

Vermont Nonpoint Source Management Program Federal Fiscal Year 2022 Annual Report



Submitted to the U.S. Environmental Protection Agency Region 1
on Progress Implementing the Vermont Nonpoint Source Management Program
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Vermont Department of Environmental Conservation
1 National Life Drive
Montpelier, VT 05602

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Cover Photos (More details in Appendix C):

Top Left: Free flowing Tenney Brook after removal of Dunklee Pond Dam

Top Right: River Corridor Easement conserved approximately 20 acres along Molly's Brook, tributary to the Winooski River

Bottom Left: Stormwater infiltration basin constructed at the Barre Town recreation fields (funded through the Design and Implementation Block Grant)

Bottom Right: Bioretention structure installed on Prospect Street in Hyde Park, VT (funded through the Design and Implementation Block Grant)

Introduction

This *Vermont Nonpoint Source (NPS) Management Program 2022 Annual Report* addresses milestones and progress updates for the federal fiscal year (FFY) 2022 reporting period (October 2021-September 2022). The Vermont Department of Environmental Conservation (DEC) prepares an updated NPS Management Plan every five years to fulfill Clean Water Act Section 319 program requirements following U.S. Environmental Protection Agency (EPA) guidance. The current Vermont NPS Management Program Plan covering FFY 2021-2025 was approved by EPA in September of 2020.¹ This Annual Report addresses milestones outlined in the FFY 2021-2025 plan.

During this FFY 2022 reporting period, the State of Vermont has continued to make substantial progress completing milestones associated with the *Vermont NPS Management Program* also driven by:

- Implementing elements of the Clean Water Service Delivery Act (Act 76 of 2019): Act 76 establishes regional organizations called Clean Water Service Providers (CWSP) in the Lake Champlain and Lake Memphremagog basins. CWSPs are responsible for partnering with Basin Water Quality Councils to identify, implement, operate, and maintain non-regulatory projects to meet non-regulatory interim phosphorus reduction targets. The Act requires formula dispersal of funds for non-regulatory projects in the Lake Champlain and Lake Memphremagog basins. Act 76 also established the Water Quality Enhancement Grant program, which will support non-regulatory clean water projects statewide. Both Formula Grants and Enhancement Grants will support Vermont's nonpoint source management efforts. DEC is on track to meet these requirements.
- Implementation of the *Phosphorus Total Maximum Daily Loads (TMDLs) for Vermont Segments of Lake Champlain* (i.e., Lake Champlain TMDL): The Lake Champlain TMDL and its accountability framework drive NPS management efforts in the Lake Champlain basin of Vermont. The State of Vermont published Lake Champlain TMDL progress report in January 2023, as part of the *Vermont Clean Water Initiative 2022 Performance Report*.² Actions being implemented to meet the Lake Champlain TMDL and its accountability framework include establishment and expansion of regulatory programs which are contributing to improvements in water quality statewide, including in the Lake Memphremagog phosphorus TMDL.
- Distribution of newly available funding through the American Rescue Plan Act (ARPA), which is part of the federal COVID-19 response to address economic impacts due to the pandemic. The State of Vermont will receive \$1.026 billion in ARPA funds to invest in broadband infrastructure,

¹ The Vermont Nonpoint Source Management Program Plan (FFY 2021-2025) was finalized and approved September 2020 <https://dec.vermont.gov/water-investment/cwi/reports#NPSPlan>

² Vermont Clean Water Initiative 2022 Performance Report: <http://dec.vermont.gov/water-investment/cwi/reports>.

clean water, climate action, housing, and economic development to be encumbered by December 31, 2024 and expended by the end of calendar year 2026. The State Fiscal Year 2022 budget (July 1, 2021–June 30, 2022) allocated nearly \$640 million of the ARPA funds to programs and initiatives, including \$65 million for climate action and \$104.5 million for clean water initiatives.

NPS pollution is the leading cause of water use impairment to Vermont’s surface water and ground water resources. Nonpoint sources are diffuse precipitation and snowmelt-driven sources of water pollution. As a result, NPS Management Program activities are integrated in much of the water quality work completed by the Agency of Natural Resources’ (ANR) Department of Environmental Conservation (DEC) and Department of Forests, Parks and Recreation (FPR); Agency of Agriculture, Food and Markets (AAFM); and Agency of Transportation (VTrans).

Appendix A illustrates the entire suite of NPS-related goals, objectives, milestones, and respective completion year based on the 2021-2025 Vermont NPS Management Program Plan. A progress update is provided for those NPS milestones that were completed or moved forward during FFY 2022. Milestones that have been completed for this reporting period and marked “complete” in Appendix A. Milestones that repeat annually or will continue after this reporting period are marked as “ongoing.” Explanations are provided for milestones that were partially met. Only milestones with an “X” in the 2022 column are required to be addressed in this report, although in some cases, more information is provided.

Addressing Climate Change and Environmental Justice in the Nonpoint Source Program

As part of the Federal Justice40 Initiative, EPA is expanding expectations for states to incorporate equity and environmental justice into Section 319 Nonpoint Source Programs. This will be a program requirement under new guidance effective in SFY24, however Vermont has already begun work that will contribute towards increased programmatic considerations of equity, environmental justice, and climate change. In the last several years, Vermont has passed two key acts that lay the foundation for state progress in the areas of climate change and environmental justice, which will be reflected in our water quality protection, restoration, and maintenance efforts for years to come.

The first is Act 153 of 2020, the Global Warming Solutions Act. The Act requires reductions in Vermont’s greenhouse gas emissions tied to three time periods: 2025, 2030, and 2050; creates a Climate Council that is required to develop a Climate Action Plan that sets forth the proposed programs and strategies to meet the reductions and to build resilience to the impacts of climate change; and requires the Agency of Natural Resources to adopt rules consistent with the plan. The Initial Vermont Climate Action Plan was published in December of 2021.³

³ <https://climatechange.vermont.gov/readtheplan>

The second is Act 154 of 2022, the Environmental Justice Act. The Act establishes an environmental justice policy for the State of Vermont and requires state agencies to incorporate environmental justice into their work, rules, and procedures. Act 154 also establishes the Environmental Justice Advisory Council and the Interagency Environmental Justice Committee to advise the state on environmental justice issues. Finally, it requires the Agency of Natural Resources to create an environmental justice mapping tool.

Through the implementation of these acts, Vermont has been and will continue to assess opportunities to advance climate change resilience and environmental justice goals, and to develop the policies, procedures, and tools to help Vermont achieve them. As Vermont makes progress in implementing these statewide initiatives, as well as complying with the requirements of the Federal Justice40 initiative, the results will be reflected in future Annual Reports.

Section 319-Funded Statewide Programs and Watershed Projects

SECTION 319 FUNDED STATEWIDE PROGRAMS

DEC's FFY 2022 Section 319 federal funding award totaled approximately \$1.24 million, of which approximately 84 percent was used to carry out DEC's NPS activities on a statewide basis. The remaining 16 percent was passed through to AAFM to support agricultural NPS pollution reduction programs. The Section 319 award to Vermont DEC is included as part of Vermont's Performance Partnership Agreement (PPA) with EPA. DEC's annual report to EPA under the PPA provides more detailed information about additional water quality-related priorities and commitments under the PPA. Clean Water Act Section 319 funds supported 11.9 full time equivalent (FTE) staff members in the DEC NPS-related programs as shown in Table 1. Further information about these program activities and respective accomplishments during the reporting period are summarized below.

Table 1. DEC use of FFY 2022 Section 319 Funds

Vermont DEC Program	Program Activities	FTE
Clean Water Initiative Program (CWIP)	Funds, tracks, and reports on priority NPS projects to restore Vermont's waters, and reports progress toward meeting TMDL targets	5.9
Watershed Planning Program (WPP)	Identifies and prioritizes projects or actions needed to protect or restore specific waters based on monitoring and assessment data and identify funding sources to complete the work	5.9
Administration and Innovation Division (AID)	Financial management and administrative support	0.1

Total		11.9
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DEC's Water Investment Division (WID) supports the prioritization (through Tactical Basin Planning), funding/financing, management, reporting, and accountability of clean water and water infrastructure projects. Section 319 funds support DEC personnel within the Clean Water Initiative Program (CWIP) and the Watershed Planning Program (WPP) which are housed within the Water Investment Division.

Nonpoint Source Program Management/Administration

Federal Funding – Clean Water Act Section 319

DEC developed the FFY 2021-2025 Vermont NPS Management Program Plan, approved by EPA in September of 2020. EPA approved Vermont's FFY 2022 Section 319 workplan in March 2022. Consistent with EPA program guidance, DEC continued using Section 319 funds to support personnel working under the NPS management program and leveraged over \$1.24 million in state funded NPS projects, in addition to providing the required 40% non-federal match. DEC's leveraged state-funded watershed projects were reported in the EPA Grants Reporting and Tracking System (GRTS). A portion of the Section 319 award (\$187,431) was provided to the Vermont AAFM, and matched by that Agency, to support their work on the management of agricultural NPS pollution across Vermont.

Federal Funding – Clean Water Act Section 604(b)

DEC has effectively utilized federal Clean Water Act Section 604(b) funds, a "set-aside" of the Federal Clean Water State Revolving Loan Fund capitalization grant, to further the inventory, evaluation, strategic planning, and management of its water resources. DEC used a portion of FFY 2022 Section 604(b) funds to complete field work, compile data, and generate assessment reports in conjunction with the statewide rotational water quality assessment process. DEC has designed a rotational watershed assessment process with a goal that surface waters (rivers, streams, lakes, ponds) of all 15 major river basins in the state are evaluated once every five years. The assessment process, including preparation of basin-specific assessment reports, is an essential and ongoing first phase of Tactical Basin Plan update and development process.

DEC also used FFY 2022 604(b) funds to assess, compile, and populate the EPA Assessment, TMDL Tracking and Implementation System (ATTAINS) data management system for the 2022 listing cycle to fulfill 305(b) state reporting requirements. Additionally, staff developed narrative information that was integrated into the ATTAINS data management system. The DEC assessment process integrates relevant DEC maintained surface water assessment and planning database information.

DEC continues to allow for the pass through federal Clean Water Act Section 604(b) funding to support water quality and NPS planning activities carried out by the 11 Regional Planning Commissions (RPCs). DEC will continue to assist in the identification and selection of planning activities conducted by the

eligible regional comprehensive planning organizations (herein referred to as RPCs) consistent with the following: Statewide Surface Water Management Strategy (revised January 2017); the Lake Champlain Opportunities for Action Management Plan (LCBP, 2022)); subsequent phases of Tactical Basin Plans for Lake Champlain TMDL implementation; and river basin assessment reports incorporated into revised river basin water quality management plans (i.e., DEC's Tactical Basin Plans).⁴

The 604(b) funding also supports surface water reclassification efforts, which includes soliciting support from municipalities for candidate waters that meet reclassification criteria, and which have been identified in Vermont's Tactical Basin Plans. As part of the revisions to the Vermont Water Quality Standards in 2022, three waterbodies were reclassified from Class B(2) to A(1) for the aquatic biota, aquatic habitat, and aesthetic designated uses. DEC understands that EPA is not currently taking action on these classification upgrades pending consultation with the USFWS under the Endangered Species Act (ESA).

State-Administered Clean Water Funding

DEC continues to award funds to RPCs, Natural Resource Conservation Districts, and Watersheds United Vermont (WUV) to support Tactical Basin Plan development and outreach. WUV became a statutory partner to support Tactical Basin Planning in SFY 2021. DEC issued \$600,000 of funding to support Tactical Basin Plan development and outreach in SFY 2022.

The State of Vermont offers clean water funding opportunities in the form of grants, loans, and contracts across state agencies from a variety of sources, including the Clean Water Fund (CWF), Clean Water State Revolving Loan Fund, Capital Bill, Transportation Fund, Lake Champlain Basin Program federal funds, and many others as shown in Figure 1. Vermont's CWF was established by Act 64 of 2015 (i.e., the "Vermont Clean Water Act"). CWF and Capital Bill clean water dollars are proposed for appropriation by the Clean Water Board through an annual budget process with public participation opportunities.⁵ All state investments made across agencies in support of clean water projects are reported in the *Vermont Clean Water Initiative Annual Performance Report*. Chapter three of the 2022 Performance Report contains a progress update for the Lake Champlain TMDL.⁶ EPA uses the Performance Report to issue report cards on progress implementing the Lake Champlain TMDL, targeting its review of the Tactical Basin Planning watersheds due for interim and final report cards, per the schedule defined in Lake Champlain TMDLs accountability framework.⁷ The Performance Report dataset is made available to the public

⁴ 2017 Statewide Surface Water Quality Strategy, available at: <https://dec.vermont.gov/watershed/map/strategy>. Lake Champlain Opportunities for Action, available at: <https://www.lcbp.org/about-us/opportunities-for-action>. Tactical Basin Plans, available at: <https://dec.vermont.gov/water-investment/watershed-planning>.

