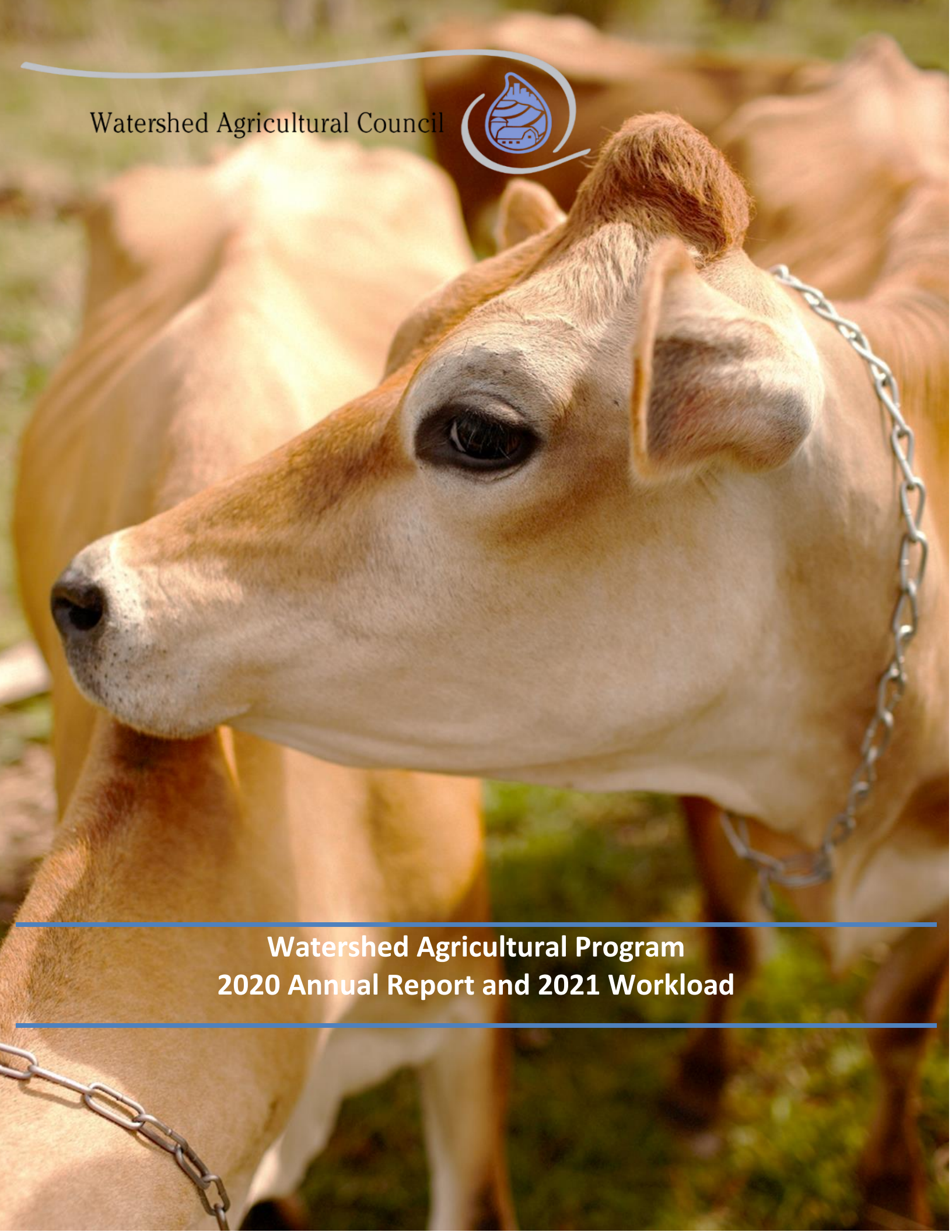

Watershed Agricultural Council

Watershed Agricultural Program
2020 Annual Report and 2021 Workload

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Cover Photo: WAC Staff
Report Photos: WAP Staff

PRIMARY FUNDING SOURCES

NYC Environmental Protection

USDA NRCS
United States Department of Agriculture
Natural Resources Conservation Service

USDA Farm Service Agency

2020 – A Year with Multiple Challenges

The Watershed Agricultural Program (WAP) met multiple challenges to its Program efforts this past year. The first being the Covid-19 Pandemic. WAP staff and partners utilized collective skills to continue full operations following both CDC and NY State guidelines. The Watershed Agricultural Council also accepted the resignations of both the Council Chair and Executive Director. Through this transition period it was determined that WAC had not effectively or efficiently followed the contractually required process to receive payments from our main funder the New York City Department of Environmental Protection (NYS DEP). The lack of consistent funding throughout the year reduced the number of projects that could be implemented. However, the WAP continued to meet contract deliverables that are highlighted throughout this report.

Despite these challenges the WAP implemented 269 BMPs West of Hudson at a total cost of $2.4 million and 19 BMPs East of Hudson for $0.1 million.

The Precision Feed Management (PFM) Program is a science-based program that develops feed management plans that managed the large quantity of feed nutrients managed annually on participant farms. 2020 was the fifth year of the PFM Program, the staff were actively planning and monitoring on a total of 45 farms and an additional 148 Benchmarks were completed. A significant effort was made to develop and commence implementation on beef farms within the West of Hudson Program. The Nutrient Management Credit Program has increased to 142 participants. A key focus for improving manure nutrient management led to a manure equipment group to discuss solutions for manure management issues that our farmers struggle with. A potential solution that has been presented is manure injection, a demonstration was held in August for staff and participants to increase their knowledge of this option. Additional information can be found on page nine of this report.

