Typing and classification involves multiple meetings with towns, draft proposals and mediation where the typing or classification between towns are inconsistent. The White River Plan was completed in November 2002. The petition for typing and classification was forwarded to the Water Resources Board on June 6, 2003. It was not until June 30, 2005 that the Board forwarded its approved final rules with the Legislative Committee on Administrative Rules (LCAR). LCAR remanded the approved final rules back to the Water Resources Board. At the time of this report, December 2005, the rule for the typing and classification of the waters of the White River basin has not been finalized.

Despite being the single most time consuming element in completing basin plans, the water management typing process is important as it brings the watershed coordinators into a close contact with each municipality, its select board, planning commission and municipal officials. As a result of this goal-setting requirement, there are discussions ranging from how municipal ordinances can be enhanced to improve water quality to problems experienced on local tributaries and public treatment works.

The Agency of Natural Resources believes that it is important to give communities the opportunity to establish goals, as described in the 2000 Water Quality Standards, for managing the waters in their environment. Some communities are enthusiastic and rise to the occasion and others do not.

V. S. A. 10 Section 1250 states clearly “It is the policy of the State of Vermont to: “protect and enhance the quality, character and usefulness of its surface waters and to assure the public health;” Within the classification B there is a clear process, Water Management Typing, to set a higher goal that enhances the water quality. Thus, it is important to maintain the typing process to enable the State and others to speak to the goal of enhancing the quality, character and usefulness of our surface waters and to assure the public health.

Finally, it would be helpful if all municipalities considered including guidelines for future water management typing or equivalent goal statements for the management of waters as they revise their Town Plans. This would facilitate the watershed initiative and engage the regional planning commissions, many of whom have now become familiar with Water Management Typing and the watershed initiative.

Details of each Planning Process

The table on the next page lists the components of the basin planning process and their current status by basin as of the first week of December 2005. Following this summary table are eight progress reports, one for each basin. Plans for 2006 are also briefly described for each basin. Basin plans and the basin planning process are required by the Vermont Statute 10 V.S.A. Section 1253(d), the Vermont Water Quality Standards Section 1-02D, and the U.S. EPA 40 CFR Part 130, Section 130.6 – Water Quality Management Plans.

Watershed Initiative Status for All Basins as of December 2004

Current Status by Basin

Components of the basin	Basin 2	Basin 3	Basin 5	Basin 6	Basin 7	Basin 8	Basin 9	Basin 11	Basin 14
planning process									
Public forums held	C	C	O	I	C		C	C	C
Watershed Council formed	C	C	C		C		C	C	C
Local WQ* concerns identified	C	C	C	O	C		C	C	C
Panel discussions on WQ issues held	C	O	O	O	C		N/A	C	C
Strategies for WQ issues formulated	C	O	O	O	C		C	C	O
Review of town plans & zoning regulations	C	I/O	O	I	C		C	O	O
Develop water management type classification proposal	C	I/O	I		C		C	O	O
Meetings with towns on classification proposal	C	I/O			C		C	I	
Watershed plan draft	C	I	I		C		C	I,C	I
Public hearings on draft plan	C						C		
Final basin plan	C						C		
Outreach to schools and local groups	O	O	O	O	O		C	O	O
Basin Assessment Report	C	C	C	C	C		C	C	C
Phase I Stream Geomorphic Assessments	O/C	O/C	O	O	O	O	O	C,O	O/C
Phase II Stream Geomorphic Assessments	O/C	I/O/C	O	O	O	O	O	C,O	O/C
Bridge and Culvert Inventory	O/C	I/O		O	O	O		O	O/C
Dam Inventory	I				C		C	See below	
Biological Monitoring	O	O	I	C	O	O	C	O	O
Restoration Projects	C&O	O	O	O	C&O	C&O	O	C,O	C&O

Key: I = initiated, O = ongoing, C= completed, WQ = water quality, Basin 2 = Poultney-Mettowee Rivers; Basin 3 = Otter Creek; Basin 5 = Northern Lake Champlain; Basin 6 = Missisquoi River; Basin 7 = Lamoille River; Basin 8 = Winooski River; Basin 9 = White River; Basin 11 = West River; Basin 14 = Wells, Waits and Ompompanoosuc Rivers

Poultney Mettowee Basin Progress Report – Basin 2

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Introduction

The Poultney-Mettowee Basin Plan was completed in February, 2005 in accordance with 10 V.S.A. Section 1253(d), the Vermont Water Quality Standards, the Federal Clean Water Act and 40 CFR 130.6. Distribution of the plan was postponed pending an expected decision from the Vermont Water Resources Panel of the Natural Resources Board relating to typing of waters in the White River Basin. The plan will serve as a roadmap to guide projects within the watershed, and it will help to leverage funds to accomplish the goals it sets forth.

Watershed Initiatives

Activity	Status	Comments/Information
Public forums held	C	Public forums were held in 2001 and 2002 to identify water quality issues and concerns and also actions in which the participants were most interested
Watershed Council formed	C	The Poultney Mettowee Watershed Partnership was expanded to serve the role of watershed council.
Local water quality (WQ) issues identified	C	Through public forums, focus group discussions, public attitudes surveys, and other media outreach.
Panel discussions on WQ issues held	C	Many formats were used to explore water quality issues, including focus groups, public forums, surveys, and panel discussions.
Strategies for WQ issues formulated	C	Strategies were formulated with extensive public input and are in the Poultney Mettowee Basin Plan.
Draft white papers for WQ issues	C	White papers on specific water quality issues were reviewed during the basin planning process.
Review of town plans and zoning	C	The Rutland Regional Planning Commission reviewed town plans and zoning regulations in the Poultney Mettowee Basin as part of an EPA 604(b) pass-through grant.
Develop water management type (WMT) classification proposal	C	A water management typing and classification proposal for the basin is part of the draft plan.
Meetings with individual towns on the WMT classification proposal	C	The watershed coordinator, with assistance from the Poultney Mettowee NRCD and the Watershed Partnership met with representatives from each town in the basin (planning commissions, conservation commissions, and select boards).
Draft basin plan	C	Draft released on July 12 th for 80-day comment period.

Public hearings on draft plan	C	3 public hearings were held on the draft plan – Aug. 5, Aug.10, and Sept. 13, 2004
Final basin plan	I	Adopted in February 2005 by Secretary of ANR
Outreach to area schools and local groups	O	Partners engage in continued outreach and involvement with schools and colleges in the basin (Fair Haven Elementary, Poultney Elementary, Mettowee Community School, Castleton State College, and Green Mountain College – Watershed Planning class).
Basin Assessment Report	C	Last assessment report completed in 1999.
Phase I Stream Geomorphic Assessments done	O	ANR Phase 1 geomorphic assessments completed for Poultney, Mettowee, Hubbardton, and Castleton Rivers.
Phase II Stream Geomorphic Assessments done	I	Castleton River phase 2 assessment completed 2005. Phase 2 underway for Poultney, Mettowee, and Hubbardton Rivers.
Bridge and Culvert Inventory	O/C	Culvert assessment in-progress or completed for each town in the Poultney Mettowee basin. Castleton assessment completed via ANR protocols 2005.
Dam Inventory and Assessment	O	Associated with dam removal in Fair Haven
Biological Monitoring	O	There are approximately 60 biomonitoring sites that are sampled on a rotational basis throughout the basin.
Restoration/Protection Projects Underway	O	Most are agriculturally related streambank restoration sites on farms in the Mettowee and Poultney River basins

Key: I = initiated, O = ongoing, C= completed

River and Stream Restoration Projects

Waterway	Water Quality Concern	Current Actions
Mettowee River	Thermal modification, sedimentation, nutrient enrichment, geomorphic instability, fish kills	Bio-engineered streambank restoration, buffer planting, water quality monitoring. 3 projects completed 2005.
Poultney River	Sedimentation, nutrient enrichment, geomorphic instability, elevated levels of pathogenic bacteria	Bio-engineered streambank restoration, buffer planting, ongoing water quality monitoring
Hubbardton River	Sedimentation, nutrient enrichment, geomorphic instability	Riparian corridor restoration through buffer planting, livestock exclusion, conservation easements
Castleton River (Fair Haven)	Ongoing concerns over flooding, stormwater runoff, nutrient enrichment, and sedimentation.	Phase 2 geomorphic assessment, river corridor planning underway.
Castleton River Gully Brook (Castleton)	Geomorphic instability causing flooding, sedimentation, nutrient enrichment	Passive geomorphic restoration project completed summer 2004. Riparian corridor restoration completed 2005.

