STATE FISCAL YEAR 2023 ANNUAL REPORT ON FINANCIAL AND TECHNICAL ASSISTANCE FOR AGRICULTURAL WATER QUALITY

Prepared for the Vermont General Assembly in Accordance with 6 V.S.A. § 4825

Submitted by Vermont Agency of Agriculture, Food and Markets
January 12, 2024



Drilled cover crop (above) in the Passumpsic watershed and rotational grazing management (below) in the Otter Creek watershed supported through the Farm Agronomic Practice (FAP) Program.

To: Vermont General Assembly

The Vermont Agency of Agriculture, Food & Markets (VAAFM) presents this annual report to the General Assembly of Vermont regarding activities in support of the objectives of Subchapter 3: Water Quality; Financial And Technical Assistance of 6 V.SA. Chapter 215, including use of State, federal, and private funds: (1) undertaken during the preceding fiscal year; (2) in progress during the current fiscal year; (3) projected for the following fiscal year; and (4) remaining to be undertaken after the following fiscal year (6 V.S.A. § 4825).

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COMPANION REPORT

Water Quality Division – Interactive Data Report

The Interactive Data Report illustrates the data and outcomes of VAAFM's technical and financial assistance programs described in this narrative report. Readers of this report are encouraged to reference and utilize the Interactive Data Report in tandem. The Interactive Data Report can be accessed via the link and infographic in the top right corner of each page. The Interactive Data Report includes various pages illustrating program investments, conservation practice implementation, regulatory and technical assistance efforts, estimated phosphorus reductions for practices occurring in the Lake Champlain and Lake Memphremagog watersheds, and more results from VAAFM Water Quality Division programs.

COMPLEMENTARY REPORTS

Vermont Clean Water Initiative 2024 Performance Report

Per Act 64 of 2015 – The Vermont Clean Water Act, VAAFM annually reports clean water efforts to the Vermont Agency of Natural Resources (ANR) Department of Environmental Conservation (DEC) Water Investment Division (WID), to account for the financial investments and progress being made towards meeting the State's clean water goals. The <u>Vermont Clean Water Initiative 2024 Performance Report includes both the Vermont Clean Water Investment Report as well as the Lake Champlain Basin Total Maximum Daily Load (TMDL) Progress Report and summarizes investments and progress made towards State water quality goals in all sectors.</u>

2024 Report on Federal Funding Related to Water Quality Improvement Efforts in Vermont

This report fulfills the requirement contained in 10 V.S.A. §1389a(d)(3) and provides a summary of available federal funding related to, or for, water quality improvement efforts in the State. VAAFM annually reports the available federal funding related to, or for, water quality improvement efforts to the Vermont Agency of Natural Resources (ANR) Department of Environmental Conservation (DEC) Water Investment Division (WID) who compiles this report on behalf of the Vermont Agency of Administration.

Introduction

The Vermont Agency of Agriculture, Food and Markets (VAAFM) Water Quality Division provides financial and technical assistance to Vermont farmers in support of their construction and implementation of on-farm improvements designed to abate nonpoint source agricultural waste discharges into the waters of the State of Vermont, consistent with the goals of the federal Water Pollution Control Act, the State Water Quality Standards, and Vermont's Required Agricultural Practices Regulations (RAPs). In support of this charge, VAAFM currently administers ten technical and financial assistance programs. These programs include the Agricultural Water Quality Initiative Program (AgCWIP), the Best Management Practices (BMP) Program, the Conservation Reserve Enhancement Program (CREP), the Capital Equipment Assistance Program (CEAP), the Farm Agronomic Practices (FAP) Program, the Grassed Waterway and Filter Strip (GWFS) Program, the Pasture and Surface Water Fencing (PSWF) Program, the Vermont Pay for Performance (VPFP) Program, the Vermont Farmer Ecosystem Stewardship (VFES) Program, and historically the Vermont Phosphorus Innovation Challenge (VPIC). Table 1 below summarizes funding sources and investments across all Water Quality Division programs from State fiscal year (FY) 2016 – FY 2023.

Program accomplishments are further detailed and summarized in this narrative report, with interactive graphics related to program implementation and investment available through the <u>Water Quality Division – Interactive Data Report</u>.

Table 1. Total VAAFM Funding Investment and Source by Program from FY 2016-2023

VAAFM Program	General Fund	Capital Fund	Clean Water Fund	Special Fund	Federal Funding*	State Total	Federal Match	Local Match	Vermont Housing & Conservation Board Match	Match Total	Grand Total
AGCWIP	\$782,887	\$88,717	\$15,093,927	\$170,585	\$849,497	\$16,985,612	\$198,729	\$10,000	\$38,736	\$247,465	\$17,233,077
BMP	\$0	\$17,834,886	\$2,124,447	\$0	\$3,446,715	\$23,406,049	\$20,023,917	\$6,988,930	\$580,488	\$27,593,335	\$50,999,384
CEAP	\$0	\$5,117,959	\$0	\$0	\$1,484,347	\$6,602,306	\$142,050	\$2,328,585	\$665,297	\$3,135,932	\$9,738,238
CREP	\$0	\$143,958	\$0	\$0	\$29,936	\$173,894	\$1,756,041	\$131,897	\$0	\$1,887,938	\$2,061,832
FAP	\$1,551,824	\$0	\$21,000	\$0	\$2,361,427	\$3,934,251	\$0	\$0	\$0	\$0	\$3,934,251
GWFS	\$0	\$0	\$64,066	\$0	\$0	\$64,066	\$0	\$33,527	\$0	\$33,527	\$97,592
PSWF	\$0	\$672,719	\$405,315	\$0	\$0	\$1,078,034	\$104,447	\$180,037	\$13,000	\$297,484	\$1,375,518
VFESP	\$150,000	\$0	\$0	\$0	\$0	\$150,000	\$0	\$0	\$0	\$0	\$150,000
VPFP	\$0	\$0	\$0	\$0	\$2,879,643	\$2,879,643	\$0	\$0	\$0	\$0	\$2,879,643
VPIC	\$0	\$832,700	\$233,860	\$0	\$0	\$1,066,560	\$0	\$224,473	\$0	\$224,473	\$1,291,034
WQ Grants	\$1,427,000	\$0	\$0	\$0	\$0	\$1,427,000	\$0	\$0	\$0	\$0	\$1,427,000
Total	\$3,911,710	\$24,690,938	\$17,942,616	\$170,585	\$11,051,565	\$57,767,414	\$22,225,183	\$9,897,449	\$1,297,521	\$33,420,154	\$91,187,568
Percent of Total	4%	27%	20%	0%	12%	63%	24%	11%	1%	37%	100%

^{*}Federal Funding Programs include Lake Champlain Basin Program, United States Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS) Vermont State Conservation Innovation Grant, and USDA NRCS Regional Conservation Partnership Program (RCPP) Alternative Funding Arrangement, and American Rescue Plan Act Funding.