The WAP partners with local County Soil and Water Conservation Districts (SWCD) and the USDA Natural Resources Conservation Service (NRCS) provides technical design and implementation of identified resource concerns on farms. Participants actively followed 259 Whole Farm Plans and 225 Nutrient Management Plans in the Catskill/Delaware Watershed. Funding provided by NYC DEP, the USDA and other sources helped the program realize its goals. The WAP continues to partner with Cornell Cooperative Extension to provide educational programs to area farmers. In 2020, 1174 farmers and farm advisors attended 28 educational programs with 32% of Watershed farmers attending at least one event.

The WAP presented a virtual Ag tour at its October Agricultural Program Committee meeting. In doing so, this provided an excellent opportunity to showcase the successes of the WAP even during a most challenging time. The virtual tour can be viewed on the WAC Website and WAC YouTube channel.

Larry Hulle, Watershed Agricultural Council
Larry Underwood, Delaware County Soil & Water Conservation District
Dale Dewing, Cornell Cooperative Extension
Dennis DeWeese, USDA Natural Resources Conservation Service

Watershed Agricultural Program
2020 Planning Goals and Accomplishments

Catskill/Delaware Watershed		Croton Watershed	
Goal	Accomplishment	Goal	Accomplishment
Annual Status Reviews			
289	289	68	75
New Whole Farm Plans			
As identified	1	As identified	2

2020 Implementation Accomplishments – Funding

BMP - Funding Sources	Catskill/Delaware	Croton Watershed	Total
Watershed Agricultural Program			
- Other BMPs	$ 2,315,858	$ 112,010	$ 2,427,868
- RCPP	$ -		$ -
- WIRC	$ 12,447		$ 12,447
- CREP (WAP)	$ 95,741	$ -	$ 95,741
Total Watershed Agricultural Program Funding	**$ 2,424,046**	**$ 112,010**	**$ 2,536,056**
Other Funding Sources			
- CP-30 (FSA)	$ -	$ -	$ -
- CREP (FSA)	$ 13,203	$ -	$ 13,203
- CREP (DCSWCD)	$ -		$ -
- DCSWCD	$ -	$ -	$ -
- RCPP	$ -	$ -	$ -
- Landowner	$ 4,160	$ -	$ 4,160
- AWEP	$ -	$ -	$ -
- NRCS	$ -	$ -	$ -
Total Other Funding Sources	**$ 17,363**	**$ -**	**$ 17,363**
Total Funding*	**$ 2,441,409**	**$ 112,010**	**$ 2,553,420**
*** Includes In Progress Payments**			

2020 Implementation Accomplishments – Number of BMPs

NRCS/WAC BMP Code	Best Management Practices	Catskill/Delaware	Croton Watershed	Total
313	Waste Storage Facility	2	0	2
340	Cover Crop	32	0	32
360	Waste Impoundment Closure	1	0	1
378	Pond	1	0	1
382	Fencing	23	0	23
391	Riparian Forest Buffer	20	0	20
393	Filter Strip	1	0	1
468	Lined Waterway or Outlet	0	1	1
500	Obstruction Removal	3	0	3
512	Forage and Biomass Planting	1	0	1
512	Forage and Biomass Planting - Lime	28	4	32
516	Pipeline	9	1	10
528	Prescribed Grazing	3	0	3
558.01	Roof Runoff Structure - Crushed Stone Drain	2	0	2
560	Access Road	4	0	4
561	Heavy Use Area Protection	5	1	6
574	Spring Development	8	0	8
575	Animal Trails and Walkway	4	0	4
578	Stream Crossing	3	0	3
587	Structure for Water Control	1	0	1
590	Nutrient Management Plan	72	7	79
612	Tree and Shrub Establishment	24	0	24
614	Watering Facility	7	1	8
620	Underground Outlet	1	0	1
634	Waste Transfer	1	1	2
635	Vegetated Treatment Area	0	2	2
642	Water Well - w/pump	1	0	1
642.01	Water Well	0	1	1
3010	Roofed Barnyard	3	0	3
3010.02	Roofed Barnyard - Concrete	1	0	1
3060.01	Manure Storage/Heavy Use Area - Covered - Concret	1	0	1
3100	Calf Housing Structure - timber permanent	1	0	1
3110	Calf Greenhouse - Solar	2	0	2
3410	Manure Spreader	2	0	2
3425	Dump Trailer	1	0	1
5001	Utility / Electric Installation	1	0	1
Total		**269**	**19**	**288**

Included in the above are modifications, emergency repair, repair, and repair and replacement BMPs.