Conclusion and Plans for 2006

Overall, partners in the basin planning process have indicated that collective efforts have been quite successful in implementing high priority projects that have required enhanced technical and financial resources. Many of the goals and corresponding strategies identified in the plan have been, or currently are being, implemented in the areas of nutrient management, water quality monitoring and education, and streambank assessment and restoration. Resources have been allocated to provide additional nutrient management education and outreach services to farmers including education about new technologies and practices, and individual assistance for record keeping and nutrient management plan implementation.

This was the third year of a project to monitor and evaluate the water quality in the Poultney River, which has now been expanded to include the Mettowee River. The primary interest for expanding this project to the Mettowee River Basin specifically relates to phosphorus loading contributions to the southern part of Lake Champlain. Students from Green Mountain College helped with water quality sampling and geomorphic assessment of nearby streambank conditions. This information is publicized on the Poultney Mettowee Watershed Partnership website and in the summer series of articles in the *Lakes Region Free Press*.

For 2006, the partners involved in the basin planning process are committed to the ongoing implementation of strategies identified in the basin plan. There will be expanded water quality assessment and monitoring activities, including additional water quality monitoring and geomorphic assessment of the Mettowee River. Agricultural cooperators will see an increase of nutrient management technical assistance, resources, and funding throughout the basin. Coupled with this will be the development of a pilot program to look at performance based measures and incentives for nutrient management. A high priority will be ongoing restoration projects and public education activities, including the potential dam removal in the Castleton River, where failing dams pose a threat to aquatic biota and habitat. Also, high priority will be given to ongoing education and awareness of water quality issues.

One significant outreach program was expanded this past summer on Lake St. Catherine - the Lake Education and Action Program (LEAP). Funded through the University of Vermont's Sea Grant Program, the primary goal of the LEAP program is to protect lake watersheds from nonpoint source pollution by giving stakeholders the knowledge and skills they need to maintain their property in a non-polluting manner. While the eventual goal of this program is to reach several watersheds, it was decided that the second year should focus on one lake watershed area to modify the program and delivery mechanisms. The following years of the program will expand to other lake watersheds in the basin including Lake Bomoseen and Lake George (in the New York portion of the Poultney Mettowee Basin).

Finally, the basin planning process allowed partners to prioritize and implement several streambank restoration projects throughout the basin this year. We have many other potential restoration projects in the works for future restoration efforts. All of these will improve the water quality locally and reduce the phosphorus that reaches Lake Champlain.

Otter Creek Basin Progress Report – Basin 3

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Introduction

During 2005, the Rutland Natural Resources Conservation District (RNRCDD) and the Vermont Agency of Natural Resources (ANR) continued to sponsor the meetings and activities of the Upper Otter Creek Watershed Council (UOCWC) from the headwaters downstream to the vicinity of the Neshobe River. The Council continues to identify the existing and potential causes and sources of pollution that can influence surface waters of the Otter Creek basin. During the 2005 calendar year, the UOCWC organized meetings and facilitated discussion on basin issues such as dams and water level fluctuation, wildlife management, water quality monitoring, stormwater runoff with respect to impaired waters, wetlands, river corridor management (with final presentations on geomorphic assessments), riparian buffers, which included buffer planting projects, and future funding and administrative support for the long-term sustainability of the Council.

Most of the topics discussed at the meetings had been top-ranked issues raised at public forums in 2002 and 2003. The UOCWC is now in the process of developing goals, objectives, and strategies that will be incorporated into the Otter Creek Basin Plan.

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

Water quality monitoring of the Otter Creek and its tributaries;

Assessment of riparian conditions and geomorphology of the Otter Creek and its tributaries;

Developing watershed improvement projects;

Working with towns to conduct erosion inventories of their back roads;

Collaborating with the Rutland City Department of Public Works and municipal officials on an outreach and awareness project for the stormwater-impaired Moon and Mussey Brooks.

Highlights for 2005 include a Phase 1 geomorphic buffer assessment of the Otter Creek mainstem, water quality monitoring of major tributaries to the Otter Creek, 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. Active water quality groups in Addison County include the Addison County River Watch Collaborative, the Lewis Creek Association, the Watershed Center in Bristol, the New Haven River Anglers Association, the Middlebury River Watershed Association, and the Lake Dunmore – Fern Lake Association.

The Otter Creek Advisory Committee, which continues to serve as the umbrella group for the basin planning process throughout the watershed, has been meeting on a quarterly basis. In addition, an agricultural work group has been formed and meets periodically to discuss water quality issues as they pertain to agricultural land use within the basin. Recently, the Advisory Committee and the agricultural work group have met to review and discuss a draft white paper regarding riparian buffer management practices, as well as to review progress made in addressing impaired surface waters where the problem has been attributed to runoff from the working landscape.

The Watershed Coordinator continues to participate in the meetings and activities of these organizations as a way to support this existing stewardship and to incorporate strategies related to these efforts into the Otter Creek Basin Plan.

Watershed Initiatives

Activity	Status	Comments/Information
Public forums held	C	A series of public forums were held in Rutland County in the winter of 2003 and in Addison County during the spring of 2004.
Watershed Council formed	C	The Upper Otter Creek Watershed Council was formed in the spring of 2003. Existing watershed groups are established in the Addison County portion of the basin. A basinwide advisory committee has been meeting quarterly.
Local water quality issues identified	C	Major WQ issues have been identified through public forums. Recently, a public attitudes survey was developed and will be implemented in Addison County in 2006.
Panel discussions on water quality issues held	O	Several panel discussions were held throughout the basin in 2004 and several more are planned for 2006.
Strategies for water quality issues formulated	O	The UOCWC, basinwide advisory committee, ag work group, and various stakeholders have begun to develop and review draft strategies to address WQ issues.
Draft white papers for water quality issues	O	Issue papers for priority WQ concerns identified thus far are currently being drafted and reviewed.
Review of town plans and zoning	O/C	Completed for Rutland County. Anticipated as a grant project for Addison County RPC for 2006.
Develop water management type (WMT) classification proposal	O	The Rutland RPC is helping to develop a draft WMT proposal for the Rutland County portion of the Otter Creek basin. A partnership with the Addison RPC may assist with this process in 2006.
Meetings with towns on the WMT classification proposal	O	The Watershed Coordinator has been meeting with towns in the basin during 2005 and will continue to meet with towns in 2006. The RPCs are assisting in this effort.
Draft basin plan	O	The Watershed Coordinator intends to develop a comprehensive draft basin plan during 2006.
Public hearings on draft plan		
Final basin plan		
Outreach to area schools and local groups	O	Partners engage in outreach and education with schools and colleges in the basin (Smokey House Center, Currier School, Success School, Rutland High School, Stafford Tech Center, North Branch School, Middlebury High School, Middlebury College, Mount Abraham Union HS, Champlain Valley Union HS, The Watershed Center, UVM, and Patricia A. Hannaford Career Center).
Basin Assessment Report	C	The last assessment report was completed in 1998. An updated assessment report is anticipated.

Phase I Stream Geomorphic Assessments	O/C	Phase 1 completed on the mainstem of the Otter Creek, Neshobe River, Leicester River, and Little Otter Creek. Phase 1 assessments completed for Lewis Creek, the New Haven River, and the Middlebury River in 2005.
Phase II Stream Geomorphic Assessments	I/O/C	Phase 2 assessments completed for the Lewis Creek, New Haven River, Moon Brook, and Middlebury River. A Phase 2 assessment has been initiated on the Neshobe River.
Bridge and Culvert Inventory	O/C	AOT culvert assessments have been completed for most towns in the Rutland County portion of the Otter Creek basin and about half the towns in Addison County.
Dam Inventory		
Biological Monitoring	O	There are approximately 100 biomonitoring sites that are sampled on a rotational basis throughout the basin.
Restoration/Protection Projects Underway	I/O/C	See table below.