⁵ For more information on the Clean Water Board, visit: <https://dec.vermont.gov/water-investment/cwi/board>

⁶ Vermont Clean Water Initiative 2022 Performance Report: <https://dec.vermont.gov/water-investment/cwi/reports>

⁷ For more information on TMDL report cards, visit: <https://dec.vermont.gov/watershed/restoring/champlain>

through two online tools:

- The Clean Water Projects Explorer allows interested parties to search for and learn more details about individual state-funded clean water projects. The Explorer also contains potential projects identified through Tactical Basin Planning.
- The Clean Water Interactive Dashboard (CWID) is an online tool that allows interested parties to interact with Performance Report data on investments, project outputs, estimated pollutant load reductions and project cost effectiveness.⁸

State of Vermont Managed Investments in Clean Water by Funding Source

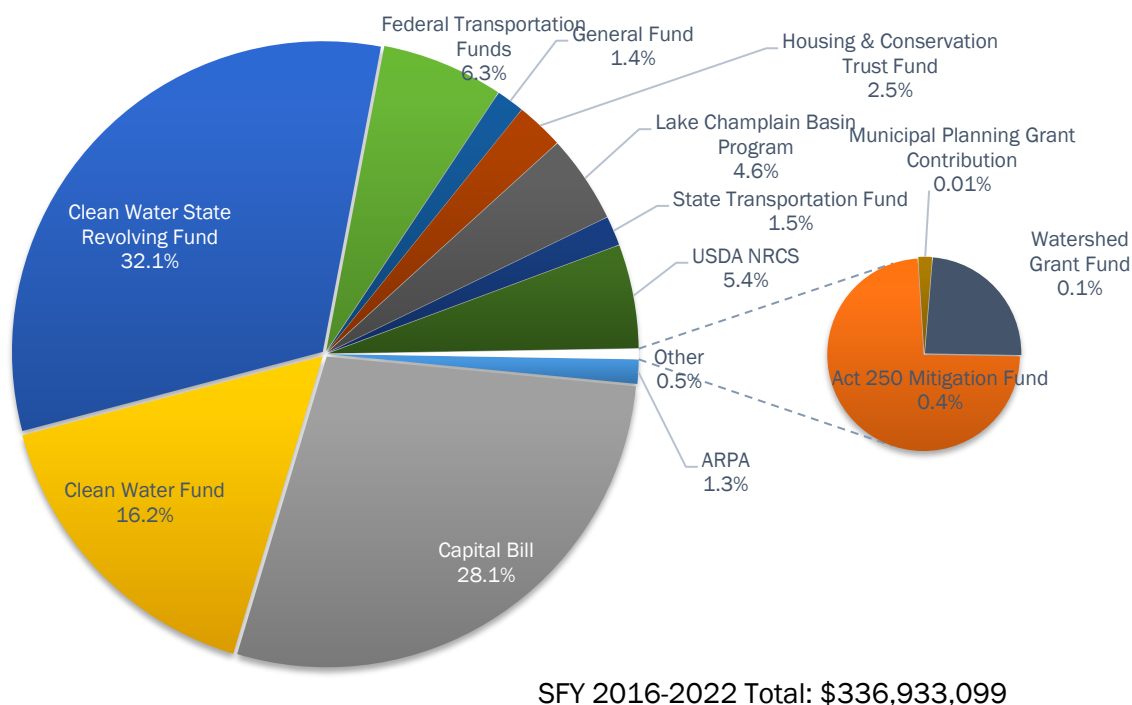


Figure 1. Proportion of dollars awarded to clean water projects through State of Vermont agencies, SFY 2016-2022 by funding or financing source (see the *Vermont Clean Water Initiative 2022 Performance Report*).

DEC CWIP staff supported a variety of efforts during the reporting period to fund, track, and report on NPS projects, including:

- Assisting the Clean Water Board in completing its SFY 2022 and 2023 clean water budget process and initiating its SFY 2024 clean water budget process;
- Awarding millions of state dollars to NPS projects through Dam Removal Grants, River Corridor

⁸ Clean Water Projects Explorer and Clean Water Interactive Dashboard are available via the Clean Water Portal: <https://dec.vermont.gov/water-investment/cwi/projects/clean-water-portal>.

Easement Grants, Design/Implementation Block Grants, Woody Riparian Buffer Restoration Grants, and various other block grants;

- Awarding start-up funding for Clean Water Service Providers to initiate operations;
- Tracking and accounting outputs and outcomes for all CWIP-funded clean water projects in the state's tracking database;
- Developing, documenting, and implementing methods to account for nutrient pollutant reductions to show progress toward meeting TMDLs;
- Fulfilling all Section 319 planning and reporting requirements;
- Coordinating with state and federal agencies to gather clean water project data through state funding programs, federal funding programs, and regulatory programs; and
- Publishing the *Vermont Clean Water Initiative Annual Performance Report*, which fulfills the State of Vermont's clean water investment statutory reporting requirements and Lake Champlain TMDL progress federal reporting requirements.

DEC staff, working under Vermont's NPS Management Program, assisted in the planning, review, selection, initiation, management, and closing out of NPS projects funded through CWIP grants and contracts.

Concurrently with Vermont's budgeting, granting, and reporting processes, DEC has begun implementing elements of the Clean Water Service Delivery Act (Act 76 of 2019). The Act requires that the Agency assign, by rule, entities that will serve as Clean Water Service Providers (CWSPs). The final Rule was approved by the Legislative Committee on Administrative Rules and is effective August 12, 2021.⁹

DEC staff have worked with stakeholders this reporting period to meet several Act 76 milestones including: finalization and implementation of phosphorous accounting methods across all sectors; application of a formula grant fund allocation methodology based on non-regulatory phosphorous reduction targets by basin reflected in the first round of funding agreements; and continued development of a new operation and maintenance program framework for installed clean water projects.

Staff finalized documentation of clean water project phosphorus accounting methods and published Standard Operating Procedures documents covering clean water projects in the agricultural, developed lands, and natural resources sectors (including forestry and floodplain and river restoration).¹⁰ DEC finalized the fund allocation methodology to inform funding awards to CWSPs via Water Quality Restoration Formula Grants. Formula Grants target phosphorus reductions necessary to restore Lake

⁹ The updated rule and other information about Act 76 can be found here: <https://dec.vermont.gov/water-investment/statutes-rules-policies/act-76>

¹⁰ Standard Operating Procedures for Tracking and Accounting: <https://dec.vermont.gov/water-investment/cwi/projects/tracking-accounting#SOP>

Champlain and Lake Memphremagog through actions not compelled by regulatory programs (i.e., non-regulatory clean water projects). Formula Grant funds are allocated to CWSPs based on non-regulatory phosphorus reduction targets and a standard cost per unit of phosphorus reduced. In FFY 2022, each CWSP was awarded startup funds to establish operations, systems, and management structures in preparation for receiving the first annual Formula Grant awards in FFY 2023.

Staff are also working to establish a framework and provide training to support operation and maintenance (O&M) and verification of existing and newly implemented clean water projects. This new program will help ensure long term performance of non-regulatory clean water projects.

Continued Coordination with USDA-NRCS

DEC staff continued to participate as a member of U.S. Department of Agriculture (USDA) Natural Resource Conservation Service (NRCS) State Technical Committee to advise on cost-sharing assistance programs for Vermont landowners seeking to implement conservation practices. Staff coordinate with NRCS and AAFCM on all aspects of agricultural and natural resources planning and water quality improvement and using technical and financial resources efficiently.

USDA-NRCS National Water Quality Initiative

DEC staff continue to engage with NRCS under the National Water Quality Initiative (NWQI) program in Vermont. The NWQI focuses conservation funding on priority HUC-12 watersheds, as recommended by state water quality agencies, for addressing agricultural sources of NPS pollution. DEC coordinates with the Vermont Office of NRCS on NWQI watershed identification and selection and, when applicable, coordinates funding of NWQI activities. For designated NWQI watersheds, DEC ensures water quality monitoring data is made available to NRCS to help partner agencies assess water quality improvements in NWQI watersheds. In FFY 2020, East Creek and Hungerford Brook were two NWQI watersheds targeted for conservation practice implementation and committed \$663,477 in cost share dollars. Rock River was added back for FFY21 and committed \$67,892.

USDA-NRCS Region Conservation Partnership Program Grants

DEC coordinates with partners on multiple NRCS Regional Conservation Partnership Program (RCPP) grants in the State of Vermont. In January 2021, DEC signed an agreement with NRCS to extend RCPP for an additional five years, and with an additional \$10 million. These funds will be split among the following categories:

- Agricultural best management practices: \$2,500,000
- Forestry best management practices: \$1,000,000
- Wetland restoration: \$250,000
- Agricultural/forestry easements: \$2,250,000
- Wetland easements: \$1,000,000

- Technical assistance: \$2,500,000

A supplemental agreement allocating funds to DEC was signed and funds were used to hire a coordinator for the RCPP program. Practice standards were completed, and two “land rental” programs were created that provided additional incentives to landowners who seeded cover crops prior to September 2021, or who reduced nutrient applications to fields with high soil test phosphorus levels. Extensive outreach about these programs and the January 13, 2023 application deadline was conducted.

DEC has also coordinated with multiple partners in establishing and providing support for other RCPP grants in Vermont. One of these, the Memphremagog Long-term Water Quality Partnership RCPP grant, has also been renewed for five years. DEC provides significant contribution to a VT Natural Resources Conservation Council RCPP grant and support to a major VT Agency of Agriculture RCPP.

303(d) List and Total Maximum Daily Load Development

The 2022 303(d) listing cycle was completed in July 2022 with EPA’s approval of the 303(d) List.¹¹ Listing actions included waterbody assessments, draft lists developed for public review and comment, and finalization of lists for EPA approval.

DEC staff completed impaired waters remediation planning, TMDL planning and development, and continued 303(d) assessment activities during this reporting period. TMDL development activities included:

- TMDL methodologies were developed, and data collection initiated for a chloride TMDL in Sunnyside Brook. This methodology will be transferable to an emerging water quality problem identified in the state. Data analysis for this TMDL was completed and TMDL write-up was completed to a final draft format.
- Continuous monitoring for chloride was conducted at several sites suspected of chloride impairment. These data will confirm impairment and provide information for TMDL development.
- NPS phosphorus TMDL alternatives are under development for ten small streams in Basins 5 and 6, Northern Lake Champlain Direct and Missisquoi River respectively. Rather than developing complex phosphorus TMDLs in these waters, a more “direct to implementation” approach is being developed in cooperation with EPA called an Alternative Restoration Plan (ARP). It is anticipated that a target loading analysis report, expected load reductions from mandatory BMPs, and the respective Tactical Basin Plans will act in concert to provide the necessary planning to restore these waters.

Activities related to the Long Island Sound Nitrogen TMDL include representing Vermont on EPA’s

¹¹ The 2022 303(d) list available here:

https://dec.vermont.gov/sites/dec/files/documents/PriorityWatersList_PartA_303d_2022.pdf

Nitrogen Reduction Strategy Technical Work Group. This group reviews EPA and contractor work in the development of nitrogen thresholds and ultimately nitrogen allocations to the states.

Considerable time was devoted to EPA's national TMDL/303(d) Program "Vision," including work related to the Vision Priorities, participation in multiple webinars and conference calls and the national TMDL workshop held by EPA.

Ongoing work related to alternative water quality remediation plans continued, including remediation plans for habitat and water quality improvements at Jay Peak, Mt Snow, Stowe, and Stratton Mountain resorts. These efforts involve reviewing and commenting on annual implementation progress reports, conducting site visits, and holding annual public meetings.

Stormwater Management Priority Focus Areas

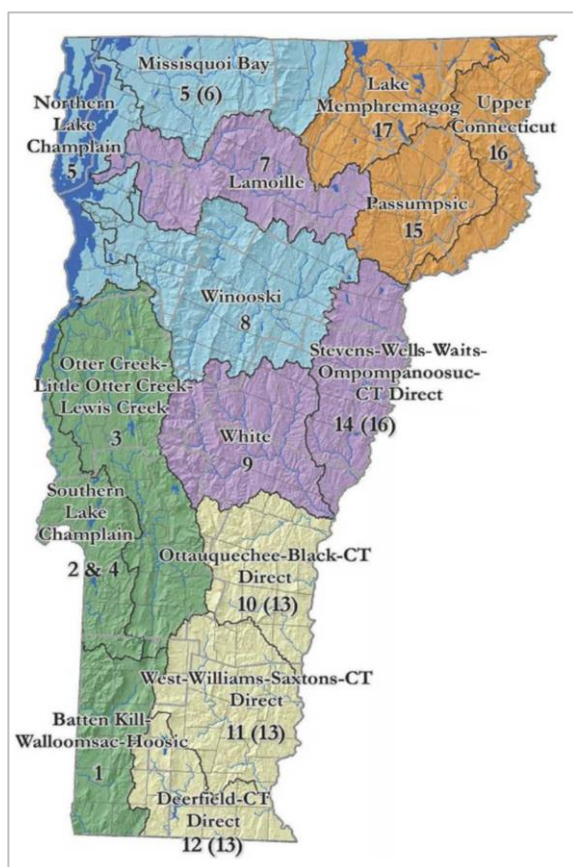


Figure 2. Tactical Basin Planning boundaries by watershed name and number

Illicit Discharge Detection and Elimination

DEC staff participated in the public noticing of illicit discharges and oversaw two illicit discharge detection and elimination (IDDE) contracts during the reporting period. Contracts awarded or managed during this period involved IDDE work in the Deerfield River (Basin 12) and the Battenkill, Hoosic, and Walloomsac River Basin (Basin 1), and one statewide IDDE contract, which includes 35-40 towns statewide. Figure 2 shows watershed/basin boundaries by name and basin number. Multiple illicit discharges are under investigation. The follow up has been delayed due to COVID, though work is normalizing. Several discharges have been confirmed to be eliminated through monitoring.

Grant Technical Assistance and Education

Staff met with numerous towns statewide on stormwater retrofit projects and provided technical assistance on preliminary and final designs.

The Green Infrastructure Collaborative (GIC) is a partnership between Lake Champlain Sea Grant and VT

DEC, which employs a coordinator that manages the Green Infrastructure Roundtable, a statewide group of Green Stormwater Infrastructure (GSI) practitioners. In 2022, several Advisory Group meetings were held to provide guidance on implementing goals in the GIC strategic plan. A listserv, managed through UVM, provides opportunities to share information and collaborate on stormwater and GSI

topics. There are consistently over 280 members of the listserv.

Stormwater Technical Assistance

DEC staff provided Stormwater Master Planning technical assistance to the following towns and entities: Bethel, Bellows Falls-Rockingham, Brattleboro, Manchester, Stowe, Williamstown, Windsor and Woodstock, Bennington, Chester, Chittenden, Mendon, Londonderry, Pittsford, Pownal, and Wilmington.

DEC staff provided comments to the DEC Wastewater Program and the Towns of St. Johnsbury and Rutland City on their next draft Combined Sewer Long Term Control Plans. Numerous combined sewer surface inlet locations in each service area were noted and several significant mapping mistakes by consultants were found and corrected. Staff also provided comments on the implementation phase(s) of the upcoming municipal combined sewer separation projects.

River and River Corridor Management

DEC Rivers Program field staff receive and respond to an average of ten new requests per day from landowners, municipalities, and other state agencies for technical and regulatory assistance on river and floodplain projects. In FFY 2022, Rivers Program staff provided technical assistance on 1,993 projects, permitted or were involved in the permitting of 1,008 projects, and offered 228 hours of training. This level of interaction shows that adoption of state river conservation policies and the establishment of the Vermont DEC Rivers Program has increased awareness of the environmental damage and erosion hazards of river and floodplain encroachments.

The river engineers and scientists play a critical role in providing technical and regulatory assistance based on sound river science. Vermont is protecting flows and managing streams toward their least erosive, equilibrium condition using science-based rules, technical assistance, and training. Resolving conflicts between human activities and development and river dynamics is resulting in the restoration of floodplain functions and the long-term reduction of nutrient and sediment pollution driven by erosion of stream banks.

The Rivers Program initiated the Functioning Floodplains Initiative (FFI) in 2019. The FFI is developing methodologies for evaluating river reach and watershed-scale restoration of stream, riparian, wetland, and floodplain function for phosphorus allocation and crediting. The identification and prioritization of natural resource conservation and restoration projects for phosphorus crediting work will be vastly improved through a publicly accessible mapping platform. The initiative seeks to garner local community support by tracking and publicizing the accumulation of the natural and socio-economic assets derived from connected and naturally functioning floodplains and wetlands.¹²

¹² An FFI project summary and supporting information is available here: <https://dec.vermont.gov/rivers/ffi>.