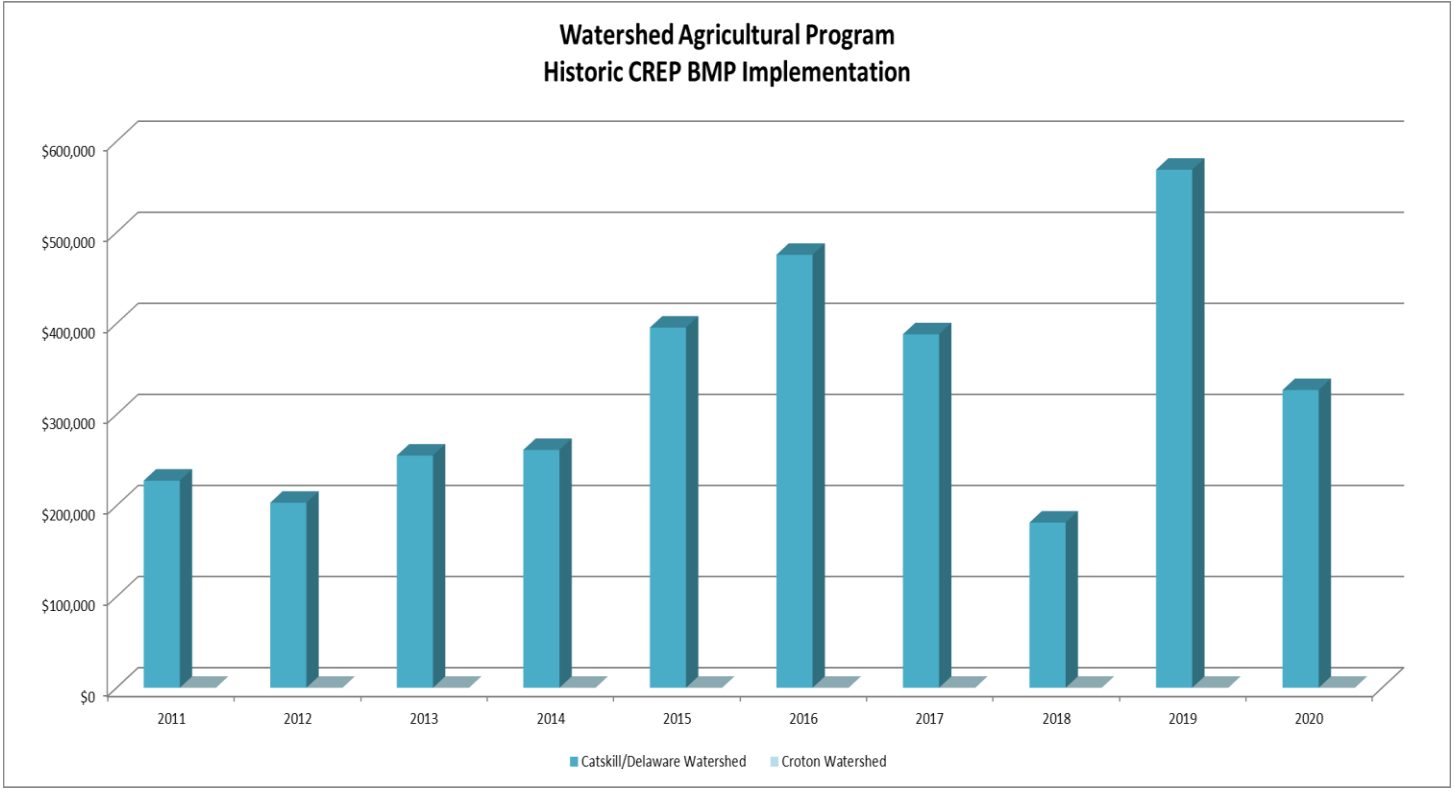
USDA Conservation Reserve Enhancement Program (CREP)
2020 Accomplishments

The USDA CREP Program within the Watershed Agricultural Program utilizes the talents found within the multi-agency team assigned to work in the Watershed to promote, design and establish both Riparian Forest Buffers and Vegetative Buffers along watercourses. This year marked the 20th full year of the NYC Watershed Conservation Reserve Enhancement Program (CREP) Memorandum of Agreement between New York City, New York State and the United States Department of Agriculture (USDA). In 2020, 45 contracts for 352.64 acres were terminated by contract holders who did not want to accept an annual rental rate reduction imposed by the FSA national office this past fall. In 2020, 3 Riparian Forest Buffer renewal contracts enrolled an additional 18.66 acres, bringing the total number of enrolled acres to 1,340.73.

2020 Total Implementation Expenditures

Total Rental Payments (USDA)	$170,811
Sign-Up Incentive Payment (SIP-FSA)	$0
Practice Incentive Payment (PIP-FSA)	$116,000
*BMP Cost (FSA)	$120,264
*BMP Cost (WAP)	$206,645

*Based on Federal Fiscal Year Numbers 10/01/18 – 9/30/19



Program	99-2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	Total
Catskill/Delaware Watershed	$ 6,163,550	$ 227,423	$ 203,211	$ 254,952	$ 261,197	$ 395,490	$ 475,423	$ 388,194	$ 181,405	$ 568,828	326,909	$ 9,446,582
Croton Watershed	$ 36,515	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 36,515

Nutrient Management Program Accomplishments

The Nutrient Management Team completed 72 Nutrient Management Plans.

Nutrient Management Plan Percent Current Analysis

	Farms Needing NMP 225 number	 % of Total
Current	222	98.7%
1 year out of date	1	0.4%
2 years out of date	1	0.4%
3 years out of date	0	0.0%
> 3 years out of date	1	0.4%
Needs NMP	0	0.0%
Total	225	100.0%

Photo: Cindy McCarthy

Nutrient Management Credit (NM Credit)

The NM Credit Program was offered to 142 participating farms. Eleven farms did not submit records (no records kept, or extenuating circumstances).

The 2019-2020 Credit year allowed for the addition of any eligible farm. One nutrient management credit farm left the program due to not meeting eligibility requirements. Six new farms were selected from the prioritized general list of NM Credit eligible farms.

For 2020-2021 Nutrient Management Credit Program year, we will continue to add eligible participants.

Precision Feed Management (PFM)

2020 was the fifth full year of implementation of the PFM through the Watershed Agricultural Program (WAP). Implementation includes; 1) feed management planning using the NRCS 592 feed management standard; 2) WAP Quality Management Assistance (QMA) planning and technical assistance to farmers and their feed industry advisors in discreet QMA events, and 3) routine dietary monitoring using NYS PFM Benchmarking tools.

Despite the entire WAP going into telecommuting mode in mid-March and limited farm contact by PFM planners throughout the remainder of the year due to COVID-19 restrictions, PFM program staff adapted and met or exceeded the 2019 program engagement metrics. In particular, PFM Benchmarking, the backbone of our on farm implementation, continued on pace with frequency standards met for 91% of the PFM farms.