Key: I = initiated, O = ongoing, C = completed

River and Stream Restoration Projects

Waterway	Water Quality Concern	Current Actions
Otter Creek mainstem	Sediment from bank erosion and nutrients	Numerous agriculturally-related streambank and buffer restoration projects on farms in the watershed.
Moon and Mussey Brooks East Creek (Rutland)	High levels of pathogenic bacteria, sedimentation, nutrient enrichment, urban (stormwater) impairment due to runoff	Watershed improvement projects planned with Rutland City DPW – 2006 Phase 2 geomorphic assessment completed. Public outreach and awareness initiated for residents of the Moon/Mussey watershed.
Middlebury River	High levels of pathogenic bacteria, sedimentation, nutrient enrichment, impairment due to agricultural runoff	Phase 2 geomorphic assessment has indicated areas of instability. Riparian corridor restoration through buffer planting, livestock exclusion, ag land taken out of production along riparian corridor.
New Haven River	Geomorphic instability, flooding, historic channel modification threatens transportation infrastructure	Phase 2 geomorphic assessment completed, floodway determination, bridge and culvert assessment associated with transportation upgrades. FEH development underway with Lincoln town.
Lewis Creek	Nutrient enrichment, sedimentation, geomorphic instability, historic channel modifications	Phase 2 geomorphic assessment completed, water quality monitoring, riparian corridor protection project, outreach with towns in the watershed, CREP.

Little Otter Creek	High levels of pathogenic bacteria, nutrient enrichment, historic channel modification	Outreach to agricultural cooperators for buffer planting, livestock exclusion, NRCS cost-share programs
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Conclusion and Plans for 2006

Overall, the planning process has provided many opportunities for collaborative problem solving among stakeholders that we anticipate for future, successful restoration efforts throughout the Otter Creek Basin.

For 2006, stakeholders and water quality issue groups will continue drafting different sections of the Otter Creek basin plan vis-a-vis white papers for major issues and corresponding strategies. Major topics that will be addressed by working groups will include agriculture, transportation infrastructure (bridge and culvert effects on streams and gravel road erosion), riparian corridor protection, and suburban and urban runoff (stormwater). The Upper Otter Creek Watershed Council as well as existing watershed groups in Addison County will pursue ongoing watershed improvement projects, water quality monitoring, geomorphic assessment, municipal planning opportunities, and public outreach, education, and awareness. Based on assessment, monitoring, and public participation, the highest-ranking projects and activities will be pursued for funding and implementation.

Northern Lake Champlain Basin Progress Report – Basin 5

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Introduction

A watershed council met for the first time on April 29, 2003. The 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 watershed council agreed to the Agency’s proposal that the watersheds of the Rock and Pike Rivers would be included in the Missisquoi River Basin planning process and not in that of the Northern Lake Champlain Basin. The Franklin County Natural Resource Conservation District also met with the Missisquoi River Basin Association to discuss this option and the group agreed with this approach. The Rock and Pike Rivers’ communities are more closely tied with the communities of the Missisquoi River watershed and landscape than those along the Lake.

During 2004, the Watershed Coordinator began to work with local groups to develop strategies for restoring and protecting water quality along tributaries to Lake Champlain. In 2005, the coordinator continued working on projects and began drafting the basin plan.

Watershed Initiatives

Activity	Status	Comments/Information
Public forums held	C	Forums were held in Shelburne, Colchester, North Hero, and St. Albans
Watershed Council formed	C	A diverse task force was formed and is assisting in the development of a draft watershed plan
Local water quality issues were identified	C	Top issues in the basin include: nuisance aquatic species, urban/suburban runoff, drinking water supply quality, farming issues, streams, causeways
Panel discussions on water quality issues held	C	Presentations and roundtable discussions were held in different parts of the basin in the spring and summer of 2003
Strategies for water quality issues were formulated	C	Strategies were developed with local groups and then reviewed and revised by the watershed council. Strategy development took place during 13 meetings.
Review of town plans and zoning	O	Town plans were completely reviewed for Chittenden and Franklin counties

Develop water management typing (WMT) and classification proposal	I	A proposal will be developed over the next year based on existing, reasonably attainable, and desired water quality
Meetings with individual towns on the WMT classification proposal		
Draft basin plan	I	The draft basin plan is nearing completion and a completed draft plan is expected to be available for public review in 2006.
Public hearings on draft plan		
Final basin plan		
Outreach to area schools and local groups	O	Groups with which we are working include La Platte River Partnership and St. Albans Area Watershed Association. Letters have been sent to all town officials in the basin. Articles have appeared in local newspapers.
Basin Assessment Report	C	The basin assessment report was completed in December 2003.
Phase I Stream Geomorphic Assessments	I/C	These assessments are completed for the LaPlatte River mainstem and major tributaries, and Jewett, Stevens and Rugg Brooks, parts of Mill Brook, Stonebridge Brook, and several small tributaries on the Georgia shoreline.
Phase II Stream Geomorphic Assessments	I/C	These assessments are completed for segments of the LaPlatte River, Bartlet Brook, Englesby Brook, Indian Brook, Munroe Brook, Potash Brook and Stevens and Rugg Brooks.
Bridge and Culvert Inventory		
Dam Inventory		
Biological Monitoring	C	Additional waters have been identified and macroinvertebrates sampled to determine long-term water quality trends of specific waters.
Restoration/Protection Projects Underway	I	Numerous protection and restoration projects are underway throughout the watershed (see below).

Key: I = initiated, O = ongoing, C= completed

River and Stream Restoration Projects

Waterway	Water Quality Concern	Current Actions
Shelburne Bay	Nutrients	Four rain gardens were installed on residential lots as demonstration projects to encourage people to treat stormwater as close to its source as possible. Related educational projects in in the planning stages.

Chittenden County waterways	Nutrients, toxins	A lake friendly urban lawn practices education event was held in April 2005 and a 2006 event is being organized.
Shelburne Bay via the LaPlatte River	Nutrients, sediment	The use of bioinfiltration structure to reduce stormwater flows to an adjacent stream is in the planning stages.
Main lake near Alburg	<i>E. coli</i> , nutrients	A water quality monitoring study with volunteers was initiated to determine the water quality impact from a hobby farm.
St. Albans Bay via Stevens and Rugg Brooks	Nutrients, sediment, geomorphic instability	A water quality monitoring study with volunteers continued and the sampling of large rain storms was included. Stormwater treatment projects are being developed with EPA funding. A streambank planting project was completed and two additional plantings were designed for implementation in 2006.
St. Albans Bay via Stevens Brook	Nutrients	An education and outreach program for homeowners that includes a survey of lawn and garden practices, free soil tests, educational meetings was completed. A grant application was written to educate businesses that sell lawn care products about lake friendly practices.
St. Albans Bay	Nutrients, sediment	Soil management workshop (erosion reduction techniques were included) was held in Franklin County and attended by farmers from St. Albans Bay. A Better Backroads workshop was held in Franklin County and invitations were sent to town officials in the county.
Northeast Arm	Nutrients, <i>E. coli</i>	An article was written in the Agricultural Review to encourage farmers to reduce agricultural runoff that could end up near water supply intake pipes.
St. Albans Bay	Aquatic nuisance species	Eurasian watermilfoil and nuisance native species were harvested.

Conclusion and Plans for 2006

In 2005, the watershed coordinator focused on developing projects with local groups and municipal, state, and federal staff, and on preparing a draft of the basin plan.

In 2006, the focus will be on completing the basin plan for public review and continuing project implementation. The chapter on establishing water management goals, including the typing and classification proposal, may not be included in the 2006 draft. The Agency of Natural Resources is waiting for the Vermont Water Resources Board to develop new guidelines for typing and classifying waterbodies. In addition, the watershed coordinator will continue outreach with

watershed groups, towns, regional planning commissions and other stakeholders in a basin planning process; continue to secure grants and mover forward on projects in the basin; continue collaboration with all partners on priority issues; and conduct ongoing education and outreach with residents of the watershed.

Missisquoi Bay Basin Progress Report-Basin 6

Note: Although the Rock and Pike River watersheds are considered to be part of the Northern Lake Champlain Basin (Basin 5), these areas have been included into the Missisquoi Bay basin planning process along with the Missisquoi River because all three flow to and affect Missisquoi Bay.

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Introduction

There is intense public concern over water quality in Missisquoi Bay, with potentially toxic algae blooms limiting the use and enjoyment of the bay for much of the summer. Many basin residents have been active in the basin planning process since it began formally with six public forums early in 2005. Over 75 people attended the forums, voicing both their concerns for water quality and their suggestions on how to improve it. Not surprisingly, the greatest concerns centered around excessive phosphorus and the resulting algal blooms in Missisquoi Bay. The related issue of soil erosion from streambanks, cropland, construction, and roads was also cited. Residents were also concerned about the lack of public awareness and the need for a coordinated approach to restoring water quality.