Highlights from FY 2023

- Farm Visits: VAAFM staff completed more than 800 on-site technical assistance and regulatory visits in FY 2023. These visits are an essential component of ensuring compliance with the Required Agricultural Practices and supporting farmers to implement effective conservation practices that result in improved water quality.
- **Investment:** \$15.5 million was invested in agricultural water quality through VAAFM's technical and financial assistance programs, leveraging an additional \$1.9 million in federal match and almost \$1 million in local farm match in FY 2023.
- **Results:** FY 2023 regulatory inspections and investments through technical and financial assistance programs resulted in 50,000 acres of conservation practices implemented, more than 3,700 acres of farm production area facilities inspected, and an estimated 24,000 kg of reduced phosphorus loading in the Lake Champlain and Lake Memphremagog Basins.
- Partnerships: In addition to State investments and cost-share programs, partner
 organizations and farmers play a crucial role in agricultural water quality improvements.
 Partners providing education and technical assistance to Vermont farmers through the
 Agricultural Clean Water Initiative Program (AgCWIP) conducted more than 600 on-site
 visits to farms in FY 2023.
- Farmer Investment: Farmers contributed almost \$1 million as match toward state funded farm water quality improvements in FY 2023. Farmer funded conservation practices account for 13% of the total estimated phosphorus reductions occurring as a result of VAAFM programs. This information is collected through technical assistance and survey services provided to farms by agricultural service providers funded through AgCWIP.

For more information about the tracking and accounting of agricultural conservation practices for nutrient reductions please reference the <u>Standard Operating Procedures for Tracking & Accounting of Agricultural Conservation Practices</u> which was developed in collaboration with the Agency of Natural Resources (ANR) Department of Environmental Conservation (DEC).

The following sections provide a narrative summary intended to complement the <u>Water Quality</u> <u>Division – Interactive Data Report</u> and summarize ten VAAFM Water Quality programs technical and financial assistance FY 2023 activities, FY 2024 activities in progress, and projections for FY 2025 and beyond.

Agricultural Clean Water Initiative Program

The Agricultural Clean Water Initiative program (AgCWIP) provides funding for partner organizations, businesses, and individuals who work with Vermont farms to support the improvement of water quality. Local and regional partners play a vital role in the education, outreach, implementation and verification of conservation practices that reduce nutrient runoff from agricultural operations. The AgCWIP program supports activities in three main categories: Education and Outreach, Technical Assistance, and Organizational Capacity Development. This program also supports a variety of mapping and analytical projects, research, and sampling efforts.

For more information about the program, visit our webpage: <u>agriculture.vermont.gov/agricultural-clean-water-initiative-program</u>

AGCWIP FY 2023

Through AgCWIP funding opportunities, a total of \$6.4 million was invested in FY 2023. Partner organizations recently supported through AgCWIP funding awards include but are not limited to; Natural Resources Conservation Council, UVM Extension, Vermont Association of Conservation Districts, TRC Environmental Corporation, Stone Environmental, Friends of Northern Lake Champlain, and the Northeast Organic Farming Association of VT.

Services supported through the AgCWIP program include, but are not limited to; farm support for grant applications and reporting, project management for farms (case managers, coordination, project oversight), Nutrient Management Planning and implementation, project consultation and design, precision agriculture technical assistance, equipment rental programs, sampling services (water, soil, manure), conservation practice surveys, workshops, educational materials, farmer participation stipends and more. Grants and contracts awarded under this program follow a Results Based Accountability framework with anticipated outcomes and outputs defined in each grant agreement and reported on a regular basis. Outcomes such as technical assistance visits and educational events supported through the AgCWIP program are included in the Water Quality Division – Interactive Data Report.

AGCWIP FY 2024

In November 2023, an additional AgCWIP funding opportunity was released for businesses, organizations, and individuals who work with farms across the state of Vermont to support the improvement of water quality and environmental stewardship. Applications were due December 20, 2023. VAAFM anticipates awarding approximately \$7.5 million through this funding opportunity.

AGCWIP FY 2025 & BEYOND

VAAFM anticipates the continuation of the AgCWIP program to provide funding opportunities and grant awards in support of the crucial work conducted by partner organizations, businesses, and individuals working with Vermont farmers. As the AgCWIP program becomes a cornerstone to supporting staff and partners providing foundational services to farmers for water quality efforts, VAAFM anticipates enhancing coordination with regional, state, and local partners to maximize funds available.

AGCWIP PROJECT HIGHLIGHT

The Natural Resource Conservation Council (NRCC) and 14-member local conservation districts are a cornerstone partner in achieving Vermont's water quality goals. In FY23, NRCC was awarded a 4-year, \$2.3 million grant to support districts statewide to provide outreach, education, and technical assistance to farmers, landowners, and the public to promote the adoption and implementation of conservation practices on Vermont's agricultural land.

Windham County Natural Resources Conservation District (WCNRCD) is one of the districts supported by the AgCWIP-NRCC Grant. Cory Ross, WRNRCD District Manager, and Heather Blunk, WCNRCD's Agricultural Resource Specialist, have expanded capacity, organizational reach, and engagement with the agricultural community in Windham County through local events, agricultural services such as soil sampling, and direct one-to-one assistance for farmers in their region. WNRCD wrote, "All of these connections and successes were due to the support that the Ag-CWIP grant provided, which allowed Heather and other staff members to educate themselves on prevalent farming issues, reach out to local producers to hear what they needed from the district, and to be creative with workshops that are informative and useful to the community."

The outreach, education, and technical assistance provided by the Windham County NRCD is mirrored throughout the State of Vermont by conservation districts serving their local producers and community members. AgCWIP provides financial support to conservation districts to deliver these services to farms and to leverage additional funding resources to accomplish Vermont's water quality, soil health, and environmental goals.



Figure 1. Windham County Natural Resources Conservation District on-farm workshop at High Meadows Farm in Putney, VT. (Photo Credit: Windham County NRCD).