Due to attrition of five dairy farms in the PFM program this year and adding one new dairy farm, there were 41 dairy farms actively participating in program as of year-end.

Development of Beef PFM

During 2020 a major effort was made to develop and begin implementation of Beef PFM in the WAP. From March until October, the operational framework, participant enrollment process, and staffing plan necessary for a Beef PFM Program in the WAP was more fully developed. Beef farms were solicited for participation in late fall 2020 and by end of December fourteen farms had signed up to participate. Implementation will commence in winter/spring 2021, and throughout this implementation, the beef PFM process will continue to evolve via 'process of discovery' to achieve its final form.

PFM Program Engagement Statistics as of 12/31/2020

Table 1. PFM Program 2020 Engagement Statistics as of 12/31/2020

	2020
Total Farm PFM QMA Events	141
Total PFM Benchmarks completed to date	148
Total PFM QMA Annual Implementation Plans	25
Total Feed Management Plans completed for year	11
Total Feed Management Plans on farms	45
Total PFM Farm planner contacts	1215

PFM Program Nutrient Management Scope

The amount of phosphorus (P) and nitrogen (N) quantified in Table 2 represent an extremely large amount of P and N under management through Precision Feed Management:

Photo: Paul Cerosaletti

Table 2. PFM Program Nutrient Management Scope

Total number of lactating cows under feed monitoring	2,746
Phosphorus	
Total pool of feed phosphorus managed per year, program, kg.	82,590
Total pool of manure phosphorus excretions managed per year, program, kg.	58,717
Nitrogen	
Total pool of feed nitrogen managed per year, program, kg.	509,073
Total pool of manure nitrogen excretions managed per year, program, kg.	369,327

Nutrient Management Impact

Consistent with previous years and studies, in herds that we targeted and were able to achieve P intake reductions, we are able to reduce manure P excretions 20-30%. The reduction achieved in 2020 (14 grams/cow/day; 20.7%) was very similar in magnitude to the reduction herds achieved over the last four years of the PFM program. Due to a concerted effort to target more herds for phosphorus reduction, the net manure P excretion impact for the 2020 program year was a reduction of 4,556 kg. This is the largest reduction achieved by the PFM program in any year to date. Like phosphorus, the PFM program achieved its largest-ever net manure nitrogen excretion reduction across all herds, totaling -23,022 kg per year.

Economic Impact

Reducing P intakes and manure excretions did not negatively impact farm profitability in 2020 as was also the case in 2019, and increased profitability in an otherwise complicated and challenging year with an increase in milk income over purchased costs of $0.43 per cow per day or $157 per cow per year. For the average PFM herd size of 64 cows, this equates to a benefit of $10,054 annually. This affirms that managing rations for environmental benefits does not have to come at the expense of profitability of the farm.

Cropland Liming BMP Pilot Project

2020 was the third and final year of the pilot cropland liming BMP. This program was designed to pilot a process for assisting farmers to improve nutrient use efficiency on cropland by improving soil pH. It is focused on PFM farms as these farms have the greatest incentive to increase homegrown feed production in order to reduce reliance on imported feed nutrients. Over the three years, 43 farms received a total of approximately 5,285 tons of lime. The NM/PFM team is evaluating the impact of this program on soil pH and for farmer feedback.

Photos: Paul Cerosaletti

2020 Manure Injection Demonstration

From August through the end of October 2020 the Watershed Agricultural Program explored the next steps in manure nutrient management in a series of on-farm demonstrations with state-of-the-art subsurface shallow disc manure injection equipment. Recent multi-year research has proven that this technology can significantly reduce soluble phosphorus loss, especially in no-till and permanent sod situations. Subsurface manure placement also conserves nitrogen fertilizer value of manure by reducing ammonia volatilization while also dramatically reducing manure odors. This would be a valuable advantage for protecting water quality in the NYC Watershed where there is an increasing number of farms with liquid storage, and where farming amongst non-farm neighbors is increasingly common.

Cornell Cooperative Extension of Delaware County with funding from The Watershed Agricultural Council has leased a shallow disc manure injection system for demonstration in the Watershed from Agi-Applicators, Inc., a Lebanon, PA based custom manure spreading and injection service. The equipment rented included a Houle 6300-gallon manure tanker outfitted with a 15 ft. BAZOOKA FARMSTAR Phantom Disc Injector bar and Raven GPS flow control system. This GPS based monitoring system and rate controller can maintain the selected application rate by making adjustments for varying ground speeds. The system is capable of injecting at various rates and crop conditions.

On August 17 and 18, farmers and Watershed staff gathered at the Del-Rose Farm to observe and evaluate manure injection equipment. Staff from Agri-Applicators and BAZOOKA FARMSTAR spent three days setting up the equipment, training local farmers as operators, and demonstrating the equipment. The in-field demonstrations were split into several times to allow for smaller groups and proper social distancing, in accordance to NY State Health Department guidelines. Manure was applied to several hay fields at several rates.

Later in the fall, the injection equipment was put through its paces at four participating WAP farms; the Hymers, Burgin, Darling and Albano farms. During these multiple day runs, WAP staff and farmers collaborated to study how efficiently the equipment could be operated in field with the use of tendering with truck mounted manure tankers. Over the course of three separate days 216,000 gallons of manure was applied subsurface across a variety of field conditions, soil types and terrain. The equipment held up and performed admirably, proving that it could work in Catskill conditions. The demonstration was successful in giving our farms and staff first hand experience with the function of the equipment and confidence that it could work in our conditions. It has served as a crucial first step in helping the WAP think through how this type of equipment could be employed as part of a system and service that could help our program and farms realize new gains in water protection, nutrient management and crop productivity and profitability.