Phase 1 FFI contract work began in March 2019 and was completed in June 2021. Phase 1 developed methods and maps to quantify and display stream and floodplain connectivity and optimal locations where restoration and protection practices may increase connectivity and stream equilibrium conditions. Work under the Phase 2 contract began in 2020 and work will continue until July 2023. Phase 2 is building upon the stream and floodplain connectivity mapping and the hydrology-hydraulics framework developed in Phase 1 to include:

- Maps of river, wetland, and floodplain forms with estimates of dynamic processes (flow storage, sediment erosion/deposition, and nutrient and carbon retention) to indicate a weighted prioritization of wetland/floodplain and river reconnection projects in a river network context.
- Ecological and economic valuation of floodplain functions to inform weighted priorities for restoration and conservation projects.
- Five-year estimated allocations for pollutant load reductions for Lake Champlain sub-watersheds at the HUC 12 scale. This includes pollutant reduction accounting methods for common restoration and protection practices.
- A web-based system to track implementation, effectiveness, and value of river and floodplain/wetland restoration and conservation projects.
- Training modules and a user manual for the web-based tracking tools. Two partner trainings, one in April 2023 and one in May 2023 are scheduled to assist in the roll out of the FFI tool in the summer of 2023.
- Outreach materials that can be used to engage a greater range of stakeholders in the initiative and learn about their perceptions of place and river dynamics as they relate to both local and statewide initiatives to reconnect Vermont's rivers.

The FFI project is at the most cutting edge of advanced science-based river management and will serve as a template internationally for jurisdictions where policy directs pursuit of river equilibrium. The project is being funded by the Lake Champlain Basin Program and the State of Vermont (via the Clean Water Fund and Clean Water State Revolving Fund).

Lakes and Ponds Watershed and Shoreland Management

DEC's Lakes and Ponds Program continued work on numerous priorities identified in the Program's Strategic Plan aimed at reducing nonpoint source pollution, namely:

- Better integrate Lakes and Ponds Program priorities into the Tactical Basin Planning process.
- Empower lake leaders to participate in monitoring and managing their lakes including through direct participation in monitoring and project planning, including water quality in lakes and lake tributaries.
- Preserve and restore the natural lakeshore to protect and improve water quality, aquatic and terrestrial wildlife habitat, and lake ecosystem functions.

- Implement a suite of shoreland protection and lake encroachment regulatory actions collectively aimed at reducing nonpoint source pollution to lake ecosystems.

The Lakes and Ponds Program actively participates in the Watershed Management Division's Annual Monitoring Summit each year, aimed at coordinating monitoring teams across the Division. Goals of the summit are to review water quality challenges in the three basins that are next in the pipeline for the assessment phase of Tactical Basin Planning, prioritize sites for monitoring during the coming field season, and coordinate monitoring efforts across the Lakes and Ponds, Monitoring and Assessment, Rivers, and Wetlands Programs. In 2022, the Monitoring Summit focused on coordinating staff sampling of surface waters, expanding the scope of the Vermont Lay Monitoring Program, improving integration between in-lake sampling and lake tributary sampling performed through the LaRosa Watershed Partnership (both vital statewide citizen monitoring programs), preparing to use our existing macrophyte, diatom, and macroinvertebrate datasets to establish biological criteria and indices of biological integrity for aquatic biota, and increasing monitoring for invasive species. The Summit also identified priority sites for continued cyanobacteria monitoring at inland lakes and on Lake Champlain.

These summits highlight the need to protect many of Vermont's lakes from excessive nutrient loading and restore other lakes that have already been negatively impacted from cultural eutrophication. In 2022, the Lakes and Ponds Program continued to implement a new clean water project type called Lake Watershed Action Plans which have been incorporated into Tactical Basin Plans and the Watershed Projects Database. The Lakes and Ponds Program is scaling up this process at lakes across the state. Lake Watershed Action Plans (LWAPs) are implementation at four lakes (Carmi, Eden, Dunmore, and Elmore) and additional LWAPs are being developed at an additional nine lakes (Iroquois, Fairfield, Caspian, St. Catherine, Fairlee, Maidstone, Morey, Willoughby, and Shadow-Glover) with a call for proposal advertised near the end of the reporting period for LWAPs on Lake Seymour, Echo Lake, Halls Lake, and Bug Pond. The Lake Eden, Lake Elmore, and Lake Dunmore Watershed Plans were completed in 2020-2021, provide a template for other lake watersheds to understand the major water quality threats and solutions in and around the lake, and combine assessments of three contributing areas: shoreland, roads, and tributaries (Figure 3). These initial three plans have now generated lake restoration and phosphorus reduction projects that have been funded using CWIP Design and Implementation Block Grants.

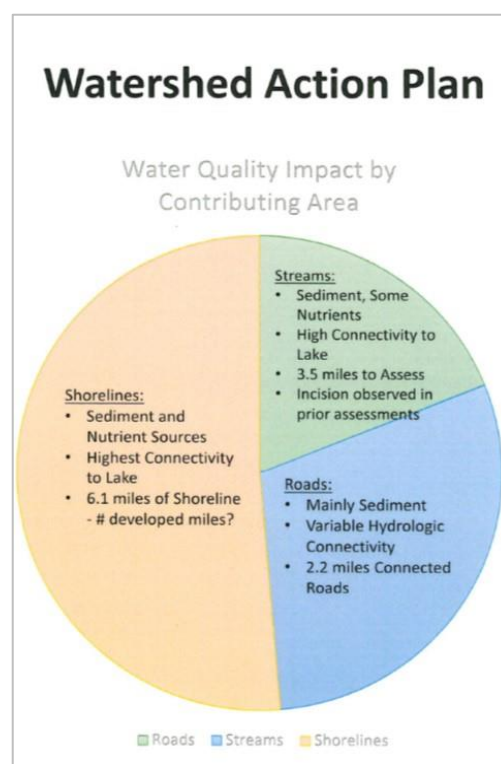


Figure 3. Water quality impacts by contributing area, identified in the Lake Eden Watershed Plan.

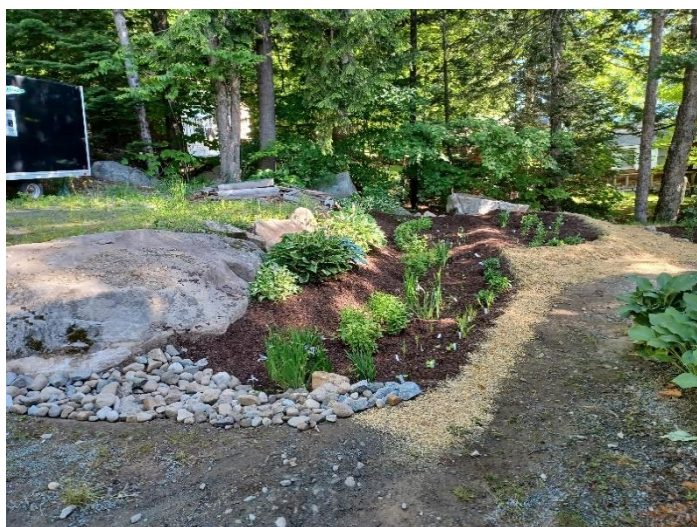
The Lakes and Ponds Program has continued implementation of a Lake Carmi Crisis Response Plan mandated by Act 168 of 2018, which declared Lake Carmi a “Lake in Crisis.” From SFY 2016 to SFY 2021, the State of Vermont invested \$2.5 million in clean water projects in Lake Carmi and its watershed and achieved over 100% of the phosphorus reduction required to meet the Lake Carmi Phosphorus TMDL load reduction targets according to modeled estimates.¹³ Continued investments and efforts across all land use sectors within the Lake Carmi watershed are needed to achieve the external load reduction target on an annual basis and the Lake Carmi TMDL in-lake phosphorus concentration target of 22 ug/L.

The Lakes and Ponds Program also maintained its monitoring efforts during the 2022 field season and was able to expand monitoring activities under the lay monitoring program, summer lake assessment program, and spring phosphorus monitoring program after all three of these programs contracted temporarily due to challenges encountered in 2020 during the COVID-19 pandemic. Volunteer lay monitors collected data throughout the summer at over 80 lakes and ponds and from tributaries to a subset of around twenty of those lakes. DEC scientists collected high-frequency data to monitor the impacts of climate change at five sentinel lakes and performed next generation lake assessments and macrophyte surveys during the 2022 field season. Monitoring for aquatic invasive species also continued during the 2022 field season, with response to new infestations of Eurasian Water Milfoil at three inland lakes, a confirmed arrival of Zebra Mussels at Lake Memphremagog (US Waters), and new water chestnut infestations at sites in Lake Champlain.

The Lake Wise Program provides technical assistance to shoreland property owners seeking to restore previously developed property. In 2022, the Lake Wise Program supported stormwater management and bioengineering projects to restore living shorelands on five lakes. Examples of projects include:

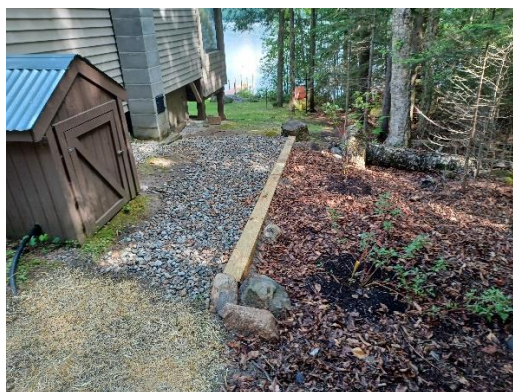
Maidstone Lake: Installation of an encapsulated soil lift to replace a failing retaining wall. Encapsulated soil lifts are used to rebuild natural, stable shorelines to protect water quality, create wildlife habitat, and dissipate wave energy. At the same location a rain garden was installed uphill of the shoreline on a steep slope to slow and infiltrate stormwater before it reached the shoreline. Raingardens are planted depressions that capture, slow and filter stormwater runoff.

¹³ Modeled estimates of total phosphorus load reductions achieved by clean water projects implemented in the Lake Carmi watershed are summarized in the 2022 *Lake Carmi Clean Water Progress Report*, available here: <https://app.powerbigov.us/view?r=eyJrIjoibGNiYjg5NzktZTdhZi00YmMwLTg2ZjltMWNiODE3ZmE1OTc0IiwidCI6IjIwYjQ5MzNiLWJhYWQtdmZyO5YzAyLTcwZWVjYzY1NTIjNiJ9>



Raingarden and encapsulated soil lift installed at Maidstone Lake

At another location on Maidstone Lake runoff from steep slopes was mitigated through the installation of infiltration steps and other stormwater drainage around the property. Infiltration steps are pervious construction that captures, filters, and infiltrates stormwater runoff on sloped pathways.



Lake Elmore: The Vermont Youth Conservation Corp installed several shoreland restoration projects at Lake Elmore in 2022. These projects came out of the Lake Wise assessments done as a part of the Elmore Lake Watershed Acton Plan. Projects included removal of invasive plants and replacement with native

species to stabilize banks, mitigation of stormwater runoff from roads and driveways by installing culverts and other drainage, and creation of terraced gardens to mitigate erosion.



Shoreline stabilization plantings at Lake Elmore. Vegetated buffers slow, filter, and infiltrate runoff from developed land, reducing erosion and pollutant discharge into the lake. Vegetated buffers also stabilize banks and protect from wave action, flooding, ice push, and other sources of erosion.



Check dams and Stone lined ditches installed at Lake Elmore to mitigate stormwater. Stone lined ditches can prevent erosion within ditches while slowing the velocity of stormwater providing time for sediment to settle out of the stormwater as it moves downslope.



Installation of terraced gardens on a bank to filter and infiltrate stormwater.

Lake St. Catherine: Six shoreland projects were installed at Lake St. Catherine in 2022. These projects included culvert outflow replacement, pervious infiltration infrastructure installation, and bank stabilization and habitat improvement plantings.

Agency of Agriculture, Food and Markets Nonpoint Source Programs

The remaining 16 percent of Vermont's 2019 Section 319 award was passed through to the Vermont AAFM. AAFM used FFY 2022 Section 319 funds to carry out portions of its agricultural NPS reduction program across the state. AAFM's agricultural NPS program, assisted by Section 319 funds, involves:

- Engineering technical assistance to landowners on best management practice (BMP), conservation practice, and waste management recommendations and designs;
- Coordinating with NRCS in the review and certification of BMPs receiving federal and state cost-share funds; and
- Resources and materials to assist in conservation planning and engineering design.

Completed Section 319 and Leveraged Watershed Projects

COMPLETED SECTION 319 PROJECTS

DEC has not awarded Section 319 funds directly to watershed projects since 2011, therefore, no Section 319-funded projects were completed during this reporting period.

COMPLETED LEVERAGED WATERSHED PROJECTS

Vermont DEC retains and expends Section 319 watershed funds for NPS program purposes, and therefore is required to leverage Section 319 funds with state funded NPS projects. Each year, DEC and EPA agree on state funded NPS projects that qualify as Section 319 leveraging. In FFY 2022, six state funded leveraged NPS projects were completed and administratively closed. The results of these projects

are summarized in Appendix C of this report and are also reported in EPA's Section 319 Grants Reporting and Tracking System (GRTS). Where feasible, DEC reports on the estimated annual NPS pollution reductions accomplished by completed projects. Reported pollutant reductions are modeled estimates based on DEC's phosphorus accounting methodologies.¹⁴ Actual pollutant reductions are influenced by a range of factors such as BMP type, maintenance status, land use changes, and variations/extremes in weather (e.g., precipitation and runoff).

Appendix B of this report summarizes the status of all Section 319 leveraged watershed projects from FFY 2014 through FFY 2022. Additional details on all listed projects, completed or active, can be obtained by contacting the Vermont NPS Coordinator, by visiting the Clean Water Project Explorer, or through GRTS.

Ongoing Section 319 and Leveraged Watershed Projects

SECTION 319 PROJECTS

There are no active Section 319-funded NPS projects in Vermont. DEC has not awarded Section 319 funds to directly to watershed projects since 2011.

LEVERAGED WATERSHED PROJECTS

Appendix B of this report lists NPS projects used for Section 319 leveraging purposes from FFY 2014 through FFY 2022. The status of projects (ongoing, completed, discontinued) are noted along with completion dates (where applicable). The outputs and outcomes of the 6 projects completed within FFY 2022 are described in Appendix C of this report.

Newly added to the list of ongoing projects are six agreements supporting dam removals, river corridor easements, and riparian buffer plantings, which were approved in the FFY 2022 workplan.