Based on the results of the forums, a watershed council consisting of a diverse mix of stakeholders from within the watershed was formed with the initial meeting attracting more than 40 residents and agency representatives. Four issue teams have been formed to focus strategy development and implementation in the following areas: reducing phosphorus pollution, protecting human health, conserving fish and wildlife resources, and increasing public awareness of how everyone contributes to good water quality. These teams have been meeting to address topics such as septic systems, agricultural nonpoint source pollution control, and education. From these discussions, draft strategies are being developed for the basin plan, and several project ideas have been put forward for funding. The watershed coordinator has been working closely with the local newspapers, resulting in numerous articles informing the general public about water quality issues and what is being done to address them.

In addition to basin planning meetings and projects, the watershed coordinator has been supporting local watershed groups in their efforts to garner greater attention to their concerns and funding for their highest priority projects. The coordinator has helped these groups in meetings with the regional legislative delegation, a daylong display at the State House for all legislators, and meetings with the Lake Champlain Basin Program Steering and Private Funding Committees. The exchange of information has allowed state, regional, and federal agencies to be more responsive to local water quality concerns.

Watershed Initiatives

Activity	Status	Comments/Information
Public forums held	C	Six forums held in January and February 2005.
Watershed Council formed	C	First meeting in April 2005.
Local water quality (WQ) issues identified	C/O	Identified at public forums, discussion ongoing.
Panel discussions on WQ issues held	O	Panel discussions held on septic systems, education, and agricultural phosphorus sources.
Strategies for WQ issues formed	O	Draft strategies under development.
Review of town plans and zoning	O	With assistance from the Northwest Regional Planning Commission.
Develop water management type (WMT) classification proposal		On hold due to deliberations of the Water Resources Panel of the Natural Resources Board.
Meetings with individual towns on the WMT classification proposal		
Draft basin plan	O	Sections underdevelopment.
Public hearings on draft plan		
Final basin plan		
Outreach to area schools and local groups	O	Working closely with existing organizations.
Basin Assessment Report	C	Basin assessment report completed November 2004
Phase I Stream Geomorphic Assessments	C/O	Completed in all of Franklin County streams, beginning in Orleans County.
Phase II Stream Geomorphic Assessments	O	Underway in select rivers and streams.
Bridge and Culvert Inventory	C	Completed in all of Franklin County
Dam Inventory		
Biological Monitoring	O	Included in 2004 rotational program
Restoration/Protection Projects Underway	C/O	Local groups continue projects, often in partnership with state and federal agencies.

Key: I = initiated, O = ongoing, C= completed

River and Stream Restoration Projects

Waterway	Water Quality Concern	Current Actions
Missisquoi River	Excessive phosphorus and erosion	Technical support and laboratory analysis (DEC partnership) for year one of MRBA volunteer water quality monitoring
Rock River	Excessive phosphorus and erosion	Technical support for town of Highgate's River Corridor Management grant application and implementation

Saxe Brook (trib to Rock River)	Excessive phosphorus in impaired reach	Field work with UVM international interns to expand assessment information
Missisquoi Bay Basin	Erosion from roadways	Assisted with Better Backroads workshop for town officials and road crew members
Missisquoi Bay Basin	Phosphorus from agricultural sources	Supported multiple efforts to fund a farmer to farmer outreach program

Conclusion and Plans for 2006

Basin planning in the Missisquoi Bay basin has attracted significant attention from the public. As such, addressing water quality problems in the region has become a greater priority at the local, state, and federal levels. Issues that have been raised and discussed in the planning process are beginning to influence policy at all of these levels, benefitting water quality activities both in the basin and beyond.

In 2006, work will continue toward developing a draft plan for the Missisquoi Bay basin. Draft strategies will be discussed at issue team meetings and with the full watershed council. Wherever possible, implementation will continue or begin on those strategies having sufficient interest and resources. As the results of Phase 1 and 2 geomorphic assessments become available, additional river restoration projects will be identified and pursued. In cooperation with the Agency of Agriculture, work will continue to support and expand farmers’ efforts to protect water quality. Education and outreach will continue through the local media and through open watershed council meetings.

Lamoille River Basin Progress Report – Basin 7

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Introduction

DEC's Watershed Coordinator and watershed partners have developed a draft water quality improvement plan for the Lamoille River watershed. The draft plan outlines the top water quality priorities for the watershed, the sources of pollution, and the specific actions to address these issues including planning, monitoring and assessment, protection, and restoration strategies.

Additional physical, chemical, and biological monitoring and assessment activities in the Lamoille's lakes, ponds, and streams occurred because of the watershed initiative. Several geomorphic assessments were conducted in the upper Lamoille watershed, Browns River watershed, and Lamoille main stem.

Numerous watershed restoration projects were identified and implemented during the 2005 field season. The watershed coordinator assisted several municipalities in identifying road-related erosion problems and formulated solutions to remediate these causes. Funding has been secured for nine separate projects. Two projects were implemented in 2005. The coordinator led a Youth Conservation Corps crew to implement streambank stabilization, streambed stabilization, garbage cleanup, canoe trail development, and lakeshore erosion control projects. A new stormwater-related large gully erosion project was mapped. Funding and remediation plans are being developed to stabilize this site. The coordinator assisted the town of Morrystown and Vermont River Conservancy in securing the protection of an access to one of the Lamoille's most scenic and popular gorges and swimming holes, Terrill Gorge. The coordinator is working closely with state and federal agencies to selectively remove floodplain encroachments and enhance instream and riparian habitat along several miles of the Lamoille River on state-owned land. Potential culvert replacement and dam removal projects to improve fish passage have been identified and funding secured. The Cambridge Conservation Commission and Smugglers Notch Resort implemented a crushed limestone treatment to address iron seepage that is impairing a tributary to the Brewster River. The coordinator assisted the Caledonia and Lamoille NRCs in the establishment of riparian buffers at seven sites along the Lamoille River.

A comprehensive watershed assessment, restoration, and protection plan for the Browns River watershed in Chittenden County is being done by DEC and its watershed partners. The Browns River has been negatively affected by significant channel alteration and severe streambank erosion. The development of a river corridor management plan is well underway.

The watershed coordinator and partners have been working closely with the Director of Lamoille Watershed Association (LWA) to build watershed interest and capacity for this new organization. The LWA is the first watershed-wide watershed organization that is a direct result of DEC's Watershed Initiative. The LWA has been actively involved in several watershed assessment, restoration, and outreach activities.

Watershed Initiatives

Activity	Status	Comments/Information
Public forums held	C	Eight public forums were held at the onset of basin planning
Watershed Council formed	C	A diverse task force was formed and assisted DEC in the development of a draft watershed plan
Local water quality (WQ) issues identified	C	Top local water quality issues include stormwater, streambank erosion and flooding, agricultural runoff, loss of working farm and forestland, lake and pond issues, and dam-related issues
Panel discussions on WQ issues held	C	A series of panel discussions was held for each of the top water quality issues
Strategies for WQ issues formed	C	The strategies are written.
Review of town plans and zoning	C	Completed
Develop water management type (WMT) classification proposal	C	A WMT proposal was developed based on existing, reasonably attainable, and desired water quality.
Meetings with individual towns on the WMT classification proposal	C	The watershed coordinator has held over 40 meetings with select boards, planning commissions, and conservation commissions.
Draft basin plan	C	A draft basin plan has been developed
Public hearings on draft plan	I	Planned for 2006
Final basin plan	I	Planned for 2006
Outreach to area schools and local groups	O	Educational programs presented at Johnson State College, Sterling College, watershed schools, angler groups, lake associations, landowners, and utilities
Basin Assessment Report	C	Completed in February 2001.
Phase 1 Stream Geomorphic Assessments	C/I/O	Phase 1 geomorphic assessments completed or scheduled: the upper Lamoille, the entire Lamoille mainstem, the Wild Branch, Elmore Branch, Gihon River, Browns River, North Branch and many smaller tributaries.
Phase 2 Stream Geomorphic Assessments	C/O	Phase 2 geomorphic assessments have been completed in the upper Lamoille, Browns River, and Wild Branch sub-watersheds.
Bridge and Culvert Inventory	C	Bridge and culvert surveys have been completed in the entire upper Lamoille watershed and Browns River, Wild Branch, and Elmore Branch watersheds.
Dam Inventory	C	A dam inventory has been completed for the entire Lamoille watershed.
Biological Monitoring	C/O	Additional macroinvertebrate and fish sampling to better bracket possible sources of pollution and determine long term water quality trends including a focus on Rodman Brook downstream of a closed landfill.
Restoration/Protection Projects Underway	C/O/I	Numerous projects are underway watershed wide (see below).