Special thanks are extended to the Hanselman, Burgin, and Darling farms for providing manure tankers, labor, and demonstration fields, and to the Albano farm for providing tractor and operator for all demonstration sites.

Photos: Paul Cerosaletti

Farmer Education Program

The Watershed Agricultural Program Farmer Education efforts ended 2020 with over 1,174 farmers and Farm Advisors attending 28 events. This included at least one person from 84 WAP participating farms (32% of active participating farms), and 31 non-participating watershed farms. Our Farmer Education events have a loyal participant base, with 55% of WAP participant farms that attended taking part in 3 or more events during the year, and 20% attending 5 or more events.

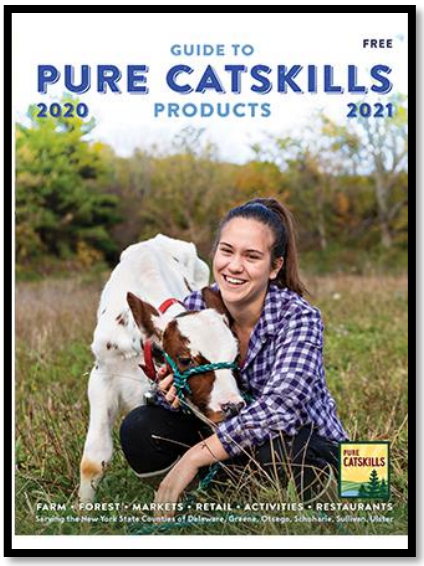
Number of Events: **28**
Number and percent of participating Watershed Farms attending at least one event*: **84** **32%**
Number of non-participating Watershed Farms attending at least one event: **31**

Date	Event	Watershed Farmers	Other Farmers	Students	Agri-Service	Agency	Other	Total
1/9	Catskill Regional Agriculture Conference	54	60	0	19	58	10	201
2/20	Winter Beef Meeting	15	9	0	2	3	1	30
2/25	PFM Cooperator Meeting	34	0	0	3	11	0	48
2/28	Pesticide Certification Training	1	4	0	0	1	0	6
3/3	Cover Crop Discussion Meeting	8	6	0	0	15	0	29
3/13	The Fast Track to Slow Flowers	15	9	0	0	0	0	24
3/18	Dairy Reproduction Web-Meeting	3	5	0	4	6	0	18
3/27	Delaware County Crop School	12	6	0	1	26	0	45
4/7	Farm Succession Planning	10	15	0	5	4	0	34
4/14	Small Ruminant Parasites I - On line Classes	4	3	0	1	1	0	9
4/15	Small Ruminant Parasites II - On line Classes	3	5		1	1	0	10
4/28	Transitioning to Spring Pasture	7	6	0	0	3	0	16
5/7	Small Scale Poultry Production	1	20	0	0	2	0	23
5/28	FSA CFAP Information Meetings	17	38	0	0	4	0	59
6/2	Understanding Current Beef Market & Marketing Beef Locally	6	24	0	1	11	0	42
6/30	Ag Monday Apr-Jun	53	23	0	0	93	0	169
8/17	Manure Injection Staff and Operator Training	11	0	0	3	8	0	22
8/18	Manure Injection Demonstration	22	3	1	5	21	0	52
8/29	Corn Dry Down - Franklin	13	9	0	1	0	0	23
9/3	Dairy Tour	35	13	0	1	27	64	140
9/9	Corn Dry Down - Stamford	17	12	0	5	0	0	34
9/30	Fall Pasture Management Series - Session 1: Managing Post Grazing & Hepler Pasture Walk	5	6	0	0	4	0	15
9/30	Ag Monday Jul-Sep	9	4	0	0	17	0	30
10/7	Fall Pasture Management Series - Session 2: Stockpiling & Virtual Walk at the Cassano Farm	6	21	0	0	5	0	32
10/14	Fall Pasture Management Series - Session 3: Dry Matter & Virtual Walk at the Hepner Farm	10	15	0	0	3	0	28
10/26	2020 Fall Beef Meeting (Reproduction and Finishing Cattle)	13	14	0	0	4	0	31
12/31	Ag Monday Oct-Dec	20	4	0	1	22	0	47
12/31	QMA - Farms Assisted	32	1	0	0	0	0	33
	Total Attendance	**436**	**335**	**1**	**53**	**350**	**75**	**1250**

Farmers	771
Advisors	403
Total	1,174

**Based on 260 active large and small farms WOH (ASR list Dec 2019)*

Economic Viability: Buying Local – A Way of Life



2020 was challenging, unprecedented and at times unnerving, but it also showed us the importance of knowing where your food comes from, supporting local businesses, and the strength of small communities. Buying locally, knowing the source of your food, and committing to supporting local farm and food businesses is no longer a trend—it is a lifestyle.

One of the greatest strengths of this region is the diversity of products being grown, produced and raised by our local farm and food producers. The Catskills represent the definition of what it means to 'buy local,' and is a robust foodshed offering everything from honey, meat varieties of all kinds, vegetables, any dairy product you need (from cow to goat), maple, fruits and so much more, to farmers' markets, farm activities, social distancing options, you name it – we have it.

Now more than ever, the work of our Economic Viability (EV) Program to promote, showcase and support our small, committed and diversified farm and forest businesses through Pure Catskills, social media and our grant programing is invaluable. We are a trusted source making direct connections between farms and businesses to consumers during a time of such uncertainty. Though our programming shifted, we were working from home, and all of our favorite events were cancelled, the EV Program was able to dedicate our workload and time to being a resource so many people still rely on, and we are proud of all that was accomplished in 2020.