¹⁴ For more information, on project tracking and accounting visit: <https://dec.vermont.gov/water-investment/cwi/projects/tracking-accounting>

Acronyms

AAFM	Agency of Agriculture, Food and Markets
ANR	Agency of Natural Resources
ARPA	American Rescue Plan Act
BMP	Best Management Practice
CWF	Clean Water Fund
CWIP	Clean Water Initiative Program
CWSP	Clean Water Service Provider
DEC	Department of Environmental Conservation
EPA	Environmental Protection Agency
FFI	Functioning Floodplain Initiative
FFY	Federal Fiscal Year
FPR	Department of Forests, Parks and Recreation
FTE	Full Time Equivalent
GRTS	Grants Reporting and Tracking System
GSI	Green Stormwater Infrastructure
IDDE	Illicit Discharge Detection and Elimination
LCBP	Lake Champlain Basin Program
LWAP	Lake Watershed Action Plan
MRGP	Municipal Roads General Permit
NPS	Nonpoint Source
NRCS	Natural Resources Conservation Service
NWQI	National Water Quality Initiative
PPA	Performance Partnership Agreement
RCPP	Regional Conservation Partnership Program
RPC	Regional Planning Commission
SFY	State Fiscal Year
TMDL	Total Maximum Daily Load
USDA	U.S. Department of Agriculture
WPP	Watershed Planning Program

Appendices

**APPENDIX A – ANNUAL REPORT ON NONPOINT SOURCE MANAGEMENT
PLAN MILESTONES 2021-2025**

**APPENDIX B – SECTION 319 LEVERAGED WATERSHED PROJECTS AND
STATUS**

**APPENDIX C – OUTPUTS AND OUTCOMES OF SECTION 319 LEVERAGED
PROJECTS COMPLETED IN FFY 2022**

Appendix A: Annual Reporting on Nonpoint Source Management Plan Objectives 2021-2025

Objectives Table 1. Required Agricultural Practices and Regulatory Program									
Lead Entity: AAFM unless otherwise noted									
	Objectives	Actions	Milestones	2021	2022	2023	2024	2025	Progress Updates
1.1	Revise the Required Agricultural Practices (RAP) rule	<ul style="list-style-type: none"> Update definition and requirements for Custom Manure Applicators Develop Technical Service Provider (TSP) certification program Develop and provide guidance for managing agricultural activities related to wetlands 	<ul style="list-style-type: none"> Rulemaking complete for revised Custom Manure Applicator statute update and TSP certification 	X					Ongoing – Rule Revisions to the Custom Manure Applicator definition has been completed. Rules related to the TSP certification program and wetlands is ongoing.
			<ul style="list-style-type: none"> Complete Wetlands rulemaking 					X	Ongoing
1.2	Conduct inspections on all Large Farm Operations (LFOs) annually	<ul style="list-style-type: none"> Minimize Large Farm Operation (LFO) NPS pollution Ensure LFO permit terms and provisions, and RAP requirements are being attained 	<ul style="list-style-type: none"> 100% LFOs reporting and inspected annually 	X	X	X	X	X	2022 - Complete/Ongoing. There are currently 37 LFOs in which 100% were inspected in 2022. LFOs are on an annual inspection cycle.
1.3	Conduct inspections of Medium Farm Operations (MFOs) on a 3-year inspection cycle	<ul style="list-style-type: none"> Minimize Medium Farm Operation (MFO) NPS pollution. Ensure MFO General Permit terms and RAP requirements are being attained 	<ul style="list-style-type: none"> All permitted MFOs inspected at least once every three years. To meet the inspection schedule, AAFM will inspect approximately 33% of MFOs each year. 	X	X	X	X	X	2022 - Complete/Ongoing. There are currently 103 MFOs and at least 33% were inspected in 2022. MFOs are on a three-year inspection cycle.
1.4	Revise MFO General Permit every 5 years	<ul style="list-style-type: none"> Revise MFO General Permit to ensure consistency with current water quality regulations and conservation practices 	<ul style="list-style-type: none"> Initiate MFO General Permit revisions 		X				Ongoing – MFO General Permit revisions are underway.
			<ul style="list-style-type: none"> Complete revisions, release new MFO General Permit 			X			Ongoing – The target date for releasing the new MFO General Permit is July 1, 2023.
1.5	Conduct inspections of Certified Small Farm Operations (CSFOs) on a 7-year inspection cycle	<ul style="list-style-type: none"> Reduce Certified Small Farm Operation (CSFO) and Small Farm Operation (SFO) NPS pollution Assess CSFO compliance with RAP requirements 	<ul style="list-style-type: none"> All CSFOs inspected at least once every 7 years. To meet the inspection schedule, AAFM will inspect approximately 14% of CSFOs each year 	X	X	X	X	X	Complete/Ongoing - In 2022, there were 330 CSFOs, and at least 10% of CSFOs were inspected in 2022. CSFOs are on a seven-year inspection cycle.

Objectives Table 1. Required Agricultural Practices and Regulatory Program									
Lead Entity: AAFM unless otherwise noted									
	Objectives	Actions	Milestones	2021	2022	2023	2024	2025	Progress Updates
1.6	Conduct Vermont Housing Conservation Board (VHCB) water quality assessments per AAFM/VHCB grant agreement (Average 15 VHCB water quality assessments per year)	<ul style="list-style-type: none"> Annually meet the terms of the AAFM/VHCB grant agreement, ensuring water quality assessments for farmland conservation applicants are completed to assess compliance with the RAPs 	<ul style="list-style-type: none"> 100% of VHCB-funded farmland conservation projects will have a current AAFM water quality assessment 	X	X	X	X	X	Complete/Ongoing - In SFY22 AAFM conducted 8 on-farm water quality assessments per the AAFM/VHCB agreement.
1.7	Ensure implementation and compliance of the AAFM/ANR Memorandum of Understanding (MOU) (DEC & AAFM)	<ul style="list-style-type: none"> Conduct routine meetings between ANR DEC-Watershed Management Division (WSMD) and Environmental Compliance Division (ECD), VT Attorney Generals' Office, and AAFM to share current activities and review cases Institute measures or protocols to ensure consistency between DEC and AAFM during farm inspection process Coordinate with DEC-WSMD to review new or amended LFO permits <p>Note: actions above are a collaboration between AAFM and DEC</p>	<ul style="list-style-type: none"> Report annually on the successful implementation of MOU accepted by the Vermont Legislature 	X	X	X	X	X	<p>Complete/Ongoing - The SFY22 DEC/AAFMOU report was submitted January 15, 2022 to the Vermont Legislature.</p> <p>Link to the AAFM-ANR-MOU Annual Report.</p>

Objective Table 2. Agricultural Outreach, Education, Technical Assistance and Financial Assistance Lead Entity: AAFM unless otherwise noted									
	Objectives	Actions	Milestones	2021	2022	2023	2024	2025	Progress
2.1	Support partner technical assistance and educational events promoting Nutrient Management Planning (NMP) development and implementation	<ul style="list-style-type: none"> Provide financial support to partners to host NMP development, implementation, and update workshops and provide NMP technical assistance 	<ul style="list-style-type: none"> Annual report summarizing partner education and technical assistance efforts related to NMP development and implementation 	X	X	X	X	X	2022 Complete/Ongoing – In SFY22, partners provided 13 nutrient management related events, reaching 361 attendees. In addition to organized events, partners continue to provide one-on-one technical assistance related to NMP development and implementation to farmers across the State.
2.2	Expand NMP educational and training opportunities	<ul style="list-style-type: none"> Develop and deliver NMP training program(s) for Custom Manure Applicators and Technical Service Providers, requiring educational credits 	<ul style="list-style-type: none"> 80% certified technical service providers and certified custom manure applicators in compliance with educational credit requirements 					X	Ongoing
2.3	Provide technical and financial assistance for field and manure management practice implementation	<ul style="list-style-type: none"> Deliver AAFM cost share and technical assistance programs that promote agronomic and manure management practices (BMP, FAP, CEAP, CREP, PSWF, GWFS) 	<ul style="list-style-type: none"> Annual report of funding and acreage of conservation practices implemented through AAFM cost share programs 	X	X	X	X	X	2022 Complete/Ongoing - Link to AAFM Annual Report on Financial and Technical Assistance for Agricultural Water Quality
			<ul style="list-style-type: none"> Cumulative increase in phosphorus reductions achieved over the course of 5 years as a result of field practice implementation 	X	X	X	X	X	2022 Complete/Ongoing – Cumulative phosphorus reductions achieved as a result of field practice implementation continue to increase each SFY. SFY 2020 – 17,218 kg P Reduction SFY 2021 – 29,051 kg P Reduction SFY 2022 – 17,831 kg P Reduction* *Due to ongoing projects, data reported for the most recent fiscal year is not complete until the following fiscal year. Link to AAFM Programs Power BI.
2.4	Promote improved grazing, pasture management, and livestock exclusion	<ul style="list-style-type: none"> Support agricultural partners and existing pasture based technical assistance programs, to provide technical and financial assistance for grazing pasture management and exclusion fencing practices. 	<ul style="list-style-type: none"> Annual report of funding, technical assistance visits, and acreage of pasture conservation practices implemented through AAFM cost share programs 	X	X	X	X	X	2022 Complete/Ongoing - Link to AAFM Annual Report on Financial and Technical Assistance for Agricultural Water Quality

Objective Table 2. Agricultural Outreach, Education, Technical Assistance and Financial Assistance Lead Entity: AAFM unless otherwise noted									
	Objectives	Actions	Milestones	2021	2022	2023	2024	2025	Progress
2.5	Continue research and development of best management practices for tile drain systems	<ul style="list-style-type: none"> Continue tile drain sampling and research data analysis Continue development of best management practices (BMPs) for tile drain management based on research and data analysis, and provide outreach and education on developed BMPs 	<ul style="list-style-type: none"> Deliver annual update to partners and the agricultural community on tile drain research, sampling, and BMP updates 	X	X	X	X	X	Ongoing – Tile drain sampling has been completed, analysis is ongoing.
2.6	Conduct Conservation Practice Surveys and conservation adoption social science efforts and surveys	<ul style="list-style-type: none"> Support partner efforts to understand, track, and report farmer funded conservation adoption outside of state and federal programs Ensure funding available for education, outreach, and organizational development to support social science approach to conservation efforts 	<ul style="list-style-type: none"> Track and report farmer-funded conservation practice installation in the Partner Database 		X	X			Complete/Ongoing 2022 – VAAFM continues to support partner efforts to verify and track farmer funded conservation adoption. In SFY 2022, over 8,000 acres of farmer-funded conservation practices were reported.
			<ul style="list-style-type: none"> Analyze and develop report summarizing social research results to inform effective and realistic water quality policy and program development 					X	Ongoing – Link to 2022 Vermont Farmer Conservation & Payment for Ecosystem Services Study

Objective Table 3. Agricultural Partnerships and Initiatives Lead Entity: AAFM unless otherwise noted									
	Objectives	Actions by AAFM and partners	Milestones	2021	2022	2023	2024	2025	Progress Update
3.1	Increase water quality improvement by adapting innovative and flexible practices under Regional Conservation Partnership Program (RCPP) funding in Vermont (DEC & AAFM)	<ul style="list-style-type: none"> Receive and allocate additional \$10 million funding to extend RCPP through 2025 Apply for and implement additional RCPP funds as possible <p>Note: DEC will lead the above actions with support from AAFM</p>	<ul style="list-style-type: none"> Successful implementation of Regional Conservation Partnership Program (RCPP) \$10 million extension in producer contracts and quantified phosphorus reductions. 	X	X	X	X	X	Ongoing - After the signing of the Supplemental Agreement that provided the funding to Vermont, a coordinator was hired. Practice standards and payments, incentive program payments and outreach were completed in preparation for a January 13, 2023 sign up deadline.

Objective Table 3. Agricultural Partnerships and Initiatives									
Lead Entity: AAFM unless otherwise noted									
	Objectives	Actions by AAFM and partners	Milestones	2021	2022	2023	2024	2025	Progress Update
3.2	Improve understanding of land treatment and water quality response in conjunction with National Water Quality Initiative (NWQI) (Rock River, East Creek and Hungerford Brook) (DEC)	<ul style="list-style-type: none"> Review current NWQI projects with partners and identify more site-specific monitoring and localized opportunities for water quality improvement (DEC, AAFM, partners) Carry out water quality monitoring efforts and interpret monitoring data (DEC) Acquire non-sensitive information from NRCS regarding land treatment implementation (DEC & AAFM) <p>Note: DEC will lead the above actions with support from AAFM</p>	<ul style="list-style-type: none"> NWQI progress reports submitted to EPA on an annual or biannual basis. 	X	X	X	X	X	Ongoing – DEC meets annually with NRCS and assists in water quality projects in these NWQI areas. Using RCPP funds, DEC provided resources for the Friends of Northern Lake Champlain to expand their water quality monitoring and farmer outreach and evaluation in the Rock River (a long-time, key NWQI region). DEC assisted FNLC in a grant application that was awarded to FNLC to further expand this work. RCPP funds will continue to support part of this multi-year project.
3.3	Support agricultural water quality partners to increase and strengthen partnerships, assistance and resources to farms, and efforts to improve water quality	<ul style="list-style-type: none"> Host, maintain, and enhance the Multi-Partner Agricultural Conservation Practice Tracking and Planning Geospatial Database (Partner Database) Provide support to new and existing farmer-led watershed groups Provide support to agricultural partners through the Agricultural Clean Water Initiative Program grants (Ag-CWIP) Support local conservation practice research and monitoring Administer the VAAFM AgCWIP Grant Program 	<ul style="list-style-type: none"> Provide Partner Database trainings and support 	X	X	X	X	X	2022 Complete/Ongoing – The Partner Database continues to be used for tracking and reporting across the state and organizations. In FY22, over 4,200 practices and 1260 visits were reported by 48 users. This resulted in 22.8 metric tons of delivered P reductions. Utilization of the Partner Database ensures consistent and accurate tracking for TMDL P reductions and enables coordination across organizations.
			<ul style="list-style-type: none"> Include farmer-led watershed groups in stakeholder meeting, as applicable 	X	X	X	X	X	2022 Complete/Ongoing
			<ul style="list-style-type: none"> Research and monitoring results developed and disseminated as available 			X		X	

Objective Table 3. Agricultural Partnerships and Initiatives									
Lead Entity: AAFM unless otherwise noted									
	Objectives	Actions by AAFM and partners	Milestones	2021	2022	2023	2024	2025	Progress Update
3.4	Collaborate and Coordinate with the Vermont Agricultural Water Quality Partnership (VAWQP)	<ul style="list-style-type: none"> Implement the VAWQP strategic plan developed in 2019 to build a stronger coalition and share research and learning across the partnership Create and sustain a formal VAWQP structure Utilize Tactical Basin Planning to Prioritize watersheds within each basin Support Vermont-specific research and monitoring including Conservation Effects Assessment Program in Addison County, Discovery Acres in Franklin County and the MAPHEX (phosphorus removal system) demonstrations in collaboration with Penn State. <p>Note: VAWQP will lead the above actions with support from AAFM and DEC</p>	<ul style="list-style-type: none"> Host biennial research summit where researchers share their findings, results, and on-going work with partners, including Vermont, regional and national experts 	X		X		X	Ongoing - The VAWQP held a science advisory meeting on May 2, 2022 highlighting local and national research.
			<ul style="list-style-type: none"> Hold Annual VAWQP Meeting, Steering Committee meetings and VAWQP Leadership meetings. 	X	X	X	X	X	Ongoing - The 2022 annual meeting was cancelled due to ongoing concerns about Covid. The 2023 annual meeting was hosted in April 2023. The VAWQP steering committee meets monthly to share information and coordinate programs, issues, and opportunities for collaboration. In addition, a communications sub-committee and other advisory groups meet regularly in between steering committee meetings.
3.5	Vermont Phosphorus Innovation Challenge (VPIC)	<ul style="list-style-type: none"> Continue VPIC program implementation, supporting the development of innovative prototypes to address phosphorus pollution in Vermont (DEC & AAFM) 	<ul style="list-style-type: none"> Administration of VPIC program through VPIC board development, proposal reviews, and grant administration 	X	X	X	X	X	2022 Complete/Ongoing – Three grants remain active, with ongoing work in Phase III Implementation.

