

2024 Phase 3 Watershed Implementation Plan (WIP) Planning and Progress Template – UNION COUNTY											
Green - action has been completed or is moving forward as planned Yellow - action has encountered minor obstacles Red - action has not been taken or has encountered a serious barrier											
Action #	Description	Performance Target(s)	Responsible Party(is) and Partnerships	Geographic Location	Expected Timeline	Potential Implementation Challenges or Recommendations	Resources Available		Resources Needed		Annual Progress to Date (2021 to 2024)
							Technical	Financial	Technical	Financial	
Priority Initiative 1: County Programmatic Initiatives											
1.1A	Implement County Comprehensive Plan policies and actions Update County Comprehensive plan beginning 2021/2022	Ensure that growth activities address existing water quality impairments through stormwater BMP implementation already required by local ordinance Preserve Environmentally sensitive areas from new development through zoning, ordinances and land trusts. Conserve 1,500 acres of forest. Conserve 125 acres of wetlands.	Union County Planning Commission (UCPC), growth boundary municipalities, Union County Hazard Mitigation Plan (CHMP), Act 167, Union County Greenway Plan, Municipalities	Countywide	Begin update to County Comprehensive plan beginning 2021/2022	Educating municipalities, Updating local plans and ordinances, Growth areas not consistent with Census Urbanized Areas Local governments willing to propose ordinances to protect economically and environmentally friendly landscapes	Education, outreach		1 – FTE Clean Water Coordinator for UCPC	\$130,000 per year \$2,000 per acre of forest conserved through easement ☐ Total \$3.0M \$2,000 per acre of wetland conserved through easement ☐ Total \$250K \$40,000 to support Comprehensive plan implementation	2024: The plan should be adopted before the end of 2024. 2023: Union County is in the process of finalizing the update to the plan. Plan should be complete in early 2024. 2022: Starting the plan update. Municipalities were made aware that the process was beginning. Estimated to take 18-20 months. HRG will plan to attend public participation events to review how the CAP can support or benefit from Comprehensive Plan initiatives.
1.1B	Advance local comprehensive planning efforts Implement the Source Water Protection (SWP) Plan Preparation and implementation of an effective stormwater management (SWM) plan	Protecting Union County’s surface water and groundwater as a viable resource is critical to preserving water quality and healthy communities Work with municipal authorities to educate on the benefits of SWP Plan – work with DEP on development of Plans.	Municipalities, DEP NRCO Staff to assist with SWP, New Berlin and Mifflinburg Borough	Countywide New Berlin and Mifflinburg Boroughs	1-2 years	Reinforcing the municipal role in coordinating with the water authorities to perform education and outreach. The problem is the protection areas often lie outside the political boundary of the municipality that owns the system. Some of the adjacent municipalities have no zoning. The plans might be dated but the implementation realities are unchanged.			1 – FTE Clean Water Coordinator for UCPC SWP development	\$130,000 per year \$100,000 SWP	2024: No progress to date. 2023: HRG has reached out to the local entities with public water supplies. 2022: HRG developed a list of water suppliers for Union County and will verify the need for SWPPs with DEP. After the list is confirmed, HRG will be performing outreach in 2023 to discuss the importance of the SWPPs and urge water suppliers to contact DEP to request assistance with the development of SWPPs. HRG will review existing plans with the water suppliers and help them determine if they need additional funding to implement the plans.