Best Management Practice Program

The Best Management Practice (BMP) Program is a voluntary program which assists farmers in implementing on-farm improvements designed to protect and improve water quality by abating the discharge of agricultural waste into Vermont waters. The BMP Program provides State technical and financial assistance to identify farmstead water quality concerns, and to assist farmers in the implementation of structural improvements which effectively reduce or eliminate the risk of agricultural wastes contaminating surface and ground water. Technical assistance, which includes a combination of agricultural, civil, and environmental engineering consultation and design, is available on a priority basis at no cost to the farmer. Financial assistance is available to assist Vermont farms with the construction costs of the designed practice(s).

To account for nutrient runoff results from farm production areas, phosphorus reductions are modeled for compliant production areas rather than for the individual best management practices (BMPs) installed within a production area. BMPs installed through the BMP Program are typically implemented within a farm's production area. BMP implementation may be correlated with production area compliance. BMPs are essential to improve farm infrastructure and prevent discharges.

For more information about the BMP Program, visit: agriculture.vermont.gov/bmp.

BMP FY 2023

In State FY 2023, the BMP program invested nearly \$3.6 million in clean water projects on 48 Vermont farm operations. State investment through the BMP program leveraged \$2 million in federal and farmer match.

Beginning in FY 2023, American Rescue Plan Act (ARPA) funds have been utilized in lieu of Capital Bill funding for the BMP program budget. Launching the use of these federal funds required an investment of time and council in order to work through ARPA guidance and eligibility requirements, and to incorporate them into the BMP Program application, granting, and reporting process. Due to these changes, execution of FY 2023 BMP grant awards was delayed until program staff completed their diligent and thorough work to ensure the satisfaction of ARPA program requirements.

Figure 2 below shows the number and types of conservation practices installed in FY 2023 with technical and financial support from the BMP Program. In total 106 practices were installed, and 82 practices were planned, with the most frequent practices being Heavy Use Area Protection, Waste Storage Facility, and Diversion.

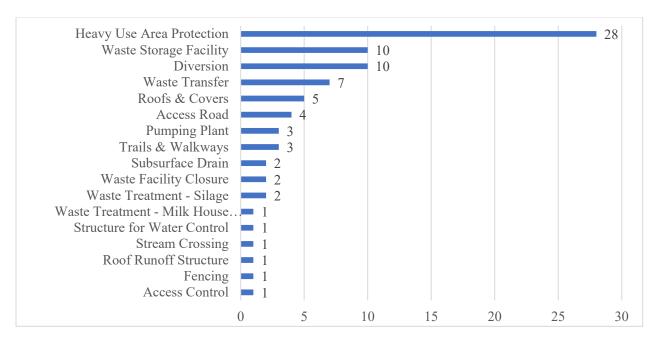


Figure 2. Types and number of BMP Practices Planned and Awarded Funding in FY 2023

BMP FY 2024

There is strong demand for BMP Program assistance and funds. Requests for funding show farmers are willing to adopt farmstead conservation practices to improve water quality, despite the economic challenges many farmers have faced in recent years. Financial assistance is necessary to enable the timely adoption and implementation of these infrastructure projects that improve and protect water quality.

As of December 10, 2023, in FY 2024, over \$3.2 million of State funding has been awarded in 34 BMP program grants to farmers. These grants will support practices such as Heavy Use Area Protection, Diversion, Waste Storage Facilities, and Waste Transfers. Funds will continue to be awarded throughout the remainder of FY 2024 for spring, summer and fall implementation in 2024 and beyond.

BMP FY 2025 & BEYOND

As farmers continue to face volatile milk and commodity prices, tight profit margins, and continued impacts from the COVID-19 pandemic, technical and financial assistance remains necessary for implementation of structural conservation practices.

Based on program trends from FY 2016-2023, the BMP program anticipates fully utilizing funding approved by the 2022 General Assembly and the Clean Water Board Final Proposed SFY 2025 Clean Water Budget. Whether the demand will exceed available funding remains subject to factors like volatile milk and commodity prices, upcoming changes in the new federal Farm Bill, and farmers' ability to pay the 10% minimum cost share requirement for the BMP program.

BMP PROJECT HIGHLIGHT

Severy Farm LLC is a small, 100% grassfed and organic dairy in Cornwall, VT owned and operated by Nate and Kerianne Severy. Joseph Severy—Nate's father—first established the dairy farm in 1975 and farmed it until transferring ownership to his son and daughter-in-law in 2021. At the time of farm transfer, manure and bedding were stacked in a field, and milkhouse waste was being treated by an aging in-ground treatment system which no longer functioned as designed.

Partially in response to recommendations from a VAAFM water quality inspector's visit, Nate decided to update their waste management infrastructure to improve operational efficiency and protect Vermont's waterbodies, especially the Cornwall Swamp Management Area which directly abuts the farm.

With the support of technical assistance and two grants through VAAFM's Best Management Practice (BMP) program totaling over \$146,000 from 2021-2022, the Severy's did a major revamp of their waste collection and management systems. They replaced an old and damaged concrete barnyard, created a gravel stack pad to store solid manure, and built a reception pit with a pump system to collect milkhouse waste and liquid manure from an adjacent holding area. Liquid waste and runoff generated from each of these components is now fully collected in a clay-lined earthen manure pit, and a new access road was added to enable proper management of the pit. These updates not only support the Severy family in more securely capturing their waste and meeting their water quality goals, they have proven to be a major labor-saving efficiency for the farm.



Figure 3. Before (left) and after (right) installation of a new waste storage facility and adjacent solid manure stack site.

Conservation Reserve Enhancement Program

The Conservation Reserve Enhancement Program (CREP) is part of the Conservation Reserve Program (CRP), the country's largest private-land conservation program. CREP is administered via a partnership between the State of Vermont and the United States Department of Agriculture (USDA) Farm Service Agency (FSA) and the Natural Resources Conservation Service (NRCS). The program compensates agricultural landowners who remove environmentally sensitive riparian land from agricultural production

and convert it to forested buffers, filter strips, or grassed waterways. Landowners are provided with an advance Signing Incentive Payment (SIP) for participating in CREP and are paid an annual rental rate for the 15-year agreement period. Federal funding provides 90% of the implementation costs and, in most instances, the remaining 10% of costs are supported by the U.S. Fish and Wildlife Service Partners for Fish and Wildlife (PFW). VAAFM provides technical assistance for the program along with an additional State SIP grant after the producer or landowner commits to a contract with USDA to leverage federal dollars and ensure the program is feasible for agricultural landowners.