Objectives Table 4. Nonregulatory Stormwater Management
Lead entity: DEC Clean Water Initiative Program unless otherwise noted

	Objectives	Actions	Milestones	2021	2022	2023	2024	2025	Progress Updates
4.1	Increase education and awareness of operation and maintenance (O&M) of installed BMPs	<ul style="list-style-type: none"> Establish O&M standards based on project type Conduct training and technical assistance targeting municipalities, private owners of BMPs, CWSPs or CWSP O&M contractors on O&M standards 	<ul style="list-style-type: none"> Training materials/curriculum developed on O&M inspection and maintenance standards and techniques 		X				Ongoing
		<ul style="list-style-type: none"> Organize a regional O&M summit or outreach event each year for partners, municipalities and consultants <p>Note: DEC will lead this effort in conjunction with Lake Champlain Sea Grant.</p>	<ul style="list-style-type: none"> Conduct annual O&M training and technical assistance each year. Reach at least 50 people per year Train at least 75 people per year 	X	X	X	X	X	Ongoing - BMP Verification methods have been piloted and additional trainings on O&M standards are under development.
4.2	Identify priority non-regulatory road segments contributing to NPS pollution and mitigate erosion and polluted runoff	<ul style="list-style-type: none"> Develop methods and tools to inventory private roads Pilot inventory of private roads in high priority watersheds (as defined in Basin Plans, SWMP's etc.) 	<ul style="list-style-type: none"> Complete pilot inventory for private roads to identify high priority road segments for remediation 		X				Delayed - The State of Vermont has secured funding through the Lake Champlain Basin Program to develop and pilot an assessment and data management framework for private road erosion inventories. The goal is to identify high priority road segments for BMP implementation. An RFP is under development with the goal to post Summer 2023.
		<ul style="list-style-type: none"> Implement high priority private road improvement projects (O&M responsible party must be in place) Identify funding sources to implement priority private road projects 	<ul style="list-style-type: none"> 10% of private roads brought up to standard 					X	Not started
4.3	Utilize the Basin Planning process to identify priority municipalities for developing Stormwater Master Plans (SWMPs) and maintain a list of priority proposed stormwater projects to be addressed	<ul style="list-style-type: none"> Identify priority towns or watersheds that have not completed SWMPs Implement SWMP's as described in specific Basin Planning objectives 	<ul style="list-style-type: none"> 15 SWMPs out of a total of 150 funded and completed over 5 years 					X	Ongoing – in 2022, a SWMP was completed for the Poultney River Watershed, covering previously unassessed areas of Benson, West Haven, Middletown Springs, Poultney, and Fair Haven. Two active funding agreements are supporting development of SWMPs in Brattleboro, Manchester, Stowe, Rockingham, Woodstock, Windsor, Williamstown, Westminster, Bennington, Chittenden, Chester, Londonderry, Wilmington, Mendon, Pownal, and Pittsford. Staff also provided support for VTrans funded plans in Lyndonville and Bethel.

Objectives Table 4. Nonregulatory Stormwater Management									
Lead entity: DEC Clean Water Initiative Program unless otherwise noted									
	Objectives	Actions	Milestones	2021	2022	2023	2024	2025	Progress Updates
4.4	Make progress toward meeting Lake Champlain and Lake Memphremagog developed lands targets through implementation of non-regulatory projects	<ul style="list-style-type: none"> Fund and implement non-regulatory developed lands treatment projects. 	<ul style="list-style-type: none"> Adequate progress made on non-regulatory developed lands reductions in Lake Champlain and Memphremagog basins in relation to achieving 5-year targets 					X	Ongoing

Objectives Table 5. Functioning Floodplains Initiative (FFI): Restoring Rivers, Floodplains and Wetlands
Lead Entity: DEC Rivers Program unless otherwise noted

	Objectives	Actions	Milestones	2021	2022	2023	2024	2025	Progress Updates
5.1	Phase 1 Functioning Floodplains Initiative (FFI): identify nature-based projects through scoring, tracking, and mapping of floodplain and wetland functions.	<ul style="list-style-type: none"> Develop methods and mapping to identify high priority projects to restore and protect stream, wetland, and floodplain functions. <p>Note DEC's Rivers Program will lead this effort with assistance from a technical advisory committee comprised of several DEC staff and outside contractors</p>	Phase 1 deliverables completed <ol style="list-style-type: none"> 1. Attainment scoring 2. Connectivity Maps 3. Reconnect VT Rivers Maps 4. Conceptual Hydrology/Hydraulics mapping 	X					Completed
5.2	Phase 2 Functioning Floodplains Initiative (FFI): track existing and potential river form and process, as well as the effectiveness of interventions to improve river and floodplain connectivity and function	<ul style="list-style-type: none"> Work with contractor as part of a technical advisory committee to advise and assist in completion of required deliverables <p>Note DEC's Rivers Program will lead this effort with assistance from a technical advisory committee comprised of several DEC staff and outside contractors</p>	Phase 2 deliverables completed <ol style="list-style-type: none"> 1. Weighted prioritizations of floodplain and river reconnection projects 2. Function and values assessment and mapping methodologies 3. Web-based mapping and tracking program with training modules 4. Outreach materials reconnect Vermont rivers 5. Final Report/Closeout 	X	X	X			Ongoing - On track to be completed in June 2023. Overall web-tool and prioritization work completed. Work remaining to be completed is the trainings and minor updates to the tool based on feedback from the trainings. Two Clean Water Service Provider and partner web tool trainings scheduled for Spring 2023 (April 19 th , and May 24 th , 2023)

Objectives Table 7. Wetland Protection and Restoration
Lead entity: DEC Wetlands Program

	Objectives	Actions	Milestones	2021	2022	2023	2024	2025	Progress Updates
7.1	Provide regulatory assistance in wetland avoidance and minimization. restoration	<ul style="list-style-type: none"> Administer Vermont Wetland Rules (VWR). Revise VWR to include greater clarity on avoidance and minimization steps. 	<ul style="list-style-type: none"> Rule revision adoption 	X					Complete - Rule revisions were adopted in February 2023 to increase clarity on what wetlands are protected and allows for a more nimble way to update our jurisdictional maps.
			<ul style="list-style-type: none"> Yearly reports of wetland losses and gains from permitting. 	X	X	X	X	X	Ongoing - 2022 reporting due out this May.
			<ul style="list-style-type: none"> 5-year report of wetland losses and gains demonstrating the achievement no net loss. 	X					Ongoing - the 2016-2020 report is drafted and will be available Spring 2023.
7.2	Increase protections for our most irreplaceable wetlands that provide water storage and water quality protection functions.	<ul style="list-style-type: none"> Complete Class I Designations 	<ul style="list-style-type: none"> 2,000 acres of wetland designated as Class I 					X	Ongoing - Eight Class I wetlands have been designated since 2016, with two added in February of 2023. Over 2,300 acres have been added since 2016, plus more acres of buffer zone. Two wetlands were designated as Class I in early 2023, adding 170 acres of Class I protected resource. There is now a total of 3,762 acres of wetland protected as Class I.
7.3	Improve knowledge of wetland locations to enhance wetland avoidance in project design.	<ul style="list-style-type: none"> Update wetland advisory layer and Vermont Significant Wetlands Inventory (VSWI) 	<ul style="list-style-type: none"> 20 square miles added to map layers 					X	Ongoing - The VSWI was updated through Rule to include recent data for the Missisquoi basin. To improve accuracy, there were both additions and deletions with a net 5,100 acres added. In 2022 around 5,000 acres were added to the advisory layer. These numbers total around 15 square miles.
7.4	Increase wetland acreage and function through restoration of previously drained and degraded wetlands	<ul style="list-style-type: none"> Provide technical assistance to the Department of Fish and Wildlife's wetland restoration program to ensure projects maximize water quality improvements. Provide incentive funding to the NRCS WRE program to increase number of farmers enrolled. Provide grant funding for wetland restoration projects. 	<ul style="list-style-type: none"> 1,000 acres restored 					X	Ongoing.

Objective Table 8. Lakes and Ponds NPS pollution
Lead entity: DEC Lakes and Ponds Program

	Objectives	Actions	Milestones	2021	2022	2023	2024	2025	Progress Updates
8.1	Reduce runoff from impervious surfaces on shorelands into lakes	<ul style="list-style-type: none"> Work with shoreland residents through the Lake Wise Program to implement land management practices that reduce this runoff, including planting and maintaining vegetated areas, ensuring clean runoff, and stabilizing banks. Training Lake Wise Evaluators, individuals qualified to help residents identify sources of runoff and address those through the implementation of best management practices, is another important ongoing effort. 	<ul style="list-style-type: none"> At least ten new Lake Wise participants identified and shoreland sites assessed during each summer field season 	X	X	X	X	X	Ongoing - Steady progress being made annually with identification of new lake wise sites on lakes and ponds throughout Vermont, with this target significantly surpassed in 2022 with assessments at over 50 sites.
			<ul style="list-style-type: none"> Ten Lake Wise BMP project sites identified during each summer field season 	X	X	X	X	X	Ongoing - In 2022, Lake Wise BMPs were identified at multiple lakes, including at Lake Iroquois which received a Lake Wide Gold Award, Seymour Lake, Echo Lake, Lake Carmi, and sites on Lake Champlain.
			<ul style="list-style-type: none"> Complete at least five lake wise implementation projects each summer field season 	X	X	X	X	X	Ongoing - 5+ Lake Wise Implementation projects completed in 2022.
			<ul style="list-style-type: none"> Two Shoreland Erosion Control Trainings completed each year 	X	X	X	X	X	Ongoing - Shoreland Erosion Control Certification Trainings Completed in 2021, with one statewide full day virtual training with over 60 participants and multiple trainings at lake sites targeting staff from partner organizations who want to become certified in performing lake wise assessments
8.2	Identify and address sources of non-point source pollution in a lake's watershed and develop projects to reduce loading	<ul style="list-style-type: none"> Develop water quality restoration plans known as Lake Watershed Action Plans (LWAPs) that identify sources of nutrient and sediment loading to lakes, prioritize sources based on various environmental, economic, and social criteria, and design projects to mitigate those sources. 	<ul style="list-style-type: none"> Identify five lakes to develop LWAPs 	X		X	X	X	Ongoing/Complete - Through summer 2022, 12 LWAPs are underway or have been completed
			<ul style="list-style-type: none"> Complete five LWAPs pending funding and willing partners 		X				Ongoing - Through 2022, 3 LWAPs have been completed
			<ul style="list-style-type: none"> Begin to implement LWAP projects 			X	X	X	Ongoing - Projects identified in LWAPs are being implemented on Lake Elmore, Lake Eden, and Lake Dunmore

Objective Table 8. Lakes and Ponds NPS pollution

Lead entity: DEC Lakes and Ponds Program

	Objectives	Actions	Milestones	2021	2022	2023	2024	2025	Progress Updates
8.3	Detect and Eradicate Aquatic Invasive Species (AIS)	<ul style="list-style-type: none"> Implement a series of projects to reduce the spread of AIS enabled by increasing phosphorus concentrations, such as EWM. Award annual grants to support projects that will contain further AIS spread, including the Vermont Public Access Greeter Program which educates boaters and provides courtesy watercraft inspections to prevent invasive plants and animals from spreading from one waterbody to another. 	<ul style="list-style-type: none"> Implement the Greeter Program at 30+ boat access areas across the state on an annual basis to prevent the spread of AIS to lakes where none are currently present 	X	X	X	X	X	Ongoing - In 2022, DEC funding was provided to greeters at over 30 access areas throughout Vermont.
8.4	Reducing non-point phosphorus pollution from roads near lake shores	<ul style="list-style-type: none"> To help reduce road runoff and protect surface waters, Act 64 mandates all hydrologically connected roads (class one through four) be maintained according to new road drainage standards. One such standard is an exemption that protects trees and shrubs along roads within 250 feet from cutting or moving and prevents roads from being widened toward the lake side. The Lakes and Ponds Program is training road maintenance officials and road building contractors and providing materials to successfully implement this aspect of Act 64. 	<ul style="list-style-type: none"> Completion of Bioengineering Manual showcasing five years of shoreland road restoration projects and methodologies for the installation of these practices 		X				Completed.
			<ul style="list-style-type: none"> New shoreland BMP guidance to address specific road / shoreland interface challenges 		X				Completed.
			<ul style="list-style-type: none"> Implement new BMPs and evaluate effectiveness of BMPs 			X	X	X	Ongoing - Bioengineering Manual and new BMPs from aforementioned new guidance and new BMP sheets began to be utilized in 2022, with tangible results to follow in 2023.
8.6	Reverse pattern of increasing chloride trends in Lake Champlain and other relevant inland lakes	<ul style="list-style-type: none"> Support the development of a program in VT similar to New Hampshire's Green Snow Pro program which reduces liability for certified salt applicators and thereby is a guard against over- 	<ul style="list-style-type: none"> Development of legislation for a reduced salt application program 	X	X				Delayed - Legislation Introduced in 2021 but no progress made. However, DEC identified lakes and ponds that exceed the acute criteria for chloride pollution in the Water Quality Standards. Development of legislation focused on reducing salt application will be a priority for DEC during the 2023 legislative session.