1.1C*	Evaluate areas to establish riparian buffers to stabilize stream banks and limit encroachment	Identify landowners willing to participate and work with the following partners to implement new buffers Work with Chesapeake Conservancy through rapid de-listing approach to identify new landowners. Identified over 1,600 acres of opportunity within Union County to implement a 35 ft wide buffer.	Municipalities, UCCD, CBF, Pheasants Forever, National Trout Unlimited, Buffalo Creek Watershed Association, Merrill Linn Conservancy (MLC)	Countywide	5-10 years	Adopting ordinances, may require a pilot project in a willing municipality to demonstrate success. Look to revise and promote ordinances where feasible. Some ordinances promote destruction of buffers due to “mowing” ordinances. Buffer funding programs must include 5-10-year minimum maintenance plan, incentive money for landowners, along with volunteers to establish the buffer.	Landowner outreach; on the ground riparian project execution		1 – FTE Clean Water Coordinator for UCPC 1 – Clean Water Coordinator for UCCD	\$130,000 per year \$130,000 per year Expand Buffer Bonus Program to provide \$10,000 per acre of buffer installed to include 5-year maintenance contract: \$2.85M total	2024: This year, UCCD focused on maintenance of existing riparian buffers by utilizing the Union County branch of Riparian Rangers which covered 20 acres of manual maintenance. We also partnered with Chesapeake Conservancy to contract out 23 acres of herbicide application to control invasives throughout buffers in stream delisting catchments. We established 3 (Sauers, Harvest Church, and Lauvers) new buffers within 2024, plan to install 3 (TCP, Ulrich, and Walter) additional buffers in late Fall, and have one planned for Spring of 2025. 2023: UCCD continues to pursue landowners who want to implement buffers. UCCD plans to submit a grant to CREP for riparian buffer handouts, updates to the Riparian Rangers handbook, as well as to hold a buffer field day. 2022: Established a Riparian Ranger Program in the summer of 2022. The Riparian Ranger Program planted approximately 10-site locations that required maintenance. To date 17 volunteers are currently signed up. It is anticipated additional volunteers will sign up in the fall. There is an additional training opportunity planned for the fall. In the fall of 2022, 5 acres of buffers will be planted. CBF K10 trees are coming in the fall for additional buffer plantings. Lewisburg Borough completed a buffer and stream restoration project as part of the Bull Run Greenway Plan.
1.1D	Adopt and update an on-lot sewage management program (Act 537)	Look to review and update all Act 537 plans by municipality. Explore plan creation for municipalities for those who do not have a plan, look to incorporate new pumping guidelines.	Municipalities, Sewage Enforcement Officer	Countywide	5 years	Landowner education will be needed to promote proper on-lot septic system maintenance Municipal buy-in to update Act 537 plans. Lack of timely DEP enforcement of the 537 Program.		Sewage Enforcement Officer	1 – FTE Clean Water Coordinator for UCPC	\$130,000 per year \$1,000,000 funding to update willing municipalities	2024: No progress to date. Municipalities are not interested in enforcing nor developing 537 plans. 2023: No progress to date. Municipalities are not interested in enforcing nor developing 537 plans. 2022: No progress to date. Municipalities are not interested in enforcing nor developing 537 plans.
1.2	Union CHMP	Improve flood prone areas with BMPs that also enhance water quality Proceed with project to improve West Milton and Kelly Township Flood control measure in place for Mifflinburg Borough and West Buffalo Township (Act 167)	UCPC, Union County Comprehensive Plan, ACT 167,	Countywide West Milton and Kelly Township Lewisburg Borough Flood Resiliency Green Infrastructure	2022-2025	Flood controls can capture pollution, if considered in design and maintained. Current Requirements by Pennsylvania Emergency Management Agency (PEMA)/ Federal Emergency Management Agency (FEMA) are tough to receive funding – funding available only if hazard is identified by FEMA/PEMA and needs extremely project specific. Also, can’t plant buffers in buy-out areas without FEMA approval.	CRS program guides		Engineering Feasibility Study 1 – FTE Clean Water Coordinator for UCPC Project Implementation	\$150,000 \$130,000 per year \$500,000	2024: No progress to date. 2023: No progress to date. 2022: Plan has recently been updated. For 2023, coordinate on potential project implementation support.