For more information about CREP visit: agriculture.vermont.gov/crep.

CREP FY 2023

In State FY 2023, 32 acres of riparian buffers were installed on agricultural lands through 5 new CREP projects. Riparian buffers have long term benefits for water quality and are an integral part of meeting State water quality goals. Additionally, CREP planners worked with 2 farmers currently enrolled in CREP to enhance 18 acres of riparian buffer for re-enrollment in the program. In FY 2023, 120 site visits were completed by CREP Conservation Planners to support new and existing projects.

CREP FY 2024

The CREP program is highly impacted by the federal Farm Bill policy. The current 2018 Farm Bill provided program authorization for five years through September 30, 2023. The Further Continuing Appropriations and Other Extensions Act 2024 allows authorized programs to continue through September 30, 2024. Luckily, State of Vermont technical assistance staff are not impacted as a result of this situation and can continue to complete field work related to project planning and design as well as support farmers who have existing CREP contracts with implementation.

As of December 1, the State has received 9 requests for State SIP grants, encompassing 40 acres of planned riparian buffers. Additionally, 23 acres are planned to be enhanced through program reenrollments. CREP Planners continue to work with existing contract holders to steward their existing buffers as well as coordinate with program partners to deliver the program.

CREP FY 2025 & BEYOND

Looking forward to FY 2025 there are at least 15 planned projects waiting for FSA approval for enrollment in the program. As CREP riparian buffer projects are seasonal implementation projects, planning is often completed 1-2 years in advance of implementation. In FY 2025 and beyond, VAAFM anticipates the continuation of this program as it serves as an important conservation practice in meeting Vermont's water quality goals.

CREP PROJECT HIGHLIGHT

Pat and Karen O'Donnell enrolled 31.54 acres of land in CREP in 2020 as part of a whole farm conservation easement project. The buffers along the Missisquoi River and Taft Brook in Westfield were planted in the spring 2021 and 2022. The farmer with the help of some hired labor planted the entire buffer over two seasons. This 50-foot-wide buffer will provide protection to water quality and wildlife habitat in perpetuity thanks to a Vermont Land Trust and DEC River Corridor Easement. Invasive species in the buffer area were also controlled to prevent them from spreading further downstream. U.S. Fish and Wildlife Service has also donated staff time to follow up stewardship work to ensure the success of the planting. In July of 2023, the buffer demonstrated resiliency and benefits that riparian floodplain habitat can provide during significant rain and flooding events.



Figure 4. Above, a view of the new riparian buffer from across the river.





Figure 5. Before (left) and after (right) planting of the trees and shrubs that will mature and become a buffer between the agricultural land and river.

Capital Equipment Assistance Program

The Capital Equipment Assistance Program (CEAP) offers financial assistance to farms, nonprofit organizations, and custom applicators in Vermont. CEAP assists in the purchase of innovative equipment or technology that will aid in the reduction of surface runoff of agricultural wastes to State waters, improve water quality of State waters, reduce odors from manure application, separate phosphorus from manure, decrease greenhouse gas emissions, and reduce costs to farmers when they apply manure.

For more information about CEAP visit: agriculture.vermont.gov/ceap.

CEAP FY 2023

In FY 2023 VAAFM invested \$1.5 million dollars and awarded 42 grants to Vermont farmers, organizations, and custom applicators to assist with purchasing conservation equipment. High demand continues for the CEAP program as farmers seek assistance to purchase equipment for increased conservation practice adoption and implementation. At time of report, 90% of FY2023 projects have been completed to support equipment purchases under CEAP grant agreements, leveraging over \$300,000 in farmer expenditure and over \$100,000 in additional support from the Vermont Housing and Conservation Board.

Beginning in FY 2023, American Rescue Plan Act (ARPA) funds have been utilized in lieu of Capital Bill funding for the CEAP program budget.

With the equipment acquired through CEAP, farmers, nonprofits, and custom applicators implemented best management practices and improved nutrient management on more than 15,000 acres of agricultural land in FY 2023. Since FY 2018, program grantees have reported more than 118,000 acres of conservation practice implementation with the equipment cost-shared through the program.

CEAP FY 2024

In September of 2023, a CEAP funding opportunity for 90% cost share on conservation equipment was made available to Vermont farmers, custom operators, and nonprofit organizations. This funding round included a variety of eligible equipment categories with specific funding maximums based on each category correlated to water quality impact as well as relative cost of equipment.

Preliminary grant awards will be offered in January of 2024 for at least \$1.5 Million in State funding to be awarded for innovative equipment acquisition enabling conservation practice implementation on Vermont farms. The CEAP program continues to be competitive with 93 applications received through the Fall 2023 funding round. Applicants for FY 2024 CEAP funds represented a wide range of farm sizes from all over the state.

The total request for funding, which considers the relative equipment funding rate or cap, was about \$3.3 million. This request represents over 35% increase in demand for this program – and continues a trend of significant increases in demand each year the program is offered. Most applications received (over 40%) were for Manure Management equipment, followed by Conservation Tillage equipment (20%).

CEAP PROJECT HIGHLIGHT

Burnt Rock Farm in Huntington, VT, is a certified organic produce farm with two thirds of its products reaching Vermonters. The farm consists of 25 acres of annual vegetables, and 10 acres of full season cover crops adjacent to and on terraces above the Huntington River, a part of the Winooski River watershed.

Funded by the 2022 CEAP program, the farm was able to purchase a Kuhn MDS 18.2 3-point hitch fertilizer applicator. This precision fertilizer spreader has hydraulic spinner shutoffs and has the ability to only spread fertilizer from one spinner at a time.

Prior to the purchase of the Kuhn MDS, the farm was using an older Vicon pendulum spreader, spreading approximately 20 ft to either side of the tractor and requiring a nearly full overlap of passes to get enough coverage across the field.

The Kuhn MDS fertilizer spreader fits perfectly into the farm operation. Owner Justin Rich says that the equipment works exactly how he hoped it would and that it's a great machine that he wouldn't have been able to purchase on his own. With the use of the Kuhn MDS spreader, the farm has been able to reduce surface runoff, while also reducing the amount of money used to purchase fertilizers. With the Kuhn MDS spreader along with the GPS guidance that Justin uses, he has been able to improve the accuracy of his spread of fertilizer without a drop in crop yield.