Objective Table 8. Lakes and Ponds NPS pollution Lead entity: DEC Lakes and Ponds Program									
	Objectives	Actions	Milestones	2021	2022	2023	2024	2025	Progress Updates
		salting, integrate lakes priorities into VTrans Snow and Ice Transportation Plan, and begin an effort to monitor lakes where chloride concentrations are increasing.	<ul style="list-style-type: none"> Work with VTrans to add low-salt zones around chloride-sensitive lakes into Snow & Ice Plan 		X	X	X		Delayed - No progress made in VT on this point in 2022.

Objective Table 9: Forest Lands Analysis, Tracking, Accounting and Pollutant Reduction
Lead Entity: Department of Forest Parks and Recreation (FPR)

	Objectives	Actions	Milestones	2021	2022	2023	2024	2025	Progress Updates
9.1	Encourage compliance with AMP rules and decrease enforcement cases.	<ul style="list-style-type: none"> Continue annual AMP enforcement and compliance reporting under revised AMPs using the AMP database. 	<ul style="list-style-type: none"> Decrease average number of complaints from a baseline of 32 cases per year and increase the average number of technical assists from a baseline of 13 per year. 	X	X	X	X	X	Completed/Ongoing - 29 complaints in 2022, and 27 Requests for Technical assistance. Over the last 19 years, the number of complaints has been going down, and the number of technical assistance calls has been going up.
9.2	Provide technical assistance and outreach to loggers, foresters and landowners	<ul style="list-style-type: none"> Provide trainings through partnerships with LEAP, Vermont Woodlands Association (VWA), Vermont Forests Products Association (VFPA). Develop digital AMP manual consisting of the new AMP manual as a smartphone application with enhanced tools to help implement the AMPs 	<ul style="list-style-type: none"> Offer 2-3 workshops per year 	X	X	X	X	X	Completed/Ongoing - Completed 5 workshops in 2022.
			<ul style="list-style-type: none"> Disseminate the new digital AMP manual. 	X					Completed - AMP app went live in August of 2022. As of February 2023, 250 people have downloaded the App and are presumed to be using it. A training webinar was held in September 2022. Located at this link: https://www.youtube.com/watch?v=MRToiN5IOmQ&list=PL4Q_G01jMxBt0DzEgdnwfwv14a2vsbY&index=1 Other Trainings on the App are planned for 2023.
9.3	Reduce erosion and sedimentation at stream crossings during harvesting	<ul style="list-style-type: none"> Provide technical support and bridge rentals to loggers, foresters and landowners Continue to administer the cost-share program for temporary skidder bridges Continue to support stream crossing improvement projects with RCPP funds 	<ul style="list-style-type: none"> 2-3 rentals of the heavy-duty bridges per year 	X	X	X	X	X	Completed/Ongoing - Rented 4 heavy duty bridges in 2022 in the towns of Ira, Tunbridge, Braintree and Lincoln.
			<ul style="list-style-type: none"> Support cost share 5-7 bridges per year 	X	X	X	X	X	Ongoing - A cost share/grant program to get 15 bridges to VT NRCD's for their temporary bridge rental program began in the fall of 2022. Those bridges are planned to be delivered to the NRCD storage sites in June of 2023. These bridges will be available for rent to those loggers and foresters that need a temporary skidder bridge but do not own one. This is an important part of making bridges available, as not all loggers wish to own a bridge, but renting one is suitable. These bridges will be staged at areas spread around Vermont.

Objective Table 9: Forest Lands Analysis, Tracking, Accounting and Pollutant Reduction
Lead Entity: Department of Forest Parks and Recreation (FPR)

	Objectives	Actions	Milestones	2021	2022	2023	2024	2025	Progress Updates
9.4	Develop methods to track and account for phosphorus and sediment reduction of forestland projects	<ul style="list-style-type: none"> Hire contractors to define methodology to identify and map critical sources areas of forestland phosphorus and sediment reduction potential Create list of prioritized sites to target project development Hire contractors to develop forestland BMP phosphorus accounting methodology design life and data requirements 	<ul style="list-style-type: none"> Critical source area maps categorized by forestland BMP type, and prioritized locations to target field assessments and project development 	X	X				Ongoing – consultants have been awarded LCBP funding to conduct Phase 2 of the Forestland Spatial Analysis and Phosphorus Load Allocation project to groundtruth spatial data to verify landscape features and calibrate the spatial assessment model/tool.
			<ul style="list-style-type: none"> Finalize forestland phosphorus accounting methods 	X	X				Complete – methods to account for phosphorus reduction associated with forestland BMPs are complete and published.
			<ul style="list-style-type: none"> Promote BMP implementation through private lands staff, Technical Service Providers (TSPs), private foresters and other strategies 		X	X	X	X	Ongoing
9.5	Refine the tracking and accounting of UVA AMP compliance, especially in priority basins to meet TMDL targets	<ul style="list-style-type: none"> Inspect parcels and document AMP compliance and identify opportunities for improvements 	<ul style="list-style-type: none"> Develop, test and refine data collection system 	X					Ongoing – system in place to apply accounting methods to estimate phosphorus load reduction achieved through AMP compliance on inspected UVA enrolled parcels.
			<ul style="list-style-type: none"> Fully deploy system 		X	X	X	X	Ongoing – estimated phosphorus reductions associated with UVA enrolled parcels anticipated to be reflected for the first time in the Clean Water Initiative 2023 Performance Report.
9.6	Implementation of forestry BMPs on high priority state lands	<ul style="list-style-type: none"> Develop method to inventory ANR roads and trails Prioritized list of projects for remediation-completed in 3 phases. Implement BMPs based on priority and funding. 	<ul style="list-style-type: none"> Complete mapping of ANR roads and trails Conduct inventory assessment of ANR lands over 3 years. Phase one starting in 2020. 	X	X	X			Ongoing - In 2022 one-third of the forest roads on ANR lands were inventoried and prioritized. The remaining two-thirds of the roads have been mapped and will be put out to bid for inventory in the summer of 2023. The prioritized projects are being incorporated into District workplans and implementation has begun on several projects.
			<ul style="list-style-type: none"> Complete final prioritization list 			X			Scheduled for after completion of data collection at end of 2023 field season, or 2024, depending on contractor availability.

Objective Table 9: Forest Lands Analysis, Tracking, Accounting and Pollutant Reduction
Lead Entity: Department of Forest Parks and Recreation (FPR)

	Objectives	Actions	Milestones	2021	2022	2023	2024	2025	Progress Updates
			<ul style="list-style-type: none"> Inventory results and project prioritization incorporated into long range management planning and FPR Annual Stewardship plans. 				X	X	2024 and beyond - work on this will begin after final prioritization has been completed.
9.7	Enhance inter-Departmental (within ANR) coordinated approach in managing current state lands	<ul style="list-style-type: none"> Identify high priority acquisition projects that meet mutual (multiple) objectives Work with District Stewardship Teams to revise/update criteria and apply to new acquisition priorities forwarded to the Agency Lands Acquisition Committee (ALAC) 	<ul style="list-style-type: none"> Update ANR Lands Conservation Plan 	X					Ongoing - completed within the process of the District Stewardship Teams

Objectives Table 10: Healthy Forest Cover									
Lead Entity: FPR Division of Forests									
	Objectives	Actions	Milestones	2021	2022	2023	2024	2025	Progress Updates
10.1	Protect and enhance urban forest canopy cover	<ul style="list-style-type: none"> Provide high-priority communities with targeted technical & financial assistance to protect urban forest canopies. Assistance includes conducting tree inventories and canopy assessments, reviewing policies and plans, and supporting tree wardens and tree management objectives Deliver urban forestry outreach presentations to varying audiences. Provide educational opportunities to municipalities to develop sustainable urban forestry programs and advance urban forestry management. 	<ul style="list-style-type: none"> Provide assistance to 10 communities per year. 	X	X	X	X	X	Ongoing/Complete - The Vermont Urban & Community Forestry Program provides assistance to towns by request. In 2022 the program assisted 12 communities with conducting tree inventories, reviewed draft policies and shade tree preservation plans for 7 communities, and regularly supported tree warden requests for assistance.
			<ul style="list-style-type: none"> Provide 5 outreach events per year. 	X	X	X	X	X	Ongoing/Complete - In 2022 Vermont Urban & Community forestry program staff delivered over 20 presentations to varying audiences with topics ranging from roadside vegetation management, to emerald ash borer preparedness, to caring for and planting young trees in communities.
10.2	Maintain and increase UVA enrolled forestland among eligible parcels.	<ul style="list-style-type: none"> Provide outreach and technical assistance to private landowners and foresters to equip them with tools to apply, enroll and manage their land in accordance with program standards, including implementation of AMPs. Current forestland enrolled is just under 2,000,000 acres 	<ul style="list-style-type: none"> Provide 5 outreach events per year 	X	X	X	X	X	Ongoing/Complete - The Vermont Private Lands Program provides outreach on a variety of topics and most presentation touch on Use Value Appraisal. In 2022, 126 presentations occurred reaching more than 3100 attendees. 9 of these events had a strong UVA focus or component and were attended by 170 individuals.
			<ul style="list-style-type: none"> Visit 800 parcels per year 	X	X	X	X	X	Ongoing/Complete - In 2022 staff with the Private Lands Program visited more than 950 parcels covering 187,400 acres. Each visit included confirmation of implementation of water quality practices and where appropriate, advice and technical assistance to support good forest stewardship.

Objective Table 11. Planning and Reporting on TMDL Progress Lead Entity: Water Investment Division Watershed Planning Program (WPP) unless otherwise noted									
	Objectives	Actions	Milestones	2021	2022	2023	2024	2025	Progress Updates
11.1	Identify and develop high priority clean water projects to implement TMDLs	<ul style="list-style-type: none"> Coordinate with inter-agency programs and statutory partners to develop draft TBPs for review 	Publish 15 Basin Plans		X			X	Ongoing - South Lake Champlain (Basin 2/4) Tactical Basin Plan developed and approved in 2022. The Lake Memphremagog Tactical Basin Plan (Basin 17), the Black Ottauquechee Tactical Basin Plan (Basin 10), and the Winooski Tactical Basin Plan (Basin 08) are under development and expected to be finalized in 2023.
11.2	Meet TMDL target load allocations to comply with VT Water Quality Standards	<ul style="list-style-type: none"> Publish Tactical Basin Plans with phase 3 and/or geographically explicit implementation priorities 	<ul style="list-style-type: none"> Lake Champlain Phase 3 content completed and subsequent iterations of other TBPs (Memphremagog, Connecticut River Basins) 	Basin 6&7	Basin 2/4	Basin 8	Basin 3&5		Complete/Ongoing - Basin 6&7 Phase 3 content developed and approved in 2021. Basin 2/4 (South Lake Champlain Basin) Phase 3 content developed and approved in 2022. The Basin 08 (Winooski) Phase 3 content is under development and anticipated to be finalized by the end of 2023
			<ul style="list-style-type: none"> Implementation targets for Lake Memphremagog 		X				Delayed – Implementation targets for Lake Memphremagog are under development and expected to be published in 2023.
11.3	Develop TMDL targets by basin and sector	<ul style="list-style-type: none"> Target-setting to meet allocations by sector, by basin split into regulatory and non-regulatory 	<ul style="list-style-type: none"> Phase 3 accounting and target setting completed (Champlain) 	Basin 6&7	Basin 2/4	Basin 8	Basin 3&5		Complete/Ongoing – TMDL Targets for South Lake Champlain (Basin 2/4) were published in December 2022. TMDL targets have been developed for the Winooski Basin (Basin 08) and will be published by the end of 2023.
			<ul style="list-style-type: none"> Implementation targets established (Memphremagog) 		X				Complete - Non-regulatory implementation targets for CWSPs (per Act 76) for the Memphremagog Basin were finalized and published in June 2022
11.4	Report on progress made towards clean water restoration and protection goals	<ul style="list-style-type: none"> Develop Tactical Basin Plan Implementation Table interim and final report cards CWIP and WPP develop and submit Annual Clean Water Initiative Performance Report including TMDL progress report 	<ul style="list-style-type: none"> Interim/ Final Report Cards developed for basins according to Lake Champlain TMDL Accountability Framework 	Basin 8	Basin 2/4 & 3	Basin 8 & 5	Basin 3	Basin 5	Complete/Ongoing - Basin 2/4 final report card submitted and approved by EPA and Basin 3 interim report card submitted and approved by EPA (April 2023). The Basin 08 final report card will be submitted in early 2024.
			<ul style="list-style-type: none"> Basins 6 and 7 submit final reports in 2021 	X					Complete

Objective Table 12. Clean Water Service Delivery Tasks and Programs Addressing Nonpoint Source Pollution									
Lead Entity: Clean Water Initiative Program and Watershed Planning Program									
	Objectives	Actions	Milestones	2021	2022	2023	2024	2025	Progress Updates
12.1	Provide reasonable assurances that non-regulatory TMDL targets will be achieved and maintained	<ul style="list-style-type: none"> Establish Clean Water Service Providers (CWSPs) and Water Quality Restoration Formula Grant Program 	<ul style="list-style-type: none"> Complete rulemaking process to establish CWSPs in Lake Champlain and Lake Memphremagog Basins and finalize Water Quality Restoration Formula Grant Guidance Document 	X					Complete – Rulemaking to establish CWSPs is complete.
			<ul style="list-style-type: none"> Implement Water Quality Formula Grant Program 		X				Ongoing – Water Quality Restoration Formula Grant guidance chapters are under development. Four guidance chapters have been finalized and published. Remaining chapters are being drafted and will be posted for public comment in 2023.
			<ul style="list-style-type: none"> Determine timeline for expanding CWSP model to address other priority pollutants statewide 			X			Act 76 requires establishing a schedule by November 2023. Timeline development will begin spring/summer 2023.
12.2	Ensure protection and enhancement of unimpaired waters through enhanced nonpoint source management and protection projects	<ul style="list-style-type: none"> Establish Water Quality Enhancement Grant Program 	<ul style="list-style-type: none"> Implement Water Quality Enhancement Grant Program statewide 		X				Ongoing - DEC facilitated a stakeholder workgroup to inform and build consensus on the Enhancement Grant program design and priorities. The State of Vermont will meet the statutory goals/intent of the Enhancement Grant program through an offering of sub-initiatives. The first year of Enhancement Grants were budgeted in the SFY 2023 Clean Water Budget and CWIP Spending Plan. The first round of Enhancement awards is being made in SFY 2023.
12.3	Develop and deploy clean water accounting methodology	<ul style="list-style-type: none"> CWIP coordinate the development of phosphorus accounting methodologies for all project types without methods in place CWIP confirm existing accounting methodology for non-regulatory projects CWIP coordinate development of standard design life for all project types 	<ul style="list-style-type: none"> Document phosphorus accounting methodology by sector and project types 	X					Complete – phosphorus accounting methods for clean water projects addressing pollution in the developed lands, natural resources, and agricultural sectors were published June 2022.
			<ul style="list-style-type: none"> Develop Quality Assurance Project Plan (QAPP) on phosphorus accounting methodology and submit to EPA 		X				Complete – QAPP approved by EPA April 2023.
			<ul style="list-style-type: none"> Reductions attained from all completed clean water projects, not previously reported on, captured in Clean Water Initiative Annual Performance Report 			X	X	X	Ongoing – The Vermont Clean Water Initiative 2023 Performance Report will be the first to reflect phosphorus reductions estimated through implementation of newly established accounting methods.