1.3*	Act 167 SWM	Revise existing model stormwater ordinance when feasible. Look to incentivize additional protections for streams. Support implementation of existing ordinances where feasible.	UCPC, municipal engineers, UCCD, Union County Farm Bureau, Buffalo Creek Act 167, Bull Run and White Deer Act 167 Watershed Plan	Countywide Buffalo Creek, Bull Run, White Deer	2022-2025	Should local involvement exist, funding to support coordination of Act 167 requirements.	Institutional knowledge		1 – FTE Clean Water Coordinator for UCPC	\$130,000 per year	2024: No Act 167 plans are currently being pursued. 2023: No Act 167 plans are currently being pursued. 2022: The 2022/2023 state budget includes new funding to support the development of Act 167 plans. Snyder+L11+L12
1.4*	Continue to Implement County Farmland Preservation Program.	Total preservation farm goal (91 farms in program currently – 10,000 acres) Look to fund 300 acres (2-3 farms) per year in preservation program. – 1,300 acres of farmland conservation Preservation of Agriculture and Open Space Land Use through the encouragement of local governments to implement effective land use ordinances Utilize conservation easements to protect land	Agricultural Preservation Coordinator, Natural Resource Conservation Service (NRCS), UCCD, Farm Bureau, Land Trusts	Prime farmland soils countywide	2022-2023 – explore incentive opportunities	Operator acceptance, additional resources for plan development incentivize BMP installation as a farmland preservation goal. Preserved farms are required to have an NRCS Conservation Plan, work with farmers to ensure Conservation Plan is reported in PracticeKeeper. Recommend making this a program requirement statewide. Lack of funds to preserve land. Landowner willingness decreases due to the reality of the limited funds, if they don’t rank at the “top” of the list, over years they quit applying.			Technical assistance for program management 1 – FTE Clean Water Coordinator for UCCD 1 – administrative assistant 6 – Ag planners to assist with technical assistance	Assume \$250,000 per farm: \$3,000,000 \$130,000 per year \$75,000 per year \$780,000 per year	2024: Two farms, totaling 210.2 acres were selected to start the preservation process. The state and county allocated \$902,981.43 to the program. We closed on 5 easements in 2024 that were started in 2023. We currently have 113 farms protected with a total of 11,149.88 acres preserved. 2023: Seven farms, totaling nearly 680 acres, are scheduled for preservation in 2023. 2022: In the spring of 2022 Union County celebrated surpassing 10,000 acres of total farmland preservation. In 2022, UCCD preserved 5-farms. Of the 5-farms, one farm was a donation and four farms were paid. In 2023, UCCD will preserve an additional 5-farms totaling 380 acres. Two of the farms set to be preserved in 2023 are donations. Explore working with preserved farms for reporting into PracticeKeeper. A good working relationship with these farmers and UCCD has been established. Continue to explore opportunities to engage preserved farms.

1.5*	Establish funding/staff support to assist the Agricultural community (day to day support) 574 farms exist in Union County	Approximately 350 have their plans in Union County, goal is to complete 450 by 2025. Support local farms with financial assistance from institutions Work with private ag consultants to document plan reporting. In order to communicate effectively with the farming community one on one farmer outreach must be conducted. Work to document Act 38 and preserved farms conservation and nutrient management plans.	UCPC, UCCD, Contracted planners, Union County Farm Bureau, ACT 38 operators, organic farmers, preserved farms, integrators	Countywide	2022-2025	Limited compliance activities by DEP. Lack of Technical assistance to support the farming community Private sector Ag plans are not required to be shared with District staff. Work with Act 38, preserved farms and organic farms to report Ag E&S and NRCS Conservation Plans. These operations are required to have them, but no requirement to report the plans. It is recommended state agencies make changes to Act38 and preserved farm programs to require PracticeKeeper reporting.	Field verification, troubleshooting 25 farm visits per year Contracted Planners	Conservation Plan Inventory 0.5 FTE (\$32,500) \$50/plan to be paid to contractor	6 – additional Ag Planners to provide TA and planning 3 – FTE Design, Engineers, Permits 3 – FTE Construction Inspector 1 – FTE Clean Water Coordinator for UCCD 0.5 FTE – Bay Technician to expand this position to a full time 1 – administrative assistant	\$780,000 per year \$420,000 per year \$315,000 per year \$130,000 per year \$32,500 per year \$75,000 per year	2024: UCCD Staff continues to support the Agricultural community through various programs and grant funding. 2023: UCCD has filled their Chesapeake Bay Technician vacancy and has hired a new administrative assistant in support of this initiative. 2022: The Foundation for Pennsylvania Watersheds applied for a Growing Greener grant totaling \$1.6 million to support additional ag engineering needs along with increased farm visits. In 2022 the Lancaster Farmland Trust (LFT) will complete 30 farm visits across the county. LFT also completed 20 farm visits in 2021. Agriculture Conservation Assistance Program (ACAP) was announced in the Pennsylvania State Budget in July of 2022. This program will provide all counties in Pennsylvania with funding totaling \$154 million over the next 3-years to support Ag project implementation and technical assistance needs. The Chesapeake Conservancy was awarded \$10 million in RCPP funding to add additional technical assistance and BMPs to Union County. Additionally, the Conservancy submitted a Growing Greener application to increase technical assistance in the Rapid Delisting Watersheds in Union County. Sustainable Chesapeake applied to NFWF MEB Program for Expanding the Adoption of Manure Injection in PA's Most Effective Basins. This grant application will connect farmers with custom applicators to pay for manure injections and provide the technical assistance to educate farmers.