Key: I = initiated, O = ongoing, C= completed

River and Stream Restoration Projects

Waterway	Water Quality Concern	Current Actions
Deer Brook, Georgia	Deer Brook is impaired from excessive sediment and nutrients	A new significant source of gully erosion has been mapped. Funding is being secured to address this erosion through Clean and Clear. A VYCC crew has removed trash in the gully ahead of the restoration project.
Unnamed Tributary to Brewster, Jeffersonville	The unnamed tributary to the Brewster River is impaired from metals (iron)	Smugglers Notch Ski Area, VTrans, and DEC working to remediate iron problem with lime injections. Also, stormwater treatment, small impoundment removal, and stream restoration project will improve this stream. Projects implemented in 2005.
Browns River, Chittenden County	The Brown River is adversely impacted by severe streambank instability and erosion	A river corridor management plan is being prepared for the towns of Essex, Jericho, Underhill, and Westford. A title search has been completed to identify the owner of a dam where a dam removal feasibility study will be done. The Vermont Composting Association and DEC are initiating composting projects to aid in nutrient load reduction to this subwatershed.
Unnamed tributary to the Gihon River, Johnson	A failing dam was discharging significant amounts of sediment downstream	A stream restoration project with Johnson State College staff and students, State Buildings staff, and Lamoille County NRCD was designed and permitted. It included establishment of a buffer and removal of the dam. Further work to address headcutting erosion above the former pond has been completed.
Jacob Brook, Morristown	Several water quality problems and opportunities affecting the town have been identified	A fish passage improvement project has been identified. The town of Morristown has signed up for the WHIP to replace this structure.
Riparian Buffer Establishment, watershed wide	Lamoille County NRCD's successful <i>Trees for Streams</i> program is being expanded	Watershed Coordinator is working closely with NRCDs and Lamoille Watershed Association to expand the successful stream buffer program to other counties and to include lakes and pond shorelines.
Lamoille River, Hardwick	Streambank erosion	Coordinator and VYCC stabilized 300 feet of streambank using tree revetments
Drainageway to Lamoille River, Johnson	Headcutting erosion	Coordinator and VYCC installed two hand-placed stone weirs to stabilize channel bed erosion
Lamoille River, Morristown	Canoe access trail	Coordinator and VYCC developed a trail to the Lamoille for canoes on F&W land

Lake Lamoille, Morristown	Erosion at boat access area	Coordinator and VYCC stabilized erosion at a canoe access ramp with rock, gravel, and drainage ditches
Roads in Walden, Hardwick, and Morristown	Erosion and sedimentation from town gravel roads	Developed designs and cost estimates for 3 towns and 7 separate projects to address erosion related to municipal road systems. Two projects were implemented in 2005.
Terrill Gorge, Morristown	Access nearly lost to development	The town, Vermont River Conservancy, and DEC protected a parcel so that access to the gorge and swimming hole is protected.
Various projects in the watershed	Floodplain encroachment removal, instream and riparian habitat improvement, dam removal, and stream-bank stabilization.	Watershed coordinator, Vtrans, F&W, and NRCS have been working closely to secure funding through the WHIP program.

Plans for 2006

Plans for 2006 include completing a final draft of the Lamoille watershed plan and adoption of the surface water management typing petition by the successor to the Water Resources Board. Public hearings will precede the adoption of a final watershed plan. DEC will continue to proactively identify water quality concerns, initiate watershed improvement projects, and protect high quality sites with help from our watershed partners. The watershed coordinator will work especially closely with the fledgling Lamoille Watershed Association in its capacity building progress.

Watershed restoration projects are planned for: a culvert replacement on Jacob Brook in Morristown, a re-connection of floodplain access on the Gihon River in Johnson, the completion of a river corridor management plan and securing riparian easements for the Browns river, the development of a fluvial erosion hazard map for the town of Underhill, developing bridge and culvert crossing capital budgets for Jericho, Underhill, Westford, and Essex, the removal of floodplain encroachments associated with the Lamoille Valley Rail, instream and aquatic habitat improvement of F&W owned lands along the Lamoille River, establishment of riparian buffers along lakes and streams throughout the watershed, road erosion best management projects at 7 sites in 3 towns, assist additional towns in securing funds for road runoff issues, and the implementation of stormwater best management practices in the Deer Brook watershed. Watershed partners include regional planning commissions, natural resource conservation districts, angler groups, the agricultural community, state and federal government agencies, landowners, and municipalities.

Winooski River Basin Progress Report – Basin 8

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River and Stream Restoration Projects

Waterway	Water Quality Concern	Current Actions
Dog River, Berlin	Streambank erosion	Coordinator and VYCC installed 300 feet of tree revetments to reduce erosion. Identified additional erosion sources within the watershed.
Winooski River, Williston	Streambank erosion at a culturally sensitive site	Coordinator and VYCC installed 400 feet of hand-placed rock riprap to reduce the erosion
Winooski river, Marshfield	Loss of riparian buffer	Coordinator planted 100 large stock hardwood trees along 500 feet of streambank with VYCC and Trout Unlimited
Winooski River, Cabot and Marshfield	Ammonia spill in Cabot	Watershed coordinator and partners are developing a watershed protection, restoration, and education/outreach plan for the upper Winooski to remediate effects of the spill.
Tributary to Great Brook in Plainfield	Significant headcutting gully erosion and sedimentation	Coordinator working with the Plainfield Conservation Commission to remediate erosion in this ravine. Clean and Clear and 319 funding will be used to remediate this site.
Kingsbury Branch, Calais	Watershed wide erosion and sedimentation	Coordinator and staff from Lakes and Ponds and River Management Sections worked with the town of Calais to map numerous sources of erosion and undertake watershed assessments.

Plans for 2006:

Additional riparian buffer plantings along the Winooski river in Marshfield, implementation of restoration, protection, and education measures along the Winooski in Cabot and Marshfield, additional streambank protection on the Winooski in Williston, remediation of a significant gully headcutting problem on a tributary to Great Brook in Plainfield, Phase 1 and 2 Geomorphic Assessments in the upper and middle watershed, and assist towns in securing funding to address road runoff issues.

Watershed partners include regional planning commissions, natural resource conservation districts, angler groups, the agricultural community, state and federal government agencies, landowners, and municipalities.

White River Basin Progress Report – Basin 9

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Introduction

The Agency of Natural Resources has adopted the plan and the Vermont Water Resources Board (Board) held public hearings in February 2005 and subsequently approved the Agency’s water management typing and classification proposal for the basin. The Legislative Committee on Administrative Rules (LCAR) reviewed the Board’s proposed rule, but has not approved them. At LCAR’s request, parties opposing the proposal, the Agency and the Board are all in discussions to develop a revised proposal, including a process for developing future typing and classification proposals.

The White River Basin Plan differs from other plans in that the Vermont 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 and other entities in the watershed. 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.

Watershed Initiatives

Activity	Status	Comments/Information
Public forums held	C	Four public forums were held in 2000.
Watershed Council formed	C	The White River Partnership and others served this function.
Local water quality issues identified	C	Top local water quality issues included stream channel instability and streambank erosion, lack of awareness of water quality problems, public access, impacts to fisheries
Panel discussions on water quality issues were held	C	Technical staff participated in development of strategies, gave presentations during public hearings.
Strategies for water quality issues formed	C	Strategies were developed to resolve each priority water quality issue.
White papers on WQ issues	C	Eight water quality issue fact sheets were developed.
Review of town plans and zoning	C	All town plans and regulations were reviewed.
Develop water management type (WMT) classification proposal	C	A water management typing proposal was developed based on existing, reasonably attainable, and desired water quality.
Meetings with individual towns on the WMT classification	C	Information about the typing proposal went to all watershed towns. DEC met with 17 selectboards and

proposal		planning commissions, 1 conservation commission.
Draft basin plan	C	Working Draft Fall 2001.
Public hearings on draft plan	C	September 2002.
Final basin plan	C	Signed and published November 2002.
Outreach to area schools and local groups	C	DEC did outreach throughout planning process. Ongoing outreach by the White River Partnership.
Basin Assessment Report	C	An updated report was done in November 2002.
Phase I Stream Geomorphic Assessments	C	Completed on upper White, First, Second, Third Branches and numerous tributaries.
Phase II Stream Geomorphic Assessments	C	Completed on many of the rivers and streams for which Phase I was done (see above).
Bridge and Culvert Inventory		
Dam Inventory	C	Field inventory done.
Biological Monitoring	C	Additional waters sampled (biological monitoring) to bracket possible sources of pollution and determine long-term water quality trends.
Restoration/Protection Projects Underway	O	Numerous watershed and restoration projects are underway watershed wide (see below)

Key: I = initiated, O = ongoing, C= completed

River and Stream Restoration Projects

Waterway	Water Quality Concern	Current Actions
Ayers Brook	Stream bank stability	DEC river management program assisted the White river Partnership in writing a grant application to begin a river management planning process to identify unstable streambanks where stabilizing vegetation should be planted
Watershed-wide	Unstable Streams	The DEC river management program is working with the White River Partnership to implement river restoration/protection projects in fulfillment of numerous basin plan strategies.
White River	Stream bank stability and runoff	DEC continued assisting the Hartford Conservation Commission in developing a draft buffer protection ordinance.
Smith Brook	Metals (iron)	The Solid Waste Division and the Water Quality Division identified an old, unpermitted landfill as the source of iron leachate.
Watershed-wide	Aquatic Nuisance Species	The DEC biomonitoring section assisted the White River Partnership in monitoring for Rusty Crayfish and harvesting.