"This is one of the best types of grant programs," Justin says. "The program asks existing operations what they need... the solutions are out there."



Figure 6. Fertilizer applicator utilized for precise and accurate placement of fertilizer to support crop growth while minimizing overapplication and reducing runoff to nearby waters.

CEAP FY 2025 & BEYOND

VAAFM anticipates the demand for this program will continue at or above its current capacity into FY 2025 and beyond. The substantial response VAAFM received through all prior years of CEAP indicates a high and sustained demand for this program. With low market prices for milk and extremely tight profit margins across the Vermont farming industry, many other operational costs on farms are prioritized before investments in new or innovative conservation equipment. Equipment is often identified as a major barrier to implementation of conservation practices or improving existing conservation efforts. The CEAP program incentivizes Vermont farmers to voluntarily invest in innovative equipment and technology upgrades that are beneficial for water quality, furthering the reduction of nonpoint source agricultural pollution.

Farm Agronomic Practice Program

The FAP Program incentivizes agronomic practices through financial assistance for on-farm conservation field practices that improve soil quality, reduce erosion, and improve water quality. Financial assistance is also available for educational and instructional activities that increase farmer understanding of the impact of agricultural waste discharges as well as any federal or state water quality regulations and requirements.

Farm agronomic practices are a critical component of the successful implementation of the various TMDLs for Vermont's waters. Between State FY 2016 and FY 2023, agronomic practice implementation has accounted for the vast majority of phosphorus reductions in Vermont. Grant funding through the FAP program is provided on a per acre payment rate, based on relative costs of implementation. FAP practice payment rates are detailed in Table 2 below. In developing FAP payment rates, VAAFM seeks to pay slightly below USDA NRCS payment rates, which are developed based on regional cost estimates, and thus promote and leverage federal funding to improve water quality in Vermont. For more information about the FAP Program visit: agriculture.vermont.gov/fap.

Table 2. FAP Agronomic Practice, Payment Rates and Practice Description

Agronomic Practice	Payment Rate	Practice Description
Cover Cropping	\$30 per acre	Planting of non-primary crops on annual cropland to
	(broadcast or	provide effective soil coverage during the non-growing
	inter-seeded) OR	season.
	\$45 per acre	
	(drilled or	
	otherwise	
	incorporated)	
Crop to Hay	\$35 per acre	Rotation of annual crop land into perennial forages for
	\$45 per acre with	pasture, hay or biomass production
	a nurse crop	

Rotational Grazing	\$30 per acre	Rotation of ruminant livestock for optimal forage production while ensuring adequate residual vegetation and livestock exclusion from surface water.
No Till	\$15 per acre	Planting of annual crops in a no-till system with no full-width soil disturbance, ensuring soil surface cover.
No-Till Pasture and Hayland Renovation	\$30 per acre	Use of no-till equipment or frost seeding to improve and re-seed pastures and/or hay to provide full soil coverage
Manure Injection	\$25 per acre	Subsurface manure injection below soil surface with a single implement. Nutrient application through this method must be within agronomic recommendations and meet Required Agricultural Practices.

FAP FY 2023

In FY 2023, the FAP program invested \$1.1 million to support the adoption and implementation of farm agronomic practices on 223 individual farm operations. Funds invested resulted in over 30,000 acres of agronomic practices installed across Vermont. The FAP program continues to be one of the top contributors to estimated phosphorus reductions accounted for both in the agricultural sector and statewide. Projects that occur within the Lake Champlain Basin are supported through Lake Champlain Basin Program funding, while projects that occur outside of the Lake Champlain Basin are funded through other State funding sources such as the General Fund.

FAP FY 2024

As of December 1, 2022, the FAP program has invested over \$1.6 million in FY 2024 to support the adoption and implementation of farm agronomic practices on 265 individual farm operations. This is 20% more farms than FY 2023 and represents a significant number of farms who have never worked with the FAP program before. This also represents the highest demand ever seen for FAP, which has grown steadily since the conception of the program.

Currently, program staff are reviewing payment requests and practice verifications associated with Fall 2023 rotational grazing and cover crop. Pending available funding, additional investments will likely be made to support 2024 spring and early summer practices on farm fields across Vermont.

Beginning in FY 2024, American Rescue Plan Act (ARPA) funds have been utilized to support requests for assistance outside of the Lake Champlain Basin. Projects that occur within the Lake Champlain Basin continue to be primarily supported through the Lake Champlain Basin Program fund.

FAP PROJECT HIGHLIGHT

At Fairview Farm in East Dover, VT, David Rosso and his wife Lindsey Brown-Rosso raise their children alongside cows, chickens, bees and pigs on their family land that the couple is slowly working to restore. When they first brought cows to the farm, David and Lindsey knew very little about grazing and quickly saw their fields become trampled and overgrazed. After they first signed up for the Farm Agronomic Practices (FAP) program for rotational grazing payments in 2022, the Vermont Agency of Agriculture, Food and Markets connected them with a service provider who provided them with personalized rotational grazing advice at no cost.

Having started implementing more intentional rotational grazing in large part because of the FAP program, David is thrilled at the improvement he has seen in just two years. His \$3,600.00 FAP grant in FY2023 will support up to 60 acres of rotational grazing and up to 60 acres of no till seeding to continue improving his pastures and hayland with new seedings. Now, as one of the youngest members of the Windham Farm Bureau, David is trying to spread the word to other farmers in his county about the resources available to them in Vermont.

"It is really evident that all the state employees I have worked with want you to succeed," he says. "They care about agriculture and the type of farming you do.

I really think more farms should utilize these programs."



Figure 7. David Rosso discusses changes to his pasture management while his cows rotationally graze dense local forages in the background.

FAP FY 2025 & BEYOND

VAAFM anticipates the continuation of this program at or above its current capacity into FY 2025 and beyond. Exploring trends through the <u>Interactive Data Report</u> reflects the increased implementation of agronomic practices and increased participation through the State's FAP program over the last eight years. Requests for assistance have increased exponentially in the last several years as outreach, education, funding, and resources for implementing these practices are leading to widespread adoption.