1.6A	Bucknell University (Bucknell) Partnership - Implementation	Develop undergraduate and graduate students to support staff with implementation. Work with Bucknell students and staff to support 319 WIP implementation	Bucknell – Professors	319 Priority Watershed – Buffalo Creek Riparian properties Preserved farms Priority Watersheds: Turtle Creek Headwaters, Turtle Creek South (Winfield Creek), Conley Run, and Cold Run Watersheds	2022-2025	Continued undergraduate/graduate engagement as students graduate through program, implementation funding Lack of technical assistance professionals to mentor students Lack of competitive paying job opportunities that ensure long term sustainability for recently graduated students	Outreach boots on the ground	N/A	5 – Student Internships to Support CAP Implementation	\$50,000 per year	2024: In 2023 and 2024, UCCD was provided an intern from Susquehanna University as we have partnered together to provide workforce development for students. The buffer maintenance programs that we utilize, including Riparian Rangers and the certified herbicide applicator program, also have been extremely helpful in project success. Our intern within 2024, assisted with inputting BMPs that were not yet captured in Practice Keeper, and we once again participated in stream sampling on Winfield Creek. Bucknell students also did their annual water sampling on Buffalo Creek to support the 319 WIP implementation. 2023: UCCD continues to work with Susquehanna University for the Riparian Ranger program which utilizes student interns. UCCD also coordinates with the Chesapeake Conservancy's interns. 2022: Susquehanna University students have been participating in the Riparian Ranger Program with the Union County Conservation District. The Foundation for PA Watersheds applied to National Fish and Wildlife Foundation Most Effective Basins for Phase 2 of BMP Verification. Phase 2 would include funding to support internships for Susquehanna University students working with the Union County Conservation District to document and verify BMPs into PracticeKeeper. Interns would be provided for 2023 and 2024. Bucknell University has completed annual sampling for UCCD. UCCD had an intern from Bucknell University who support with PK efforts. A senior Capstone project with Bucknell University is in the process to complete mobile milk processing facility. UCCD worked with Susquehanna University to complete Macro survey in Winfield Creek.

1.6B	Quantify Land/BMPs Managed by Bucknell	Work with Bucknell to ensure that water quality improvements that they manage are captured in PK/FieldDoc	Bucknell	Bucknell Owned Lands in Union County	2022	Getting maximum credits for experimental BMPs	Institutional knowledge	N/A	5 – Student Internships to Support CAP Implementation	\$50,000 per year	2024: UCCD and HRG reached out to Bucknell this year to determine if any projects need to be reported. No response was received from the University yet. 2023: No progress to date. 2022: No progress to date. In years past, there was a professor who worked with the Conservation District. This long term relationship has fallen off due to professor retiring. New contact hasn't been identified.
1.7A	Develop a Union County Water quality communication plan, leveraging existing documents and covering topics including Hazard Mitigation, Comprehensive Plan, Greenways Plan, Act 167, Buffalo Creek 319 etc.	Work to Develop messages and audience; execute plan and distribute messaging through staff and partners. Utilize the Union County website as a source of consistent communication, website development is underway.	Board of Commissioners staff, PA DEP Northcentral Office, Penn State Extension (Master Gardeners), PA Rural Water Association, Trout Unlimited, Buffalo Creek Watershed Alliance, USDA-NRCS, DCNR, Bucknell, UCCD	Countywide	2022-2023 Commence discussions and planning to develop a communication plan 2023 – develop local content, timing, identify responsible staff	Simplifying the resources that are available			Website development and continued maintenance 1 – FTE Marketing and Outreach Coordinator 1 – FTE Clean Water Coordinator for UCPC	\$30,000 per year \$130,000 per year \$130,000 per year	2024: UCCD continues to utilize social media, its website, and outreach at local fairs to communicate to the public. 2023: UCCD utilizes social media, its website, and outreach at local fairs to communicate to the public. 2022: The Union County GIS team is developing a joint website for both Snyder and Union Counties to utilize for outreach efforts. Included in the website will be a tool to enter project opportunities, along with more information about the CAPs. HRG is developing a messaging schedule for timely outreach newsletter articles and social media post. HRG will support in drafting public outreach pieces.