Our Pure Catskills members, along with all of our Watershed farmers and foresters, represent the very best of this region, clean water, high-quality food, and the future of food purchasing. With the world changing so rapidly around us, our hardworking farmers and producers remain persistent, relentless, and most importantly they remain consistent. Our hope, especially after 2020, is that you'll join our buy local movement and make it a continual and integral part of your lifestyle.

Watershed Agricultural Program Virtual Farm Tour

During the 2020 calendar year, our normal request for farm tours was hampered by social gathering restrictions placed as a result of the Covid-19 pandemic. This restricted the ability for in-person gatherings at farm sites for group tours. In an effort to continue our outreach, education and contract deliverables, WAC and WAP staff developed a new approach to bring the farm tour to the Council, Ag Program Committee, NYC DEP, Regulators and other invitees through a virtual video tour.

This virtual tour (prepared solely by WAC and WAP staff) was presented at the October 13, 2020 Ag Program Committee Meeting extending through lunch with a period for live questions and answers at its completion.

This first Ag Program Committee virtual tour showcased Walterna Farm, owned by Fred Kuhn Jr. and operated by the Kuhn family. Also included from the family in the video tour were Fred Kuhn Sr. and Devin Kuhn (Fred Jr's son) as well as a various WAP staff. The 45-minute video viewed current program highlights and accomplishments including Whole Farm Planning, BMP Implementation, Nutrient Management Planning and Implementation, Precision Feed Management, Cover Crops and highlights of this year's pilot manure injection demonstration.

Walterna Farm, a participant in the WAP since 1996, was chosen for this virtual tour for many reasons. They are a generational dairy farm with a strong conservation ethic. They have been very active with every program area of the WAP as well as being the recipient of the WAC administered Regional Conservation Partnership Program (RCPP) Grant. This Grant provided cost share funding from the USDA NRCS for a covered manure storage and covered Heavy Use Area Protection (HUAP) feeding/barnyard system. The video detailed the need, design, construction and completed solution to the waste facility resource concern.

The virtual tour, viewed by 80+ participants live, was well received and is available on the WAC Website and the WAC YouTube channel. It was also shared on WAC's social media and featured in a WAC e-news.

Photos by: Ben Hendee

2020 Projects

Char-Marie Farm, LLC., – Heifer Waste Storage Facility

Char Marie Farm LLC, owned and operated by the Haynes family in Bloomville NY, are long time members of the New York City Watershed Agricultural Program (WAP). They had worked with Delaware County Soil and Water Conservation District (DCSWCD) WAP staff in 2019 to design a concrete waste storage facility that would allow for the collection and storage of manure from the free stall heifer barn. Previously, the manure would need to be cleaned from this barn every day of the year, and spread on the crop fields, regardless if acceptable field and weather conditions were present. The farm follows a nutrient management plan, which gives the farmer guidelines and field options to minimize environmental risk on each given day they have to spread.

The plan considers the distance from fields to a watercourse, as well as the amount of nutrients already in the soil, and provides “safe” fields to spread on in case of saturated soil conditions, frozen or snow covered ground, or imminent high precipitation events. Having the ability to safely store the manure during these conditions is one of the best ways to reduce the risk of runoff or loss of nutrients, achieving protection of water quality.

In the spring of 2020, the farm had recently sold their milking herd, but the heifer barn facility would continue to be used for livestock production. Construction began on the project in May and was completed in early October. Over 240 cubic yards of concrete were installed to create the 40’ X 60’ x 14’ deep waste storage facility. This will allow for the safe storage of 240,000 gallons of manure, the amount produced by 100 animal units over the course of 6 months. The manure will now be spread in the late spring just prior to planting a crop such as corn. Many of the nutrients from the manure will be readily available for the new plants to utilize. The manure can also be applied to grass hay fields just after harvest. The growing vegetation will utilize the available manure nutrients to produce high quality feed for the livestock to consume. This application also may reduce the need for the farmer to purchase commercial fertilizer, a cost saving to the operation, and a reduction in the amount of nutrients being imported to the landscape.

Photos: Dave Adams

Mauer's Mountain Farm, LLC.

The project consisted of two stream crossings with animal trails, two spring developments and associated watering stations, an existing diversion cleanout with a culvert crossing, and fencing associated with the other BMPs. The job was split between two separate farm locations roughly one mile apart.

The main farmstead construction involved a cattle slat crossing with approximately 400' of associated gravel animal trail, a spring development involving 1500' plus of waterline both above ground and buried, and seven watering stations.

The lower farmstead construction involved a cattle slat crossing and approximately 50' of gravel animal trail, a spring development involving 700' plus of waterline both above ground and buried with two watering stations, and cleanout of approximately 650' of diversion ditch with a culvert crossing through it. Pictured are timeline photos of the two slat crossings during the construction process.

These BMPs will help to ensure that livestock and farm equipment will have stabilized stream crossing locations and watering sources other than flowing streams and springs, a significant improvement to the water quality of the watercourses on the farm.

Photos: Rick Hochuli

Frost Valley YMCA

There were many manure transportation challenges at the Frost Valley YMCA. There are three Equestrian Facilities where livestock are housed, fed, and exercised at one part of the valley. Manure collected at these facilities has to be transported to the Composting Facility and/or applied to pasture fields some distance from the source. The participant had a Manure Transportation Credit BMP (MT Credit) in their Whole Farm Plan (WFP) that could be used to facilitate the transportation and application of manure on the farm property and/or to provide using custom spreading services. Due to Frost Valley YMCA's remote location and distance, they were not able to take advantage or use this BMP effectively. The participant also had a small, older model dump truck which could not be economically maintained.