Objective Table 12. Clean Water Service Delivery Tasks and Programs Addressing Nonpoint Source Pollution									
Lead Entity: Clean Water Initiative Program and Watershed Planning Program									
	Objectives	Actions	Milestones	2021	2022	2023	2024	2025	Progress Updates
12.4	Establish Clean Water Service Providers for each Champlain (tactical) Basin/ region and Memphremagog Basin	<ul style="list-style-type: none"> Rulemaking process to adopt the CWSP for 6 Champlain Basins and 1 Memphremagog Basin 	<ul style="list-style-type: none"> CWSPs for Champlain and Memphremagog Basins selected and adopted by rule 	X					Complete – CWSPs have been assigned for all 7 basins
			<ul style="list-style-type: none"> Basin Water Quality Councils (BWQCs) established and operational for Champlain and Memphremagog Basins 		X				Complete – BWQCs have been established in each basin
12.5	Provide assurance that BMPs implemented on the ground are properly functioning throughout their useful design life	<ul style="list-style-type: none"> Establish BMP Verification Procedures Train CWSPs, and other entities on BMP Verification (see Objective table 4 for training milestones) 	<ul style="list-style-type: none"> BMP Verification procedures documented 	X					Ongoing - Internal DEC procedures are documented, procedures for external partners to engage in this work is under development.
			<ul style="list-style-type: none"> Operation and Maintenance (O&M) guidance manual finalized 		X				Ongoing - Finalized manual is delayed. Currently under final review with DEC staff.
			<ul style="list-style-type: none"> Field verify O&M of 35 state funded GSI projects per year 	X	X	X	X	X	Ongoing - In 2022 DEC staff led verification visits to four state-funded projects, as part of pilot verification trainings.
12.6	Adaptive management strategy developed and deployed	<ul style="list-style-type: none"> Applying accounting methods, determine progress made in meeting target allocations (WID) 	<ul style="list-style-type: none"> Clean water BMP implementation progress determined annually by sector and basin 	X	X	X	X	X	Ongoing
			<ul style="list-style-type: none"> BMP implementation progress informs updated targets for next planning cycle 		X		X		Ongoing

Objective Table 13. NPS Program Administration and Oversight									
Lead Entity: Clean Water Initiative Program: Nonpoint Source Coordinator									
	Objectives	Actions	Milestones	2021	2022	2023	2024	2025	Progress Updates
13.1	EPA approved NPS Success Stories that document partial or full restoration of NPS impaired waters	<ul style="list-style-type: none"> Through reliable water quality monitoring efforts, document NPS impaired situations where water quality is fully or partially restored. 	<ul style="list-style-type: none"> At least two type 1 Vermont NPS success stories submitted and made part of EPA's NPS Success Stories web page with each biannual listing cycle. 		X		X		Delayed – two success stories to be submitted before July 2023
13.2	Continue to manage & implement NPS program to meet goals while working towards addressing Vermont's NPS water quality problems effectively & expeditiously	<ul style="list-style-type: none"> Employ appropriate programmatic & financial systems that ensure 319 dollars are used efficiently & consistent with fiscal and legal obligations. In keeping with Section 319(h)8 & 11, provide EPA with sufficient information/reports/data about VT 319 program to allow EPA to determine progress & whether meeting or exceeding all elements in EPA's Satisfactory Progress Determination (SPD) checklist. 	<ul style="list-style-type: none"> Vermont NPS Program continues to receive SPDs on an annual basis in a timely fashion. 	X	X	X	X	X	Complete for 2022
13.3	Preparation & submittal of annual NPS program reports consistent with EPA guidance	<ul style="list-style-type: none"> Assemble pertinent material reporting on Vermont's progress meeting program milestones noted in NPS Management Program plan. When information is available, report estimated reductions in NPS pollutant loading & other improvements in water quality arising from program implementation. Provide draft annual program report to EPA for review. Submit annual report. 	<ul style="list-style-type: none"> Report annually on progress made in implementing the state's NPS Management Program 	X	X	X	X	X	Complete for 2022

Objective Table 13. NPS Program Administration and Oversight									
Lead Entity: Clean Water Initiative Program: Nonpoint Source Coordinator									
	Objectives	Actions	Milestones	2021	2022	2023	2024	2025	Progress Updates
13.4	Revised NPS Management Program plan	<ul style="list-style-type: none"> Track the status of actions, milestones & accomplishments found in current 2021-2025 NPS Management Program plan. Prepare revised & updated NPS Management Program 	<ul style="list-style-type: none"> EPA-approved Vermont NPS Management Program plan (2026-2030) in place by 10/1/2025 					X	Not started

Appendix B: Section 319 Leveraged Watershed Projects and Status

Workplan Year	Grantee/Contractor	Project Title	Total Amount	Project Status	Date Completed
2014	Vermont Agency of Agriculture, Food and Markets	Agricultural Technology to Monitor Nutrients (UVM)	\$63,150	Completed	6/24/2014
2014	Lamoille County Conservation District	Lamoille LID – Phase I (Design) & Phase II (Construction)	\$41,000	Completed	11/18/2014
2014	Rutland Natural Resources Conservation District	Tenney Brook Stormwater Master Plan	\$34,000	Completed	12/17/2014
2014	Winooski Natural Resources Conservation District	Trees for Winooski Basin Streams	\$33,960	Completed	12/29/2014
2014	Lewis Creek Association	Stormwater Treatment in the LaPlatte	\$67,600	Completed	1/9/2015
2014	Poultney-Mettowee Natural Resources Conservation District	Poultney High School Stormwater Management	\$41,710	Completed	2/4/2015
2014	Poultney-Mettowee Natural Resources Conservation District	Woodlawn Farm Agricultural Runoff Reduction	\$42,765	Completed	2/4/2015
2014	Friends of Northern Lake Champlain	Enhanced Silage Leachate Treatment System	\$10,000	Completed	3/13/2015
2014	Vermont Youth Conservation Corps	Water Quality Implementation Projects Work Crew	\$75,403	Completed	4/24/2015
2014	Vermont Agency of Transportation	Better Backroads by Towns in St. Albans Bay Watershed	\$60,000	Completed	5/27/2015
2014	Town of Poultney	York Street Stormwater Management Feasibility Analysis	\$9,000	Completed	6/2/2015
2014	Northwest Regional Planning Commission	Franklin County Regional Hydroseeder Program	\$38,675	Completed	6/5/2015
2014	Friends of the Winooski River	Winooski Watershed Targeted Riparian Restoration	\$23,420	Completed	7/21/2015
2014	Friends of the Mad River	Fayston Road Erosion	\$30,614	Completed	12/16/2015
2014	Vermont Association of Conservation Districts	Statewide Trees for Streams	\$137,461	Completed	1/14/2016
2014	Central Vermont Regional Planning Commission	Waterbury Corridor Plan and Fluvial Erosion Hazards	\$60,960	Completed	2/3/2016
2014	Lamoille County Planning Commission	Brewster River Stream Geomorphic Assessment and Corridor Plan	\$24,240	Completed	2/24/2016
2014	Friends of the Winooski River	Upper Winooski Illicit Discharge Detection and Elimination (IDDE)	\$59,400	Completed	3/7/2016
2014	Friends of Northern Lake Champlain	Missisquoi Basin Stormwater Project Identification and Implementation	\$75,000	Completed	11/2/2016

Workplan Year	Grantee/Contractor	Project Title	Total Amount	Project Status	Date Completed
2014	Missisquoi River Basin Association	Multi-Barrier Cluster Approach to Stewarding Farmland along the Missisquoi River	\$15,000	Discontinued	1/14/2016
2014	Franklin Watershed Committee	Multi-Barrier Cluster Approach to Stewarding Farmland Surrounding Lake Carmi	\$15,000	Discontinued	1/27/2016
2014	Town of Hardwick	South Main Street Stormwater Treatment	\$30,700	Completed	10/18/2017
2014	Vermont River Conservancy	Wild Branch Easements	\$76,660	Completed	3/21/2017
2014	Vermont Agency of Agriculture, Food and Markets	Stewarding Farmland in Missisquoi and St. Albans Bay Basins	\$68,000	Completed	6/30/2016
2015	Missisquoi River Basin Association	Northrop Road at Talcott Road (WB-3) Fairfield Ditch Project	\$32,805	Completed	2/11/2015
2015	Vermont River Conservancy	Hurteau River Corridor Easement, Lamoille River	\$48,220	Completed	4/24/2015
2015	Winooski Natural Resources Conservation District	Winooski Trees for Streams, Spring 2015	\$23,625	Completed	8/5/2015
2015	Vermont River Conservancy	Selawsky River Corridor Easement: Wild Branch	\$11,500	Completed	8/6/2015
2015	Vermont River Conservancy	Selawsky River Corridor Easement: Wild Branch – Phase 2	\$26,540	Completed	10/9/2015
2015	Winooski Natural Resources Conservation District	Equine Manure Management and Composting	\$13,000	Completed	11/3/2015
2015	Town of Fairfield	Shenang Road Erosion Controls	\$30,000	Completed	1/6/2016
2015	City of Burlington	Installation of Pervious Stormwater Sidewalk	\$11,890	Completed	1/14/2016
2015	Lake Iroquois Recreation District	Lake Iroquois Public Beach Area Ecological Landscape Design, Erosion Control and Stormwater Management	\$49,661	Completed	3/7/2016
2015	Vermont Youth Conservation Corps	Implementation of Class IV Roads Erosion Control BMPs	\$75,000	Completed	3/15/2016
2015	University of Vermont Extension	Implementing Precision Agriculture Technology to Improve Application and Minimize Nutrient Loss of Manure	\$75,057	Completed	7/21/2016
2015	Village of Swanton	Marble Mill Park Underground Stormwater Treatment: Final Design and Implementation of Phase 1	\$74,880	Completed	9/19/2016
2015	Lamoille County Conservation District	Hyde Park Stormwater Improvement Project	\$75,000	Completed	11/9/2016
2015	Central Vermont Regional Planning Commission	Northfield Stormwater Site Construction	\$59,842	Completed	11/21/2016
2015	Birds of Vermont Museum	Road Erosion Control and Stream Restoration Project	\$15,000	Completed	5/3/2017

Workplan Year	Grantee/Contractor	Project Title	Total Amount	Project Status	Date Completed
2015	Franklin Watershed Committee	Lake Wise Shoreland BMPs – Lake Carmi, Franklin County	\$37,125	Completed	7/24/2017
2015	Lake Champlain Land Trust	The Upper La Platte River Floodplain and River Restoration Project	\$15,750	Completed	3/14/2017
2015	Missisquoi River Basin Association	Missisquoi Watershed Trees for Streams	\$45,000	Completed	1/19/2018
2015	Poultney-Mettowee Natural Resources Conservation District	Agricultural Water Quality BMP Implementation Project	\$74,010	Completed	3/8/2017
2015	Rutland Natural Resources Conservation District	Stormwater Reduction in the East Creek Watershed	\$75,000	Completed	9/27/2017
2015	Town of Cambridge	Cambridge Trail Bridge Replacement and Floodplain Restoration	\$61,605	Completed	1/25/2018
2015	Vermont Association of Conservation Districts	Portable Skidder Bridge Rental Program	\$75,000	Completed	7/11/2017
2015	Vermont Association of Conservation Districts	Statewide Trees for Streams	\$67,500	Completed	7/11/2017
2015	Village of Jeffersonville	Jeffersonville Easement Acquisition	\$4,677	Completed	1/25/2018
2015	Poultney-Mettowee Natural Resources Conservation District	Agricultural Runoff Mitigation Project on Beaver Brook Tributary	\$75,000	Completed	4/30/2018
2016	Friends of the Winooski River	Hayes Road Sediment Control Project	\$25,000	Completed	12/9/2015
2016	Vermont Land Trust	Kaiser Farm River Corridor Easement Purchase	\$42,098	Completed	7/21/2016
2016	University of Vermont Extension	Developing Functional Nutrient Management Plans with GoCrop Software	\$57,577	Completed	9/7/2016
2016	Winooski Natural Resources Conservation District	Trees for Streams 2016	\$14,300	Completed	9/29/2016
2016	Town of Waitsfield	Waitsfield Town Office Stormwater Mitigation	\$15,000	Completed	11/2/2016
2016	Vermont Land Trust	Rankin Farm River Corridor Easement	\$40,349	Completed	12/28/2016
2016	Central Vermont Regional Planning Commission	Northfield Village Green Stormwater Site	\$110,695	Completed	2/24/2017
2016	University of Vermont Extension	Precision Manure Management in the Jewett Brook Watershed	\$75,000	Completed	4/24/2018
2016	City of Montpelier	One Taylor Street Stormwater Treatment	\$230,000	Completed	5/5/2020
2016	City of Montpelier	Taylor Street Reconstruction Stormwater Treatment	\$250,000	Completed	1/28/2021
2016	University of Vermont Extension/Farmers Watershed Alliance	Reduction of Fall Tillage in Jewett Brook/Stevens Brook Watersheds	\$102,154	Completed	9/15/2018