1.7B	Agricultural Communication Strategy	Work to develop a communication plan to engage integrators: 1-4 mailings a year, for equip rental, ag preservation, etc. - Short postcard surveys to get feedback - Social Media - Trying to set up software that can email or text messages to our farmer lists - Outreach events - piggy backing on annual events hosted by partners (Extension, Commercial (Hoover Tractor), Community Events (Fair) - Stories or ads in local paper - Posters on bulletin boards at local businesses - Attending meetings of outside groups – Young Farmers, 4H, etc.	UCCD, County Farm Bureau, Integrators, Ag Land Preservation, PSU Extension, NRCS, 4R Alliance, Young Farmers, Pesticide Meetings	Countywide	2022-2025	Funding to support the technical assistance required to complete one on one farm outreach Outreach to integrators is a challenge due to the number of integrators and multiple country boundaries they serve. It is recommended DEP/PDA/SCC communicate with integrators on a frequent basis to reduce mixed messages One on one farm outreach is the best way to communicate with farmers. Work to develop a plan to complete one on one farm visits.			6 – additional Ag Planners to provide technical assistance and ag planning 1 – FTE Marketing and Outreach Coordinator 1 – FTE Clean Water Coordinator for UCCD	\$780,000 per year \$130,000 per year \$130,000 per year See 1.7A for website costs. Costs for meeting attendance and administration may be covered through other funding requests.	2024: UCCD is conducting a Soil Health Field Day in August of 2024. UCCD participates in a Field Day sponsored by Seedway that covers different cover crops and soil compaction. UCCD participates in the Hoover Field Day where they provide information on nutrient management plans, District programs, and other Ag BMP related information. UCCD continues to utilize social media, its website, and outreach at local fairs to communicate to the public. Lancaster Farmland Trust is visiting about 12 farms by the end of 2024. 2023: Lancaster Farmland Trust (LFT) will visit 25 farms throughout the year as part of the Countywide Action Plan. Additional visits will occur under the scope of the FPW Growing Greener grant. 2022: Farm visits have been utilized to conduct outreach to farmers about the Countywide Action Plan. In 2021, 15 farm visits were conducted and in 2022 an additional 25 visits are scoped. The Foundation for Pennsylvania Watersheds (FPW) submitted a Growing Greener grant titled 12-County Investment to Catalyze Agricultural Project Readiness that would support rapid scaling up of farm visits within Union County. Scaling up of farm visits would allow for additional outreach to occur. UCCD provided a soil health demonstration at the County Fair. UCCD will be performing annual field days for the next 3 years to educate farmers. UCCD performed an ag land preservation field day to focus on soil health: taught landowners soil testing. UCCD performed "Soil Your Undies" education event with farmers through the PA Soil Health Coalition.
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Priority Initiative 2: Reporting and Tracking

2.1*	Existing BMP cataloguing (quantity and location) for select BMPs, expanding on general recommendations provided in Quality Assurance Project Plan (QAPP) BMPs = forest buffers, urban forest buffers, grass buffers, urban grass buffers, manure storages, grassed waterways, wet ponds and wetlands, fencing	Expand use of existing buffer layer with urban hydrology layer R&D into distinguishing ag, pasture, and turf covers from grassed buffers Manual digitizing where leaf-off <1 ft resolution imagery is available Field verify with staff where required Add data to Practice Keeper or another batch upload option (FieldDoc)	Lead - Chesapeake Conservancy Stakeholder peer review – Bucknell, United States Geological Survey (USGS), Farm Bureau, PDA, Environmental Protection Agency (EPA)	Countywide	2022 – cataloguing 2023 – Practice Keeper batch upload processing and field views	EPA acceptance of the approach, further refine guidance in QAPP so that counties can accomplish this or so that the state can take the burden off of counties, utilize the approach to catalogue existing BMPs and do on the ground verification where required for reporting purposes, this is an accelerated BMP catch up approach while we continue to provide support to farmers on planning and BMP installs, reduce the amount of interruption of government entities to compliant farm operations.	Precision Conservation Tools General methodology outline BMP field backcheck	N/A	Further GIS and data processing/method refinement 5 – Student Internships to Support CAP Implementation 6 – additional Ag Planners to provide technical assistance and verification support	\$46,000 (2022 only) \$50,000 \$780,000 per year	2024: UCCD's Technicians have verification integrated into PK reporting. 2023: UCCD's Technicians have verification integrated into PK reporting. 2022: In April of 2022, the Foundation for PA Watersheds applied to the National Fish and Wildlife Foundation Most Effective Basins grant application to support Phase 2 of a remote sensing analysis. Phase 2 of the analysis would support analysis focusing on six priority BMPs including: Barnyard Runoff Controls, Animal Waste Management Systems, Forest Buffers, Grassed Waterways, Streambank Exclusion Fencing, and Wet Ponds/Detention Basins. Remote sensing efforts would take place in the Buffalo Creek Watershed. A BMP Verification Quick Guide is being developed by HRG to assist with field verification efforts. The grant was not awarded. In conjunction with site visits conducted by the Lancaster Farmland Trust, 30 possible sites were identified to verify BMPs in Union County. Those sites will be visited in December of 2022 and the results will be entered into PracticeKeeper.