Through discussion and planning it was decided the best solution to address the manure management resource concern would be to provide a tow behind dump trailer to be used with their existing heavy-duty pick-up truck. The manure transportation credit was deleted from the WFP, and an in-depth discussion was held between participant, planner, and WAC technician to design trailer specifications which met the facilities needs in a safe, cost effective and efficient manner. The new dump trailer will be used to offload and manage the placement of the manure as mandated by their Nutrient Management Plan agreement.

Photos: Tim Hebbard and Rick Neuman

Richard Krum Farm

The Richard Krum Farm, located in Neversink, has been a longstanding participant with the Watershed Agricultural Program. The farm raises beef and chickens, along with growing vegetables for their farm stand. The original winter-feeding area for the beef cows located off of the barn would become denuded every year due to the feeding occurring in a concentrated area. The roofed barnyard and laneway that were recently completed address the water quality issues caused by the feeding area, eliminating runoff concerns and increasing manure cleanup and utilization by the farm.

The design for the barnyard is a covered feeding area with a manure stacking area for storage during the critical times when the Krum's cannot spread. An updated water system and slant bars were also installed as part of the practice.

A laneway leading from the structure to the pasture was installed to help facilitate animal movement. Also, high tensile fence was installed on one side of the pasture to exclude the cows from a pond and wetland area that was previously accessible.

These management practices ensure that the Krum's can now clean up the barnyard area much more efficiently, while eliminating nutrient laden runoff from the feeding area.

Barnyard Before

Barnyard After

Before

Barnyard After

Photos: Dan Gehl

Cover Crops - 2020

Building on the progress of previous years, the WAP and its participating farmers achieved a very successful 2020 cover crop season. Prior to 2017 there was an average of 26 acres implemented and paid for by the program. Since that time, we have been able to implement an average of 1400 acres annually.

In 2018 and 2019 the WAP was piloting the aerial application of cover crop seed and monitoring its effectiveness. This was done through the services of an aerial seed applicator via helicopter. Many participants opted for the aerial application because of its ability to accomplish a great deal of acres in a relatively short amount of time.

In the summer of 2020 the WAP was informed that the company that provides the aerial service would not be available because of issues related to COVID. WAP informed its participating farms of the adjustment and farmers began gearing up to implement their cover crops on their own by drilling or broadcasting, and some opting to hire a custom service to plant it for them. The 2020 weather gave us a boost due to near historic highs for Growing Degree Days (GDD) in this area, which allowed corn to mature on many farms in early to middle September and presented an opportunity to plant and grow a quality cover crop. Most of the success, however, has come from farmers making sound decisions and because of that we were able to implement 1467 acres of robust cover crops in 2020.

We will continue to monitor this year's cover crop through the spring of 2021 prior to termination, and we are looking forward to what the next season brings.

Why?
A cover crop slows the velocity of runoff from rainfall and snowmelt, reducing soil loss due to sheet and rill erosion. Over time, a cover crop regimen will increase soil organic matter, leading to improvements in soil structure, stability, and increased moisture and nutrient holding capacity for plant growth. – USDA/NRCS

Photo: Tristin Tait

WIRC Team Emphasis 2020

The Watershed Investigation Repair Crew (WIRC) had another industrious and challenging year of investigations, repairs, and assistance to participants while adhering to current continued operations protocol. Tim Hebbard, WIRC Specialist along with Assistant Planner Alison Heaney and Engineering Specialist Ben Green, performed 48 investigation requests that included:

11 on-site, no-cost repairs with landowner assistance; 2 on-site consultations for technical support; 17 encumbered and completed WIRC repair projects; 11 approved projects uncompleted but encumbered; 5 projects requiring further engineering assistance and 2 repair requests referred to workload for WAC Procurement process. The WIRC Team also made 1 delivery/transportation of WAC rental equipment-calf poly pens to storage.

Participants' comments:

- Quick and timely repairs/assistance.
- Professional and courteous communication.
- Increased knowledge of BMP operation and maintenance agreements by participant.
- Information gathered from participants to improve BMP design and planning.
- Team operates safely and always followed the Covid 19 Safety Protocols.
- WIRC staff works "one on one" with participants repairing and improving existing BMPs.

Raymond Buel Farm
Covered Barnyard-Manure Buckwall-Modification
Engineer Cost Estimate = $4,516.28 WIRC Cost Invoice =$1,904.56

Gladstone Farms
Roofed Barnyards-Wind Break- Modification
Engineer Cost Estimate = $9,313.46 WIRC Cost Invoice =$5,246.58

Broken Spoke Stables Farm
Water Facility-Cracked Trough Replacement-ER
Engineer Cost Estimate = $2,392.19 WIRC Cost Invoice =$707.71

David Cobbe Farm
Pipeline & Trough- FF Hydrants Broken- Emergency Repair
Engineer Cost Estimate = $2,796.92 WIRC Cost Invoice =$299.24

Photos: Tim Hebbard

East of Hudson – Little Creek Farm

Little Creek Farm is a 450-acre alpaca operation located within the Titicus basin in North Salem, NY. The farm is one of the largest alpaca fiber producers in New York and its annual Parade of Champions auction draws top producers from across the country. This year, EOH implemented a new water pipeline and watering facilities to improve the farm's ability to rotationally graze its herd of more than 400 alpaca. The BMPs consisted of connecting the pipeline to an existing water source and the installation of five frost-proof animal waterers.

The new waterers do not require an electric line nor a heat source to prevent water from freezing during the winter months. The geothermal waterers act like a frost-free hydrant but are designed for livestock use. The animals push down on a paddle to call for water. When the animal finishes drinking, the remaining water inside the pipe gravity flows back into the ground below the frost line. There is no water left in the system to freeze in the winter or get hot in the summer. These BMPs will add an additional 23 acres of pasture for the farm, enabling Little Creek to better manage their grazing, ensure healthier pastures, decrease erosion and runoff, improve livestock health and performance, and reduce costs to the farm.