This increase can also be attributed to Lake Champlain Basin Program Lake Champlain Phosphorus Total Maximum Daily Load (TMDL) funding that has been secured through agreements with the Department of Environmental Conservation since FY 2018. The EPA funds have made a significant contribution to the expansion and availability of the FAP program for farmers in the Lake Champlain Basin, resulting in increased implementation statewide from 13,803 acres in FY 2019 to more than 27,000 acres accounted for so far in FY 2023. EPA funding has accounted for well over half of overall funding for the FAP program payments to farmers since FY 2016. Additional EPA funds awarded to VAAFM in FY 2022 will support the FAP program through FY 2026.

Farmer participation in NRCS EQIP practices may also influence participation in the VAAFM FAP program. NRCS EQIP contracts fund these practices at a higher rate, but often only for three years. Some level of decreased FAP program demand is anticipated in FY 2024 when a new federal Farm Bill is expected to be authorized and more farms become (re-) eligible to request practice reimbursement under NRCS programs. However, it remains to be seen how this effect will interact with the historic increased trend of FAP demand and enrollment.

Grassed Waterway and Filter Strip Program

The Grassed Waterway and Filter Strip (GWFS) Program provides technical and financial assistance to Vermont farmers for in-field agronomic best practices to address critical source areas, erosion, and surface runoff. This program provides compensation to farmers via incentive payments for participation and cost-share to cover 90% of the installation costs for establishing perennially vegetated grassed waterways, filter strips, pasture & hay plantings, and associated infrastructure, if necessary, on agricultural cropland adjacent to surface waters and ditches (6 V.S.A. § 4831). In contrast to similar existing financial assistance programs such as CREP that support these practices, the benefit of this program is that all the practices implemented under GWFS can be harvested. For more information about the GWFS Program visit: agriculture.vermont.gov/gwfs.

GWFS FY 2023

In FY 2023, no State funding was awarded under this program to implement perennial plantings to replace and/or to reduce/capture erosion and runoff from annually cropped agricultural fields.

GWFS Project Highlight

The Grassed Waterway Filter Strip (GWFS) program is gearing up for a revamp! Next year the program will see the roll out of some changes to help improve the administrative efficiency and the reach of the program. The program will primarily focus on supporting land managers in implementing high quality, harvestable filter strips along surface water.

To help inform and support GWFS program improvements, VAAFM staff, Ellen Friedrich, worked with a group of 9 undergraduate students at the University of Vermont (UVM) enrolled in Environmental Problem-Solving and Impact Assessment (NR 4060) on a semester-long project focused on agricultural filter strips and the GWFS program. UVM students interviewed Vermont farmers on their perspectives around filter strips, collected soil samples from several existing agricultural filter strips, and helped to develop education and outreach materials for the GWFS program.

Ellen spoke to the fruitfulness of this collaboration between UVM, VAAFM, and Vermont farmers, "It was a pleasure to work with such a bright and enthusiastic group of UVM students on this project. Most of the students had limited prior experience with agriculture, so it was wonderful to witness their growth as they grappled with agricultural and environmental issues through their background research and conversations with farmers. I'm extremely grateful for their help, and for all the farmers who have generously shared their time and offered insights over the course of this project."

The VAAFM water quality team is looking forward to putting some of the students' and farmers' suggestions and materials into action with the GWFS program next year!





Figure 8. (Left) University of Vermont undergraduate students take soil samples from existing agricultural buffers to evaluate nutrient content and other soil parameters. (Right) Students gather to learn about Vermont agricultural buffers and discuss their research project.

GWFS FY 2024

At the time of this report writing, there are no projects under development in this program. VAAFM plans to revise and revamp the program, including modified branding, outreach, and educational materials to make the program more relevant for the agricultural community.

GWFS FY 2025 & BEYOND

The GWFS program has been available for Vermont farmers for five years. Grassed Waterways can have a huge benefit in reducing agricultural runoff and in protecting fields from erosion, especially in periods

of extreme rainfall like Vermont experienced this year. However, Grassed Waterways can be challenging to implement and maintain because they take land out of production in the middle of the farm field, and are thus often a difficult practice to persuade operators and landowners to implement. Additionally, many Vermont farm fields are small, which means that if the field is contributing a high proportion of sediment or pollution to nearby waterways it often makes more sense to convert the entire field to perennial crop rather than trying to engineer a solution in which part of the field is in annual production and the remainder is in perennial sod. As a result, this program has historically achieved the most uptake and success when converting entire critical source areas from annual cropland to pasture & hay plantings and when implementing filter strips.

In future, we hope to build on our learning and successes to revamp the Grassed Waterway and Filter Strip program to better fit Vermont's farming landscape. There is vast potential for this program to support perennial buffer implementation and improvements on Vermont farms, provided there is sufficient dedicated staff capacity to provide outreach, technical assistance, and project planning support for this program.

Pasture and Surface Water Fencing

The Pasture and Surface Water Fencing (PSWF) Program provides technical and financial assistance to Vermont farmers to improve water quality through improved and expanded pasture management, as well as on-farm livestock exclusion from surface waters statewide. Technical assistance available to farmers under this Program addresses and mitigates water quality concerns on their farms. The goal of this Program is to increase participant understanding of best pasture management for water quality and to identify water quality improvement projects, in addition to providing technical service to farms that cannot, or choose not to, meet the requirements of other programs that promote livestock exclusion from surface waters, such as CREP and NRCS's EQIP. Providing pasture management and grazing assistance where water quality benefits can be realized from improved management is also a large component of this Program.

For more information about the PSWF Program, visit: agriculture.vermont.gov/pswf.

PSWF FY 2023

In FY 2023, the PSWF program invested \$216,000 through 23 awards supporting exclusion fencing and rotational grazing infrastructure. Grant awards provide technical and financial assistance for fencing, water pipelines, water pumping plants, trails and walkways, water wells, stream crossings, and watering facilities. The program prioritizes practices that exclude livestock from surface waters.

PSWF FY 2024

As of December 1, in FY 2024, a total of \$107,747 of State funding has been awarded through 14 grant awards to farmers across the State of Vermont. VAAFM and partner organizations are currently providing technical assistance to approximately 53 farms that have expressed interest in the PSWF Program and improving grazing on their farms. VAAFM was awarded federal funding through a USDA Grazing Lands Conservation Initiative Grant to develop a new staff position focused on providing livestock grazing and pasture management technical assistance. With a FY 2023 budget of \$350,000 for the program and

additional personnel able to assist in grant planning and implementation, it is anticipated the increasing practice implementation trend will continue through FY24.