2.2*	Identify future ag/urban project opportunities using automated means	BMP opportunity analysis – ag conservation, land retirement, alternative crop, forest conservation, stream restoration Back check with staff field views Batch upload to FieldDoc to calculate credit opportunity	Lead - Chesapeake Conservancy Stakeholder peer review – Bucknell, USGS, Farm Bureau, PDA	Countywide	2022 – cataloguing 2023 – batch upload processing and field views 2024 – 2025 – implementation focus	Different data set scales/precision	Precision Conservation Tools Batch upload processing BMP field verify GIS Mapping Abilities	N/A	Further GIS and data processing/method refinement 5 – Student Internships to Support CAP Implementation	\$46,000 (2022 only) \$50,000	2024: No progress to date. 2023: As a part of the Chesapeake Conservancy's Cooperative Agreement with the Chesapeake Bay Program, the CIC has been working to adapt the USDA Agricultural Conservation Planning Framework (ACPF) toolbox and produce its related GIS conservation practice opportunity outputs for the entire watershed. The toolbox outputs a suite of NRCS agricultural practice opportunities at the field scale -- some have direct equivalents to Bay Program BMPs, while others do not. Since there are many assumptions made to produce these opportunity footprints across the entire watershed, they are not intended to be ground truth and should only serve as a high level reference for helping to plan efforts in combination with expert on-the-ground input. The outputs are expected to be publicly available after June 2024. 2022: No progress to date.

2.3*	Develop a local system to capture data collection on urban structural and non-structural practices	Add development related BMPs to PK/FieldDoc so that as land use data sets are updated, there are accompanying BMPs	Municipal engineers, Chesapeake Conservancy, Central Keystone Council of Governments (CKCOG), Susquehanna Economic Development Association – Council of Governments (SEDA-COG)	Urban/suburban landscape	2022	Currently municipalities are not collecting BMP data because it is not required in non-Municipal Separate Storm Sewer System (MS4) communities. Must incentivize communities to report, no existing system in place.	Reporting platform	N/A	Training 5 – Student Internships to Support CAP Implementation 1 – municipal planner	N/A \$50,000 per year \$130,000 per year	2024: No progress to date. 2023: No progress to date. 2022: The Foundation for Pennsylvania Watersheds applied for a NFWF Most Effective Basins grant in April of 2022 to support Phase 2 of BMP verification remote sensing analysis. Phase 2 would include analyzing wet ponds and detention basins in urban areas across Union County. PA DEP has updated FieldDoc to allow for additional reporting of urban practices. The grant was not awarded.
2.4*	Implement a documentation program for commercial and homeowner nutrient applications in developed lands Support current legislation for fertilizer bill.	Support fertilizer legislation – where legislation requires reporting, be the data clearinghouse Legislation will support the implementation of Urban Nutrient Management – 2,000 acres	PSU Extension	Countywide	TBD	Education of responsible parties, receiving timely information, training on reporting system, will need direction from State on what’s expected and any reporting system that’s developed. Counties aren’t equipped with technology or field experience to manage this initiative Fertilizer Legislation has failed to pass congress in the last two years.	TBD based on fertilizer legislation if passed	TBD based on fertilizer legislation if passed	1 – FTE Clean Water Coordinator for UCPC	\$130,000 per year Urban Nutrient Management \$10 per acre @ \$20,000	2022: On July 11, Governor Wolf signed SB 251, a bipartisan bill sponsored by Senator Gene Yaw (R) and Senator Carolyn Comitta (D), into law. Pennsylvania now has a law governing turfgrass fertilizer application dates, practices, rates, and type of fertilizer used. We are uncertain on how documentation and crediting will occur with the new bill.