Plans for 2006

Plans for 2006 include adoption of the surface water management typing petition by the Water Resources Panel. The Watershed Coordinator will continue to proactively initiate watershed

improvement projects, and protect high quality sites with watershed partners, state and federal government agencies, landowners, and municipalities in accordance with the adopted White River Basin plan. The Watershed Coordinator will also follow the guidelines or rules adopted by the Water Resources Panel to revise the petition for Typing of waters within the basin.

West, Williams, Saxtons Rivers Basin Progress Report – Basin 11

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Introduction

The West River Watershed Alliance (WRWA) and its partners, the Windham County Natural Resources Conservation District (WENRCD), the Windham Regional Commission (WRC) and the South Windsor County Regional Planning Commission (SWCRPC), since 2003 have been conducting their own locally-driven and supported basin planning process in the West, Williams, and Saxtons River watersheds – state-designated Basin 11. The planning initiative has been a cooperative effort with the Vermont Agency of Natural Resources, specifically its Department of Environmental Conservation (VT DEC), the WRWA and its partners, following state basin planning guidelines, that involved agencies, organizations and the public in developing a document designed to help maintain and improve surface water quality for the three watersheds.

The concept of watershed planning is not new to southeastern Vermont. In November 1998, a group of citizens, including representatives from over twenty state and local agencies and community organizations, met to develop ideas for community-based actions in the West River watershed. By 2000, the group had created an action plan describing an ambitious role for the new grassroots organization that included stream habitat improvement, stream bank restoration, community watershed education, and river advocacy in the watershed. The WRWA then began to implement several projects identified in its action plan.

In 2002 WRWA and its partners became interested in the State's Basin Planning Initiative. However, as the State's program could not provide a state-employed watershed planner for Basin 11 for several years, the three partners saw this as an opportunity for their organizations to open venues that would help protect and preserve natural resources - a theme explicit in their respective missions. The basin planning process itself would create opportunities to bring water quality issues to the public forefront. The WRWA with its partners collectively took on the responsibility for implementing the planning initiative for the three watersheds as a locally-supported grassroots program hoping to address existing and proactively arrest potential water quality issues that had developed or could develop in these watersheds. With encouragement and technical support from the VT DEC, the WRWA has successfully provided the organizational umbrella to harbor the collaborative partnering effort.

Following State basin planning guidelines, the WRWA sponsored three public forums during 2004. Forum participants and other interested parties formed the Basin 11 Watershed Council which has met regularly since April 2004. In that time, over 30 Federal, State, local agencies and non-profit organizations have committed personnel to serve as technical resource professionals for the Council. Seven issue-based focus groups or Roundtable Discussions have revolved around specific watershed problems such as erosion control, storm water runoff, deforestation and buffer loss, flow regulation and flood control, and swimming holes. Focus groups reports and white papers derived

from Roundtable discussions have been presented to the Watershed Council for proposed inclusion into the basin plan. More details about the Basin 11 are presented in the accompanying tables.

From its beginnings, the goals and objectives defined in the WRWA’s original action plan have been consistent with those of Vermont DEC’s basin planning initiative. Because of this the WRWA and its partners have implemented certain activities which support both organizational and basin planning objectives. Projects and activities identified by the WRWA that are now being conducted within the context of basin planning are outlined in the tables presented below

The Windham County NRCO, WRC, SWCRPC and WRWA have been enabled in this important project obtaining monies from EPA Section 319 and Section 604B grants, Connecticut River Joint Commissions, New England Grassroots Environmental Fund, Windham Foundation, and Vermont Watershed License Plate Grants. These and other funds have afforded the hiring of a part-time Windham County NRCO Watershed Coordinator, provided for associated basin planning expenses, and funded specific erosion-control project costs, while allowing administrative and program oversight from the Windham County NRCO District Manager, and professional staff assistance, public meeting coordination, writing contributions, and GIS capabilities and technical support from WRC and SWCRPS. In spite of limited financial resources, the dedicated grassroots effort has continued to achieve notable and exemplary accomplishments in supporting basin planning goals culminating with a draft preliminary basin plan scheduled for Watershed Council and Vermont DEC review in January 2006.

Watershed Initiative Status

Activity	Done	Comments/Information
Public forums held	C	One public forum was held in each of three watersheds in 2004. Tech Resource personnel were identified and invited. Letters to town officials sent. Public announcements, newspaper articles, email list-server postings, posters and flyers distributed.
Watershed Council formed	C	First meeting held April 1, 2004. Council meets bi-monthly at various locations to include all three watersheds. RPCs and Watershed Coordinator present regular updates. At each meeting a specific focus area is presented and discussed
Local WQ concerns identified	C	WRWA Action Plan (1999) had previously identified concerns and issues. Forum participants in 2004 have added others to the list. Focus groups have further refined lists of concerns while prioritizing issues
Panel discussions on WQ issues held	C	Members of specific focus groups have presented reports to Watershed Council at each council meeting since April 2004, public is invited to attend and participate in question and answer discussions. RoundTable Discussions (RTD) were inaugurated into the Basin 11 Water Council meeting format to examine issues and solutions – six RTDs were conducted in 2005
Strategies for WQ issues formulated	C, O	Seven focus groups had been designated to prioritize and develop strategies to address identified issues. Swim Hole/Public Access, Stream Action, Dams and Flow

		Regulation, Education, have met regularly in 2004... strategies have been formulated and were presented to the Watershed Council in 2005. Projects planned, some implemented in 2005. A Stream Typing group has met since August 2004 to forward the typing and classification process. Land Use, Water Withdrawal and Roads RTDs were held to address respective issues in 2005.
Draft white papers for WQ issues	C	WCNRCD Watershed Coordinator has incorporated focus group and RTD recommendations into the preliminary draft basin plan
Review of town plans and zoning	O	WRC & SWCRPC, through 604B funding in 2003, 2004 and 2005 have conducted an on-going project to review town plans.
Develop water management type classification proposal	O	A stream typing group, comprised of reps from WRC, SWCRPC, WRWA, WCNRCD, VT Dept of F&W, and other concerned citizens, has met since August 2004 to devise and move forward with the Basin 11 classification process. In 2005 preliminary GIS mapping was completed by both RPCs to show typing determinations.
Meetings with individual towns on WMT classification proposal		Planned to begin Fall in 2005 with preliminary discussion with towns. Final review on hold awaiting WRB decision.
Watershed plan draft	O (C?)	Preliminary Draft Basin Plan in progress, Watershed Council and VT DEC review period for preliminary draft plan anticipated to begin late January 2006
Public hearings on draft plan		Spring 2006
Final basin plan		Scheduled for Summer 2006
Outreach to area schools and local groups	C, O	Outreach to area schools begun through Education Focus group. The WQ monitoring program has expanded to include special grant projects for area middle school and high school students. Macroinvertebrate lab facilities set up at Landmark College. WRWA promotes basin planning initiative to its partners and organizational members. Basin Planning concepts have been presented to VT Legislators and local planning commissions. Letters have been sent to all Town officials in Basin 11. Rock River Focus Group involves town officials, and local organizations. Articles and press releases have appeared in local newspapers and on list serves. Local TV info-mercials have been created to promote river stewardship, the sampling program, and basin planning projects. WCNRCD has developed a Basin Planning website.
Basin Assessment Report completed	C	Information incorporated and referred to in the Basin 11 draft plan