PSWF 2025 & BEYOND

Farmers receiving PSWF grants include small, diversified farmers raising goats, cattle, sheep, horses, and dairy livestock. Many PSWF grantees in the last four years have been first-time VAAFM grant program recipients. As the program continues to grow and the State continues to support diversified, pasture-based farming, VAAFM expects the PSWF program to continue to be a highly sought-after grant program.

PSWF PROJECT HIGHLIGHT

In early 2022, Jana Meyer of Lunar Hill Icelandic connected with Amber Reed of UVM Extension to learn more about conservation practices related to pasture health, water quality, and climate change for her equine farm in the White River watershed. Over the next year, Jana worked with Amber to develop a rotational grazing plan for her Icelandic horses and was awarded an AAFM PSWF grant to financially support the implementation of fence, livestock pipeline, and frost proof watering facilities. These practices excluded horses from freely accessing nearby surface waters, with a designated crossing, established more paddocks to implement the rotational grazing plan, and a new winter watering source.

The project was completed in the fall of 2023. While many cost share programs are focused on dairy and beef livestock, this is an important example of the type of projects that can be undertaken by any livestock farm and the ability to tailor and customize plans to livestock type. Excluding the horses from the nearby surface water and installing infrastructure to support rotational grazing will have long term water quality and soil health benefits.

In addition to Jana's engagement with the PSWF program, Jana actively works with the local White River Conservation District, UVM Extension, and the VT Grass Farmers Association to host workshops and share her experience and encourage other equine farmers to adopt conservation practices to improve pasture health, water quality, and share climate change mitigation strategies.



Figure 9. Newly installed perimeter fencing (left) which supports exclusion of livestock from surface water and pigtail fencing (right) with braided wire for temporary fencing between paddocks.

Vermont Farmer Ecosystem Stewardship Program

The Vermont Farmers Ecosystem Stewardship Program (VFESP) offers supplemental incentive payments to farmers who enroll in the USDA-NRCS Conservation Stewardship Program (CSP). These payments are meant to encourage more farmer participation in the CSP program, as the program has so far been underutilized in the State of Vermont.

The commitment to land stewardship under the Conservation Stewardship Program is longer term and more comprehensive than many other financial and technical assistance programs. The application and assessment process require substantial commitment from the farm and many of our local farmers have been unfamiliar with the program's benefits. This state incentive payment aims to reverse those barriers in the short term, to motivate farmers to increase their level of conservation and to build a cohort of Vermont farmer-advocates with experience engaging in comprehensive, farm-wide ecosystem stewardship. This program design follows the recommendations of the Vermont Payment for Ecosystem Services and Soil Health Working Group, a coalition of farmers, non-profit organizations, technical service providers, policy makers and others that met from 2019 to 2022, and is designed to incentivize conservation planning and enhance conservation practices on farms without "reinventing the wheel".

The NRCS Conservation Stewardship Program offers significant technical and financial assistance to farmers who adopt practices that enhance a variety of natural resources on their property. Farmers must meet certain environmental objectives and commit to five years of enhanced conservation on their land through the CSP program.

VFESP offered financial compensation of \$5,000 to early adopters of the CSP program as a one-time incentive payment and offers two possible incentive payments for applicants who apply for a CSP contract for the first time. Vermont farms who engage in the development of an NRCS Conservation Assessment Ranking Tool Report with the NRCS are eligible to receive \$2,000. Applicants who are selected for funding and sign an NRCS Conservation Stewardship Program contract are eligible to receive an additional \$7,500 payment.

VFESP FY 2023

The VFESP program launched in Spring of 2023 and two distinct applicant types were eligible to apply for the program. The first was for active CSP participants to request a one-time incentive for their early adoption of CSP, and the second was to encourage new applicants to apply for the CSP program. In FY 2023 a total of \$150,000 was awarded to 31 farm operations who were actively participating in CSP. VAAFM additionally received 15 applications for assistance from 'new applicants' to CSP during FY 2023.

VFESP FY 2024

As of December 1, 2023, overall, a total of \$450,000 has been awarded through 51 grants with Vermont farms during FY 2024. An additional round of funding was made available for farms to correspond with the October 20, 2023, deadline for CSP applications and VAAFM received 23 applications for the incentive payments offered through this program.

Existing CSP contract holders will no longer be eligible for an incentive payment through this program in FY 2024. Payment rates for new applicants will remain the same. An additional round of funding will be made available for Vermont farms to correspond with NRCS application deadlines for CSP.

VFESP PROJECT HIGHLIGHT

Bruce Hennessey of Maple Wind Farm operates multiple parcels that have been enrolled in the CSP program for 2 years. He rotationally grazes his chickens, turkeys and pigs daily as part of his contract. "I think it's great that there is support out there. It's like a payment for doing the right thing. We've been grazing like this for 25 years and we've seen a lot of improvement with the grass and forage. Our chickens and turkeys are great grazers!" Bruce applied for the CSP Assist program and received a \$5,000 one-time incentive for his early participation and adoption of the CSP program.



Figure 10. Left: Chicken coops staggered in their rotation. Right: Turkeys grazing over pasture.

VFESP FY 2025 & BEYOND

The Vermont legislature allocated a total of \$1 million dollars for program recommendations through the Vermont Payment for Ecosystem Services and Soil Health Working Group. Depending on the level of applications received through FY2024, and the capacity of NRCS offices to receive, process, and complete CSP Assessments and offer CSP Contracts, any additional funding available through this one-time allocation will be available in SFY 2025.

Vermont Pay for Performance

The Vermont Pay for Performance Program (VPFP) is a new and innovative program that provides performance-based payments to Vermont farmers for reducing phosphorus (P) losses from their agricultural fields. While most current conservation programs pay cost-share for practice implementation, VPFP pays for the outcomes of practices: it recognizes that conservation practices generate different levels of value to the public and directly compensates farms for that value. This approach also allows VAAFM to target our water quality resources towards the highest impact farms and fields with respect to reducing phosphorus and improving water quality. Participating farmers use the Farm Phosphorus Reduction Planner (FarmPREP), a web-application tool that integrates farm management information, agronomic and hydrologic science, and numerical modeling to evaluate field-by-field reductions and average annual phosphorus losses. Reductions measured through FarmPREP represent improvements in farm management in comparison to management assumptions used in the Lake Champlain Basin Total Maximum Daily Load (LCB TMDL). Under this program a total of \$4.9 million in funding will be available to farms for management planning and phosphorus reduction payments across four years.