Photos: Andy Cheung

East of Hudson – Summit Farm

In 2020, WAC implemented repairs to existing BMPs at Summit Farm, an equestrian riding operation located in North Salem, NY. Summit has 25 horses on the farm and offers horse boarding and riding instruction, as well as horse leasing and sales. The farm has been an active participant of the EOH program since 2006 and WAC has implemented 16 BMPs at Summit. During the farm's Annual Status Review, the landowner informed the planner that strong odors were emanating from the wash stall VTA discharge and tank area.

During an engineering inspection, the existing VTA was determined to be non-functional based on its moisture saturation and evidence that flows were leaving the filter area. It was determined that the best course of action was to decommission the VTA and replace it with underground infiltration chambers.

Additionally, the dumpster pad did not have a wastewater treatment component allowing stormwater in contact with the manure-filled dumpster to flow off the pad. Repairs to the system included the addition of a trap system from the effluent pipe of the indoor wash stall, the addition of a concrete junction box which receives flow from both the indoor wash stall and a new catch basin inside the dumpster pad. The outlet of the junction box would be discharged into four underground infiltration systems which replaced the nonfunctional VTA and eliminate any waste water from surface flows by directing it underground.

It is a priority for EOH to replace wash stall VTAs with underground infiltration systems to better address pollutant concerns. The BMPs addressed by EOH had all reached their end-of lifespan and required modifications to ensure they continued to address water quality issues on the farm.

Photos: Andy Cheung

2021 Planning Goals

Catskill/Delaware Watershed	Croton Watershed
Goal	Goal
Annual Status Reviews	
290	68
New Whole Farm Plans	
As identified	As identified

2021 Projected Design & Implementation Workload

BMP - Funding Sources	Catskill/Delaware Large Farms	Croton Watershed
Watershed Agricultural Program		
- Non-CREP BMPs	$ 5,374,745	$ 832,735
- CREP (WAP)*	$ 164,374	$ -
- Grazing	$ 284,820	$ -
- WAP Stream Buffers*	$ 51,200	$ -
- Repair, Repair & Replacement & Modificatio	$ 242,200	$ -
- Agonomic BMPs***	$ 150,000	$ -
- RCPP	$ -	$ -
Total Watershed Agricultural Program Funding	$ 6,267,339	$ 832,735
Other Funding Sources		
- CREP (FSA)	$ 34,793	$ -
- GRP	$ -	$ -
- AWEP		$ -
- DCSWCD		$ -
- EQIP		$ -
- Landowner		$ -
- RCPP	$ -	$ -
Total Other Funding Sources	$ 34,793	$ -
Total Projected Workload**	**$ 6,302,132**	**$ 832,735**
* Includes companion BMPs for Catskill/Delaware.		
** Does not included $150,000 for emergency repairs for Catskill/Delaware.		
*** Does not include unknown cover crop and lime pilot BMPs.		

2021 Projected Design & Implementation Workload – Number of BMPs

NRCS/WAC BMP Code	Best Management Practices	Catskill/Delaware Large Farms	Croton Watershed	Total
309	Agrichemical Handling Facility	0	1	1
313	Waste Storage Facility	6	0	6
314	Brush Management	4	0	4
317	Composting Facility	1	1	2
340	Cover Crop	30	0	30
342	Critical Planting	0	2	2
360	Waste Facility Closure	2	0	2
362	Diversion	2	0	2
367	Roof and Covers	1	0	1
382	Fencing	24	2	26
391	Riparian Forest Buffer	6	0	6
412	Grassed Waterway	1	1	2
468	Lined Waterway	1	0	1
472	Access Control	1	0	1
511	Forage Harvest Management	1	0	1
512	Forage and Biomass Planting - Lime	1	0	1
512	Forage and Biomass Planting	2	5	7
516	Pipeline	9	1	10
528	Prescribed Grazing	14	0	14
533	Pumping Plant	2	0	2
558	Roof Runoff Management System	1	3	4
560	Access Road Improvement	9	2	11
561	Heavy Use Area Protection	10	4	14
574	Spring Development	11	0	11
575	Animal Trails and Walkway	16	1	17
578	Stream Crossing	9	0	9
587	Structure for water Control	2	5	7
590	Nutrient Management Plans	80	6	86
606	Subsurface Drain	2	0	2
612	Tree & Shrub Planting	3	0	3
612	Weed Control & Herbicide Spray	2	0	2
614	Watering Facility	8	2	10
620	Underground Outlet	3	0	3
628	Waste Infiltration	0	1	1
634	Waste Transfer System	3	0	3
635	Wastewater Treatment Strip	1	1	2
638	Water and Sediment Control Basin	0	1	1
3010	Roofed Barnyard	2	0	2
3010.02	Roofed Barnyard - Concrete	7	0	7
3050	Covered Manure Storage	2	0	2
3060.1	Manure Storage/Heavy Use AreaCovered - Concret	1	0	1
3070	Sand/Manure Stacking Pad	1	0	1
3178	Manure Transportation Credit	1	0	1
3230	Agitation Pump	3	0	3
3410	Manure Spreader	3	0	3
3635	Manure Equipment - Vacuum Truck	1	0	1
3710	Feed Wagon	1	0	1
3720	Hay Saver Feeder	3	0	3
3840	Rotational Feeding Area	3	0	3
5004	Fencing - Semi-Permanent	1	0	1
Total		**297**	**39**	**336**

Included in the above are modifications, emergency repair, repair or repair and replacement BMPs.

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