Phase I Stream Geomorphic Assessments done	C, O	All Phase 1 field surveys and SGAT data entry completed for Ball Mountain Brook watershed
Phase II Stream Geomorphic Assessments done	C,O	Connecticut River Joint Commissions grant and Section 319 monies funded Phase 2 assessments in 26 reaches of Ball Mountain Brook – completed November 2005. Report submitted to VT DEC December 2005. The Ball Mountain Brook project has served as a pilot study for further SGA work in Basin 11. The CRJC has approved reallocation of 2005 funds to begin Phase 1 work in the Rock River early winter 2006. WRWA is working with The Nature Conservancy to fund and initiate Phase 1 and 2 of the West River main stem in summer 2006. Grant proposal for Clear and Clear funding will be submitted in January 2006.
Bridge and Culvert Inventory (B&C)	O	Several towns in Windham County have inventories completed as part of each town’s GIS initiatives. Result of RTDs concerning road maintenance issues have initiated discussions with VTrans and private consultants to conduct B&C inventories in other Basin 11 towns. SGA Phase 1 survey compiled field data has added to data base.
Dam Inventory	I	State inventory provides information for larger impoundments. Dam Focus group has recommended survey of small dams in Basin 11.
Biological Monitoring	O	In 2003 and 2004 WRWA volunteers conducted macro invertebrate monitoring and habitat assessments at 10 sites in Basin 11. WRWA worked with VT DEC to screen potential sites for State sampling. MacroLab set up at Landmark College, Winter 2005. State biological monitoring is on-going in areas of Basin 11 – as described in the Basin 11 Watershed Assessment 2001.
Restoration/Protection Projects Underway or Completed in 2005	O, C	<ol style="list-style-type: none"> 1) Dummerston Covered Bridge Steps erosion control project and Park & Ride lot (C, 2005) 2)Dummerston Covered Bridge rain garden project planning underway. (I, 2005) 3) Williamsville Station access trail erosion control project (C, 2005) 4) Ball Mountain Brook Stream Geomorphic Assessments Phase 1 and 2 (C, 2005) 5) WRWA Water Quality monitoring program and public reporting (I, 2003, on-going) 6) Macroinvertebrate sampling and processing program (I, 2003,on-going) 7) South Windsor County RPC Williams River Assessment Project (C, 2005) 8) Brattleboro Union High School Water Quality Monitoring Project designed and conducted (C, 2005) 9) Retreat Meadows aquatic invasive species control outings and public education seminars offered by WRWA and

		<p>Town of Brattleboro.</p> <p>10) WHIP projects – developed collaboratively with USDA-NRCS and Windham County NRCD (O, 2005)</p> <p>11) Saxtons River bank stabilization and riparian buffer project – USDA- NRCS (C, 2005)</p> <p>12) Invasive species workshop conducted sponsored by the VT Department of Forests, Parks and Recreation in cooperation with the Windham County NRCD (C, 2005)</p> <p>13) Town of Jamaica stream restoration project proposed and under consideration (I, 2005)</p> <p>14) Rock River Inventory conducted (C, 2002)</p> <p>15) West River Clean-Up day organized in cooperation with the Connecticut River Watershed Council, and conducted by WRWA volunteers.(C, 2005)</p> <p>16) Watershed Coordinator, WRWA, collaboration with The Nature Conservancy to develop “Sustainable Rivers” project concerning USACE Dam operations in the West River. Leading to a formal agreement between TNC and USACE to conduct stream studies on West River (C, 2005, on-going)</p>
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* I = initiated, O = ongoing, C= completed

River and Stream Restoration Projects due to WRWA/WRC/WCNRCD Watershed Planning Initiative*

Waterway	Water Quality Concern	Current Actions
West River, Williams, Saxtons Rivers and their tributaries	<p>1) Sedimentation and thermal modification due to riparian vegetation removal,</p> <p>2) Flood control dams, erosion and flow alteration</p> <p>3) High levels of bacteria due to storm water runoff.</p> <p>4) Stream bank erosion</p> <p>5) High use of swimming holes and associated environmental, public health and safety impacts in lower West River mainstem.</p>	<p>1) WRWA Implemented Volunteer Basin 11 WQ monitoring program, 2003, 2004</p> <p>2) WRWA Implemented Basin 11 Macro-invertebrate monitoring program 2003, 2004, 2005</p> <p>3) WRC Public Access/Swim Hole inventory with Section 604B and WCNRCD improvement projects as part of Section 319 Workplan</p> <p>4) Public outreach concerning, basin planning, bacterial levels, and storm water runoff via articles and letters in local news media. <i>Rivers of Windham County</i> brochure developed with WRWA and River Bank Media.</p> <p>5) WRWA project coordination and partnership with agencies and organizations including the The Nature Conservancy, US Forest Service, Student Conservation Association, US F&W, Trout Unlimited</p> <p>6) Watershed Council Round Table Discussions</p>

		<p>to present USACE and VT DEC Flow regime and Dam Operations issues and agreements</p> <p>7) Newly inaugurated NRCS Conservation Security Program to be promoted and initiated in West and Saxtons River watersheds as integral part of basin planning efforts.</p> <p>8) Educational Kiosks designed, constructed, and installed (C, 2005) – on-going use with upkeep and postings by WRWA volunteers.</p> <p>9) Swim Hole User Attitude survey 2003 and 2004, Results analysis (C, 2005)</p> <p>10) Landmark College collaboration for Macroinvertebrate lab set up and sample processing (I, 2005) – on-going)</p> <p>11) WRWA basin planning initiative website development (I, 2005) –on-going.</p> <p>12) Riparian Landowner workshop curriculum developed for Vermont Coverts (C,2003)</p> <p>13) Windham County Rivers Brochure developed</p> <p>14) Annual WCNRCD-sponsored “Envirothon” program offers instruction and friendly competition between area schools.</p> <p>15) WRC initiated VTrans Traffic Safety Assessment at two local swim hole access areas</p> <p>16) Annual salmon release presentations by Watershed Coordinator in West River watershed schools in cooperation with the U.S. Forest Service.</p>
West River Main Stem	<p>1) Sedimentation and stream bank erosion</p> <p>2) High use of swimming holes along Rt 30.</p>	<p>1) Dummerston Covered Bridge erosion control “steps”project and Park & Ride enhancement project.</p> <p>2) WRC safety assessment project addressing traffic and parking issues along Rt. 30 corridor with VTrans. Outreach to neighboring towns.</p> <p>3) Dummerston Covered Bridge rain garden project planning underway.</p> <p>4) Williamsville Station access trail erosion control project completed</p> <p>5) Educational Kiosks designed, constructed, and installed– on-going use with upkeep and postings by WRWA volunteers.</p> <p>6) Swim Hole User Attitude survey 2003 and 2004, Results analysis in 2005</p> <p>7) West River “Clean Up Day” WRWA collaboration with CRWC in 2005</p> <p>8) Retreat Meadows aquatic invasive species</p>

		control outings and public education seminars offered by WRWA and Town of Brattleboro.
Ball Mountain Brook	1) Geomorphic instability, flooding, historic channel modification and transportation infrastructure	1) Phase 1 and Phase 2 Stream Geomorphic Assessments (SGA) conducted. Phase 2 to completed 2005. 2) Water quality monitoring and review of bridge and culvert surveys. 3) WRWA proposed cooperative restoration project with Town of Jamaica pooling SEP funds 4) Ball Mountain SGA reports and presentations to Jamaica Select Board members 2005.
Rock River	1) Geomorphic instability, flooding, and transportation infrastructure	1) NRCS Stream bank restoration project 2002 as identified in WRWA Action Plan 2) Riparian buffer inventory 2001 3) Watershed Coordinator work with riparian landowners to preserve public access, reduce erosion, and ensure safe conditions at Indian Love Call swim hole. 4) Rock River trail erosion and Roundtable discussions and recreational planning for Indian Love
Williams River	1) Lack of public involvement with water quality issues 2) Nutrient enrichment and high bacteria levels in specific areas	1) Formation of new Chester Conservation Committee to work with the SWCRPC basin planning efforts 2) Brattleboro Union High School WQ Monitoring Project in the Williams River. BUHS WQ results included in WRWA's WQ 2005 monitoring report. 3) South Windsor County RPC Williams River Assessment Project funded by 604B. conducted in 2005
Saxtons River	1) Geomorphic instability, flooding, and transportation infrastructure	1) WHIP projects developed collaboratively with USDA-NRCS and Windham County NRCD 2) Saxtons River bank stabilization and riparian buffer projects with the USDA- NRCS 3) WRC's Route 121 highway construction project completed adjacent to the Saxtons River.