This program is supported by the U.S. Department of Agriculture, under Regional Conservation Partnership Program Alternative Funding Arrangement (RCPP AFA) Supplemental Agreement number 2145-A-0368, 2145-A-0553, 2145-A-0551, and 2145-A-0675.

For more information about the program, visit our webpage at https://agriculture.vermont.gov/VPFP.

VPFP 2023

In FY 2023, the VPFP program overall awarded \$1.9 million across 56 awards.

The VPFP program enrolled 10 farms who were awarded a total of \$30,000 in Management Planning and Data Entry grants. During this first phase, farms work with their chosen assistance provider to enter all their field boundaries, manure and fertilizer rates, soil data, crop management, and conservation practices into FarmPREP on a field-by-field basis. This data entry process is the first phase of the program and provides the information necessary for FarmPREP to model both their current and baseline phosphorus losses so improvements in management can be accurately measured before moving into the next phase of the program. To assist farms with their data management and data entry in the FarmPREP program, VAAFM continues to contract services with the Vermont Association of Conservation Districts who are available to provide one-on-one support at no cost to the farmer. Farms are also able to opt-out of this assistance if they would prefer to learn how to use FarmPREP themselves or if they prefer to utilize another source of technical support on their farm to meet the program requirements.

The VPFP program also enrolled 46 farms who were awarded a total of \$1.8 million dollars in Phosphorus Reduction grants. These participants were able to show through their FarmPREP Planned Assessments that they could achieve more than a 40% reduction in P-loss when compared to the baseline and are thus eligible to receive \$100 per pound of phosphorus reduced above that threshold per year, up to an annual cap of \$50,000. Additionally, farms that show they have a low average annual P-loss of 1 lbs. P/acre or 0.5 lbs. P/acre are also eligible to receive a stewardship payment of \$3 or \$8/enrolled acre, respectively.

VPFP 2024

As of December 1, 2023, a total of \$408,500 has been obligated to 9 new program participants for three-year grant agreements for the 2023, 2024, and 2025 field seasons. The average grant amount for these new Phosphorus Reduction Payment agreements is \$15,130 per year. Final P-reduction payments are dependent on updated and verified assessments accounting for actual farm management.

FY 2024 & BEYOND

Under the current USDA grant, farms will be able to enroll in VPFP for the 2024 and 2025 field seasons, but continuation of this program beyond those dates will require additional funding and is contingent on feedback from farmers and partners agencies.

VPFP PROJECT HIGHLIGHT

The Choiniere Family Farm is an organic grass-fed dairy farm owned by Guy Choiniere in Highgate, VT and they have been participating in the VPFP program since 2022.

Guy Choiniere says that "the PFP program has been a pleasant surprise! Even though we have an all-grass farm... this program provides incentives and rewards for using best management practices such as nutrient management planning and rotational grazing."

Perhaps "surprising" because a conservation program like this has never been implemented in Vermont. Participating farmers use a web-based environmental modeling application called FarmPREP to digitally map their fields and conservation practices like crop rotations, nutrient management, reduced or no-till, cover crops, and buffers. FarmPREP then incorporates the user input information with geospatial data layers like soil type, slope, and localized weather records to simulate run-off and estimate average annual phosphorus loss at both the field and farm scale.

The Choiniere's have been supported through this data-driven program with the assistance of the Franklin County Conservation District, one of many Conservation Districts throughout Vermont that are working with VAAFM to provide one-on-one assistance to farms under the VPFP Program.



Figure 11. A No Till corn field which FarmPREP helps farmers and conservation planners quantify the water quality benefits of along with other conservation practices utilized on the field.

Vermont Phosphorus Innovation Challenge

The Vermont Phosphorus Innovation Challenge (VPIC) is an initiative launched by Governor Phil Scott in 2018. It is designed to support solutions for reducing phosphorus loading to Vermont's landscape and waterways by utilizing innovative technologies. Since 2018, Vermont has partnered with businesses and entrepreneurs through three project scoping and development stages. In FY 2023, three projects continued to be ongoing in Stage 3 – Final Round which supports investments in construction and operation of the proposed solutions. The three ongoing projects are with Agrilab Technologies, Digested Organics, and the Village of Essex Junction. To learn more about VPIC and the ongoing projects, please visit our website: agriculture.vermont.gov/Vermont_Phosphorus_Innovation_Challenge.

Looking Ahead

Looking ahead, VAAFM anticipates continued increased demand for agricultural water quality technical and financial assistance. Vermont farmers continue to demonstrate their commitment to the adoption of conservation practices and improving water quality in the face of rising challenges to agricultural production from a changing climate. Natural disasters and increasing temperatures have led to unexpected frosts, damaging floods, increased pest pressures and more. Meaningful progress has occurred toward reducing non-point source pollution, but the State of Vermont needs to continue to support agricultural conservation practice adoption that improves water quality and builds an environmentally sustainable and viable agricultural landscape. The Initial Vermont Climate Action Plan (CAP) outlines how agricultural water quality conservation practices and existing state water quality technical and financial assistance programs can help support climate action in Vermont. Where agronomic conservation practices deliver quantifiable water quality benefit, there exists significant opportunity for these same conservation practices – e.g. cover crop, no and reduced tillage, management intensive grazing – to provide climate mitigation, adaptation, and resilience benefits for farms.

Additionally, while a Federal continuing resolution passed in November 2023 to extend the current 2018 Farm Bill to ensure continuity of federal food system programs through September 30, 2024, many Vermont farms have reached the maximum funding they are eligible to receive for conservation endeavors under the 2018 Farm Bill. As a result, farms have reduced their level of enrollment and implementation through federal conservation assistance programs. It is more crucial than ever before to ensure continuity of state funding for water quality technical and financial assistance programs. State programs often support farms in collaboration with and/or in lieu of federal program support, and they ensure local technical assistance is available for farmers across Vermont.

VAAFM will strive to continue serving farms and partnering with the agricultural community to meet technical and financial assistance needs while improving process and efficiency. Funding for education, outreach, technical assistance, and practice implementation is essential to support conservation efforts on private agricultural land in Vermont. VAAFM water quality programs are a cornerstone to providing farmers with the resources needed to meet Vermont's water quality and climate change mitigation goals.

For more information on the Vermont Agency of Agriculture, Food & Markets Water Quality Division grant opportunities, regulations, or educational opportunities visit

<u>Agriculture.Vermont.gov</u>