Workplan Year	Grantee/Contractor	Project Title	Total Amount	Project Status	Date Completed
2016	Vermont Association of Conservation Districts	Statewide Trees for Streams	\$173,250	Completed	4/19/2019
2017	Winooski Natural Resources Conservation District	Trees for Streams Spring 2017	\$18,050	Completed	9/25/2017
2017	Friends of the Mad River	Bioretention at Harwood Union Middle/High School	\$29,040	Completed	2/19/2018
2017	Lamoille County Conservation District	Johnson State College Stormwater Improvements	\$84,500	Discontinued	3/5/2018
2017	Village of Poultney	Poultney York Street Stormwater Treatment	\$420,000	Completed	12/9/2019
2017	City of Barre	City of Barre Vacuum Sweeper	\$260,750	Completed	11/9/2018
2017	City of Barre	City of Barre Vactor Truck	\$14,043	Completed	6/5/2019
2017	City of Barre	Park-Winter Meadow Stormwater Reduction	\$36,978	Discontinued in FY 2020	9/29/2020
2017	University of Vermont Extension	Enhancing the Water Quality Benefit of Cover Crops	\$99,554	Completed	6/3/2019
2017	Lake Iroquois Association	Lake Iroquois Streambed Restoration and Erosion Control	\$34,000	Completed	11/21/2018
2017	Town of Wolcott	Wolcott Town Garage and Fire Station Stormwater Management Improvements	\$15,888	Completed	10/22/2018
2017	Central Vermont Regional Planning Commission	Northfield Water Street Stormwater Structure	\$173,785	Completed	1/21/2020
2018	Northwest Regional Planning Commission	Municipal Roads Grants-in-Aid 2018	\$1,068,150	Completed	6/30/2018
2018	Warren Town	Fuller Hill Road, Warren Stormwater Treatment Implementation	\$164,074	Completed	12/22/2018
2018	Jericho Town	Packard Road, Jericho Stormwater Treatment Implementation	\$56,635	Completed	1/28/2019
2019	Vermont Land Trust	River Corridor Easement Grant- Lewis Creek, Briggs	\$137,377	Completed	4/2/2020
2019	Vermont Land Trust	River Corridor Easement Grant- Lewis Creek, Clifford	\$117,832	Completed	12/2/2019
2019	Vermont Natural Resources Council	Mill Pond Dam Removal	\$100,000	Completed	1/27/2020
2019	Warren Town	Warren School Campus Stormwater Management – Subsurface Chambers	\$22,051	Completed	11/27/2018
2019	Stowe Town	Town of Stowe Grader-Mounted Rollers	\$19,045	Completed	7/19/2018
2019	Vermont Department of Forests Parks and Recreation	Cotton Brook Culvert Upgrades	\$130,800	Completed	5/29/2019

Workplan Year	Grantee/Contractor	Project Title	Total Amount	Project Status	Date Completed
2019	Rutland County Natural Resources Conservation District	Cold River Berm Removal	\$36,400	Completed ¹	8/18/2022
2019	Cambridge Town	Cambridge Elementary Stormwater Project	\$18,589	Completed	3/28/2019
2019	Friends of Northern Lake Champlain	Bouchard Farm Ditch Improvement Project-Rock River	\$47,913	Completed	11/27/2018
2019	Franklin Watershed Committee	Towle neighborhood road culvert stabilization	\$21,293	Discontinued	N/A
2019	The Nature Conservancy	Hathaway Point Agricultural Stormwater Runoff Project	\$22,565	Completed	12/20/2018
2019	Vermont Department of Forests Parks and Recreation	Waterman Brook Culvert to Bridge Project – Johnson	\$26,540	Completed	5/21/2019
2019	Vermont Department of Forests Parks and Recreation	Bombardier Forest Road- Preston Brook logging road remediation	\$60,170	Completed	5/29/2019
2019	Derby Town	Derby, Morgan and Brownington shared Hydroseeder program	\$24,390	Completed	4/10/2019
2019	Friends of Winooski River	Pouliot Stormwater Mitigation – Gully Restoration	\$ 144,000	Completed	2/11/2020
2019	Franklin Watershed Committee	Franklin Town Garage Stormwater Treatment	\$38,000	Completed	2/11/2020
2019	Poultney-Mettowee Natural Resources Conservation District	West Rutland School Stormwater Management	\$ 30,268	Completed	3/13/2020
2019	Otter Creek Natural Resource Conservation District	Elephant Mountain Gully Stabilization	\$ 39,100	Completed	3/13/2020
2019	Rutland Town	Rutland Town Elementary School Green Stormwater Infrastructure	\$ 16,244	Completed	3/13/2020
2019	Natural Resources Conservation Service	Wetland Incentive Payment – Salisbury	\$ 115,700	Completed	9/24/2018
2020	Vermont River Conservancy (VRC)	River Corridor Easement Grant 2019 – Lamoille River	\$70,945	Completed	8/20/2020
2020	Vermont Youth Conservation Corps (VYCC)	2019 Vermont Youth Conservation Corps Watershed Work Crew Project	\$93,316(awarded) \$33,023(leveraged) ²	Completed	3/27/2020

¹ Projects completed in FFY 2022, further described in Appendix C.

² DEC overleverages state funds by identifying block grants as sources of leverage in the annual workplan. Overleveraging (awarded value) accounts for the fact that some projects funded under block grants may not meet the Section 319 leverage criteria. Upon block grant closeout, projects funded under block grant sub-grants that meet the Section 319 leverage criteria are reported with final funded amounts (leveraged value) and outputs/outcomes in GRTS (also summarized in Appendix B and C of this report). As part of this process, DEC tracks the final sum of Section 319 leverage eligible projects closed out under block grants to ensure the total required leverage funding amount is met each year. The value reflected in this table for block grants with project status “completed” is representative of the projects that met the leveraging requirements and were reported as leveraged funds.

Workplan Year	Grantee/Contractor	Project Title	Total Amount	Project Status	Date Completed
2020	Watersheds United Vermont (WUV)	Woody Buffer Block Grant – WUV 2019	\$132,576 (awarded) \$81,084 (leveraged) ²	Completed	12/15/2020
2020	Watersheds United Vermont (WUV)	WUV Clean Water Projects Design and Implementation Grant	\$575,000(awarded) \$183,784(leveraged) ²	Completed ¹	12/31/2021 ³
2020	Vermont Natural Resources Council (NRCC)	NRCC Clean Water Projects Design and Implementation Grant	\$925,000(awarded) \$599,553(leveraged) ²	Completed ¹	12/31/2021 ³
2020	Southern Windsor County Regional Planning Commission (SWCRPC)	SWCRPC Design and Implementation Block Grant	\$1,500,000 (awarded) \$189,014(leveraged) ²	Completed ¹	12/31/2021 ³
2021	Friends of Winooski River	Camp Wihakowi Dam Removal	\$315,305	Completed	10/13/2021
2021	Vermont Land Trust	2020 River Corridor Easement Design and Implementation, Randall	\$98,294	Completed	11/21/2021
2021	Vermont Land Trust	2020 River Corridor Easement Development and Implementation, Fairmont	\$75,300	Completed ¹	12/31/2021
2021	Watersheds United Vermont (WUV)	2021 WUV Clean Water Design and Implementation Block Grant	\$1,000,000(awarded)	Ongoing	
2021	Vermont Natural Resources Council (NRCC)	2021 NRCC Clean Water Design and Implementation Block Grant	\$1,000,000(awarded)	Ongoing	
2021	Southern Windsor County Regional Planning Commission (SWCRPC)	2021 SWCRPC Clean Water Design and Implementation Block Grant	\$1,000,000(awarded)	Ongoing	
2022	Vermont Natural Resources Council	Dunklee Pond Dam Removal - Implementation	\$196,000	Completed ¹	5/28/2022
2022	Vermont Department of Fish and Wildlife	Pelletier Dam Removal MOA 2022	\$180,000	Ongoing	
2022	Vermont Land Trust	2021 River Corridor Easement Implementation: Bathalon & Parent	\$215,725	Ongoing	
2022	Vermont Land Trust	2021 River Corridor Easement Implementation: Ricketson	\$73,697	Ongoing	
2022	Watersheds United Vermont	2020 Woody Buffer Planting Block Grant Year 2- WUV	\$492,946(awarded)	Ongoing	
2022	Natural Resources Conservation Council	2020 Woody Buffer Planting Block Grant Year 2- NRCC	\$269,862(awarded)	Ongoing	

³ These grant agreements have been amended to add funds and extend the term however for the purposes of tracking, leveraged projects under the initial award have been recorded in GRTS.

Appendix C: Outputs and Outcomes of Section 319 Leveraged Projects Completed in FFY 2022

The following projects were completed during the FFY 2022 reporting period. Each completed project displays project photos, project outputs and estimated pollutant reductions, if available. Block Grant projects show more details as they represent multiple individual projects.

Cold River Berm Removal	
Project Type	Floodplain/Stream Restoration Implementation
Watershed(s)	Otter Creek
Partner	Rutland County Natural Resource Conservation District
Funding Amount	\$62,400
Project Output	10 acres of floodplain reconnected 1,600 linear feet of riparian corridor buffer planted or restored
Estimated Total Phosphorus Load Reduction	Unable to estimate – phosphorus accounting methods under development
Estimated Total Suspended Solids	Unable to estimate – sediment accounting methods under development



A berm along side the Cold River prevented the river from accessing its floodplain. Work underway to remove the berm.



After berm removal, the river has space to move beyond its banks, allowing for natural channel evolution and reduction in erosive channelization.

Dunklee Pond Dam Removal

Project Type
Watershed(s)
Partner
Funding Amount
Project Output

Dam Removal Implementation
Otter Creek
Vermont Natural Resource Council
\$196,000
900 linear feet of stream restored
13 stream miles reconnected for stream equilibrium and aquatic organism passage
Unable to estimate – phosphorus accounting methods under development
Unable to estimate – sediment accounting methods under development

Estimated Total Phosphorus Load Reduction

Estimated Total Suspended Solids



Removal of the 75 ft long and 10ft high stone rubble and concrete barrier dam on Tenney Brook.



Free flowing Tenney Brook and restored floodplain following dam removal.

2020 River Corridor Easement Development and Implementation, Fairmont

Project Type	River Corridor Easement
Watershed(s)	Winooski
Partner	Vermont Land Trust
Funding Amount	\$75,300
Project Output	19.57 acres of riparian area conserved
Estimated Total Phosphorus Load Reduction	Unable to estimate - phosphorus accounting methods under development
Estimated Total Suspended Solids	Unable to estimate - sediment accounting methods under development



River Corridor Easement along Molly's Brook, tributary to the Winooski River near Marshfield, VT.

The following block grants were awarded to Watersheds United Vermont (WUV), Natural Resources Conservation Council (NRCC) and Mount Ascutney Regional Commission (MARC, formerly Southern Windsor County Regional Planning Commission (SWCRPC)) to work with a variety of partners across the state to design and implement clean water projects across sectors. Projects listed below include results of installation of stormwater treatment projects funded under these block grants that meet the eligibility for leveraged projects. Not all projects funded by these block grants are reported here. The block grant agreements have been amended to add additional funds and extend the agreement term.

WUV Clean Water Projects Design and Implementation Block Grant (2020)

Project Type	Stormwater Implementation
Watershed(s)	Winooski
Partner	Watersheds United Vermont
Funding Amount	\$183,784
Project Output	7.52 acres of existing impervious surface treated
Estimated Total Phosphorus Load Reduction	12.6 lbs/yr
Estimated Total Suspended Solids	12,587 lbs/yr



Infiltration trench installed along the roadside at Hubbard Park in Montpelier, VT.



Stormwater infiltration basin constructed at the Barre Town Recreation Fields in Barre, VT.

Project Name	Project Description	Project Implementer	Town(s)	Outputs	P Reduction (lbs/yr)	TSS Reduction (lbs/yr)	Cost
Hubbard Park Road Sediment Traps	Three sediment basins, associated rock-lined swales and plunge pools, and a forebay above a manmade pond were constructed to address erosion and reduce the sediment load in a tributary to the North Branch River.	Friends of the Winooski River	Montpelier	4.0 acres of existing impervious surface treated	7.8	7,816.7	\$48,094
Barre Town Recreation Fields Infiltration Basin	Improved conveyance and pre-treatment swale leading to a large infiltration basin designed to mitigate erosion and reduce sediment load in a tributary to the Winooski River.	Friends of the Winooski River	Barre	3.6 acres of existing impervious surface treated	4.8	4,770	\$135,690

NRCC Clean Water Projects Design and Implementation Block Grant (2020)

Project Type	Stormwater Implementation
Watershed(s)	Lamoille
Partner	Natural Resources Conservation Council
Funding Amount	\$599,553
Project Output	15.5 acres of existing impervious surface treated
Estimated Total Phosphorus Load Reduction	46.5 lbs/yr
Estimated Total Suspended Solids	17,044 lbs/yr



Subsurface infiltration system being installed at Copley Park in Morristown, VT.



Bioretention structure installed on Prospect Street in Hyde Park, VT.

Project Name	Project Description	Project Implementer	Town(s)	Outputs	P Reduction (lbs/yr)	TSS reduction (lbs/yr)	Cost
North Main Street Stormwater Treatment	Construction of a subsurface infiltration stormwater treatment system for a 31-acre mixed residential and commercial drainage area in Hardwick, VT.	Caledonia County Natural Resource Conservation District	Hardwick	9.3 acres of existing impervious surfaces treated	31.5	11,725.8	\$439,845
Copley Park Stormwater Subsurface Infiltration System	Implementation of a subsurface chamber system under existing greenspace in park in Morristown, VT.	Lamoille County Natural Resource Conservation District	Morristown	5.7 acres of existing impervious surfaces treated	14.1	4,748.8	\$113,640
Hyde Park Prospect St Bioretention Project	Installation of a bioretention structure to treat stormwater as part of a larger road redevelopment project in Hyde Park, VT.	Lamoille County Natural Resource Conservation District	Hyde Park	0.4 acres of existing impervious surfaces treated	0.9	569.1	\$46,069

SWCRPC Clean Water Projects Design and Implementation Block Grant (2020)

Project Type	Stormwater Implementation
Watershed(s)	Otter Creek, Missisquoi
Partner	Mount Ascutney Regional Commission
Funding Amount	\$189,014
Project Output	5.9 acres of existing impervious surface treated
Estimated Total Phosphorus Load Reduction	5.4 lbs/yr
Estimated Total Suspended Solids	2,156 lbs/yr



Bioretention structure installed to capture, treat, and infiltrate stormwater in Pittsford, VT.



Subsurface stormwater infiltration system installed below the parking area at Highgate Elementary School.

Project Name	Project Description	Project Implementer	Town(s)	Outputs	P Reduction (lbs/yr)	TSS reduction (lbs/yr)	Cost
Pittsford Fire Station Bioretention	Implementation of a bioretention system at Mechanic and Arch Streets to capture, treat, and infiltrate stormwater runoff from the drainage area that includes Lothrop School, associated parking lots, portions of Pleasant Street, and the southern half of the fire station property.	Rutland Regional Planning Commission	Pittsford	3.7 acres of existing impervious surfaces treated	1.3	1,299	\$54,280
Highgate Elementary School Stormwater Chambers	Installation of three subsurface stormwater infiltration chambers to capture and treat stormwater originating in the parking area and other impervious surfaces around the Highgate Elementary school campus.	Northwest Regional Planning Commission	Highgate	2.2 acres of existing impervious surfaces treated	4.1	856	\$134,734