Plans for 2006

With the completion of the preliminary draft plan and the recent hiring of a new State Watershed Coordinator, the Basin 11 program will now follow a new tact into the future. Although the WRWA and its partners will continue to follow the planning schedule as it has been laid out by the Basin 11 Watershed Council, the Windham County NRCD Watershed Coordinator will retire in January 2006. The new State Watershed Coordinator will work with the local partnership, overseeing the Basin 11 Management Plan through the public review process while implementing water quality projects as prescribed in the 5-year plan.

Conclusion

2005 has been an exceptionally productive year in the Basin 11 watershed. The collaboration of local towns in erosion control projects and the cooperation of state and regional agencies in planning and implementation has lead to a number of completed projects. With this support and the new staff support from the Agency of Natural Resources 2006 should bring further improvements to the watershed.

Wells, Waits, Stevens and Ompompanoosuc River Basin Progress Report – Basin 14

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Introduction

A DEC Watershed Coordinator has been actively engaged in the Wells, Waits, Ompompanoosuc, and Stevens Rivers basin for approximately two years. Much of the work this year has been focused on planning and assessment but some watershed restoration projects were completed as well. Watershed Council meetings have been held on average every two months for each of the four subwatersheds to develop strategies to address the major community concerns in each watershed. Draft white papers have been written for a majority of the issues in the basin.

Assessments completed in the watershed in 2005 include: phase 2 geomorphic assessments of the Stevens River watershed and the West Branch of the Ompompanoosuc River; phase 1 geomorphic assessments of the Waits River watershed and for the remainder of the Ompompanoosuc River watershed; a bridge and culvert assessment of the Ompompanoosuc River watershed. Finally a water quality testing program for the Stevens River was initiated by the Stevens River watershed council and the Peacham Conservation Commission.

Projects completed in the watershed this year include two riparian restoration projects done in conjunction with the phase 2 geomorphic assessment of the Stevens River. The Ticklenaked Pond Association also completed its watershed grant - planting riparian vegetation and carrying out a barnyard improvement project. The coordinator has also participated in meetings and site visits regarding the DEC and EPA remediation of the Elizabeth Mine superfund site. Accomplishments include: the completion of the stabilization of the largest tailings pile on the site, the design for the next phase of work to begin next summer with funding of approximately 3 million dollars, and the development of the final remediation plans.

Watershed Initiatives

Activity	Status	Comments/Information
Public forums held	C	Five public forums were held in 2004.
Watershed Council formed	C	Watershed Councils were formed in 2004 in each of the four watersheds.
Local water quality (WQ) issues identified	C	Local water quality issues have been identified in each of the four watersheds
Panel discussions on WQ issues held	C	Panel discussions were held in 2004
Strategies for WQ issues formulated	O	Strategies for a majority of the WQ issues have been formulated

Review of town plans and zoning	O	Town plan and zoning regulations have been reviewed
Develop water management type (WMT) classification proposal	O	Initiated but on hold until the process for WMT is resolved for the White River basin
Meetings with individual towns on the WMT classification proposal		
Draft basin plan	I	The compilation of draft white papers into a draft plan has been started.
Public hearings on draft plan		
Final basin plan		
Outreach to area schools and local groups	O	The Watershed Coordinator made presentations to the Wells River Rotary, the White River Natural Resource Conservation District, and conducted a watershed education workshop for the Wells River Conservation Day Camp.
Basin Assessment Report	C	The basin assessment report was completed in April 1999.
Phase I Stream Geomorphic Assessments	O/C	Phase 1 assessments were completed on the Stevens River and Ompompanoosuc West Branch in 2004, on the Waits River and remaining area of the Ompompanoosuc River in 2005, and are proposed for the Wells River in 2006.
Phase II Stream Geomorphic Assessments	O/C	Phase 2 assessments were completed for the Stevens River watershed and West Branch of the Ompompanoosuc River.
Bridge and Culvert Inventory	O/C	Bridge and culvert surveys were completed in the Stevens River watershed in 2004 and in the Ompompanoosuc River watershed in 2005.
Dam Inventory		A dam inventory has been proposed for all 4 watersheds.
Biological Monitoring		Scheduled for 2007
Restoration/Protection Projects Underway	O	See below

Key: I = initiated, O = ongoing, C = completed

River and Stream Restoration Projects

Waterway	Water Quality Concern	Current Actions
Ticklenaked Pond-impaired	Excessive phosphorus	The watershed coordinator worked with the Ticklenaked Pond Association on buffer plantings and a barnyard improvement project. A TMDL study of the lake and its tributaries has been initiated by the Lakes and Ponds section.

Stevens River, Barnet	Lack of woody riparian buffer and streambank erosion	The Caledonia NRCD planted woody buffers along the Stevens River at two sites and there are proposals for more riparian restoration projects next year. The establishment of woody stream corridors has been identified as a watershed planning priority.
West Branch of the Ompompanoosuc River, Strafford	Significant streambank erosion and lack of woody riparian buffers	The Strafford Conservation Commission has completed a Phase 2 and bridge and culvert survey of the West Branch in Strafford and a rough alternatives analysis of possible restoration sites. An additional proposal for Phase 2 assessment and restoration has been submitted for 2006.
Copperas Brook and the West Branch of the Ompompanoosuc River, Strafford and Thetford	Acid mine drainage	The largest tailings pile on the site has been stabilized and 3 million dollars of funding has been received to continue remediation in 2006 and 2007.

Conclusion and Plans for 2006

In 2005, strategies have been developed to address the major water quality concerns in the basin and compiled into draft white papers. These draft white papers will be compiled into a draft plan in 2006. Numerous assessments of basin watersheds were completed this year and more are planned for next year. These assessments have already led to effective water quality improvement projects in the Stevens and Ompompanoosuc Rivers. Projects already planned for next year include: road improvement and riparian restoration projects in the Stevens River watershed based on phase 2 geomorphic assessments and bridge and culvert surveys, and the restoration and protection of riparian lands on the West Branch of the Ompompanoosuc river. Funding and partners will be sought to complete Phase 1 geomorphic assessments of the Wells River and Phase 2 geomorphic assessments of priority sections of the Waits, Wells, and unassessed portions of the Ompompanoosuc Rivers.

Surface water quality testing will continue at Ticklenaked Pond as part of the TMDL study, and funding will be sought to continue the Stevens River water quality testing program. Outreach will continue to local camps, schools, and community groups. The process of surface water typing will continue through the collection of monitoring and assessment data, the review of town plans and zoning, and presentations to municipalities and the watershed councils.

Conclusion

Overall, the watershed initiative is being received very positively and it is, in several instances, already measurably restoring the waters of the state. Watershed residents are active on Watershed Councils or similar organizations, on stream teams, sub-watershed organizations and on focus groups. By encouraging local citizens to lead discussion of water quality issues about their own waters, people with common interest in clean water have arrived at practical, proactive approaches that bring out the best in Vermonters. People are generous in offering their ideas in forming strategies for their watersheds and they also participate in actions to correct and protect impaired waters in the near and long-term. As a result of this participation we have begun to see restoration in certain impaired waters.

Through the process an enormous amount of “deferred maintenance” has been discovered in our watersheds that will take years of systematic work and years to correct. The groundswell of participation from the Missisquoi Bay in the north to the West River in the south; from the Poultney Mettowee and Otter Creek Watersheds in the west to the White River and Stevens, Wells, Waits, and Ompompanoosuc River Watersheds in the east is very valuable. Many further projects will be guided by citizens with the technical help of Watershed Coordinators as the foundation by which the goals of enhanced water quality will be accomplished. DEC is enlisting the participation of land owners in urban and rural watersheds to control of the flow of phosphorus to Lake Champlain to achieve the water quality goals spelled out in the “Lake Champlain Phosphorus TMDL”, the “Opportunities for Action” and the mission of the Vermont Clean and Clear Program. Projects are implemented to address the obvious sources of pollution now and not waiting for the perfect plan. DEC encourages all professions and individuals to join us in examining how our actions can be modified for the benefit of our waters.

We also encourage all involved to arrive at a practical and expeditious process to make typing and classification a useful and timely method to set goals to enhance the waters of the state.