2.5*	Improve Agricultural BMP reporting utilizing PracticeKeeper, Capital RC&D Transect Survey, PSU Survey, Manure Transport Reporting and Remote Sensing	Increase reporting of agriculture plans into PracticeKeeper Work with Capital RC&D to improve current transect survey routes to be more inclusive Work with PSU to produce better response rate to the PSU survey for Union County Work with PDA/DEP to improve manure reporting	DEP, UCCD, NRCS, PDA, NRCS, Union County Farm Bureau, Capital RC&D, Chesapeake Conservancy, PSU Survey, Manure Brokers	Countywide	2022-2025	Private sector ag planners do not have access to PracticeKeeper. Ag planners do not have time to report into PK. Current Capital RC&D routes are not all inclusive. Current response rates are low and miss a large demographic of Union County farmers. Manure brokers are not required to report data annually. Data is not all inclusive.			5 – Summer interns for reporting and verification	\$50,000 – paid internships See 3.5 for funding needs to improve cover crop reporting for Capital RC&D	2024: HRG continues to assist CDs in better PracticeKeeper practices and kept them up to speed on best guidance from DEP. 2023: HRG assisted CDs in better PracticeKeeper practices and kept them up to speed on best guidance from DEP. 2022: In the Spring of 2022 HRG participated in a beta testing group for the PracticeKeeper 3rd Party Module. PADEP initially released the module in June of 2022 before recalling the system for additional bug fixes. Phase 2 of the BMP verification grant submitted by the Foundation for PA Watersheds includes budget for interns from Susquehanna University to enter BMPs into PracticeKeeper. Union County has been utilizing in-house staff as part of the \$30,000 for BMP verification to report "Old Bay Special Projects" into PracticeKeeper along with other practices and plans. LFT is being subcontracted to come on board to complete additional BMP verification and data entry into PracticeKeeper.

2.6*	Standardized Reporting for Dairy Precision Feeding	Counties would like to utilize the dairy precision feeding BMP. However, current reporting guidelines do not allow for clear reporting standards on feed reduction amounts, how to report, and who is qualified to report.	Chesapeake Bay Program, Penn State Extension, Dairy co-ops	Countywide	2022	It is recommended that milk urea nitrogen (MUN) be an acceptable standard for reporting dairy precision feeding. Guidelines need to be posted on acceptable MUN rates and work with dairy integrators to receive MUN data to report to DEP.	N/A	N/A	Reporting protocol	N/A	2022: No progress to date, reporting standards still remain an issue to utilize the BMP. 2023: No progress to date. Education, implementation, and reporting remain an issue.
Priority Initiative 3: Achieve New Pollutant Reductions											
3.1	Implement Union County Greenway Plan	Protect 250 miles of riparian buffers using easements Install 200 acres of riparian buffers along the Susquehanna River Protect 50 acres of flood plain next to Koons Easement in Mifflinburg Permanently protect 1.5 miles of riverfront land in Great Stream Commons Make strategic additions to the state forest and other public lands	UCPC, UCCD, Buffalo Creek Watershed Alliance, Land Trusts	Countywide	2021-2025	Gaining landowner interest, design/permit/construction schedules, dedicated funding to support BMP implementation. Lack of technical assistance and engineering staff to support implementation. Lack of technical assistance to implement the plan. Lack of adequate funding to implement the plan.			1 – FTE Clean Water Coordinator for UCPC	\$130,000 per year \$2,000 per acre of buffer conserved through easement: Total \$125K For buffer implementation see initiative 3.8 \$2,000 per acre flood plain conserved through easement: Total \$100K	2024: HRG worked through the Greenway Plan to determine if potential CAP related projects would shake out. We will continue to keep an eye out for future projects that could benefit from BMP implementation. 2023: No progress to date. 2022: Working through Merrill Linn Conservancy and Susquehanna Greenway for implementation. Implementation progress has been slow due to lack of funds, lack of political will, and the COVID-19 pandemic. More work will be done when it is included with the updated Comprehensive Plan. As of the writing of this report, postcard outreach has occurred and meetings are being scheduled to try to secure buy-in.

3.2	Implementation of the Buffalo Creek Watershed 319 Plan	Conduct farm visits, windshield surveys, GIS Studies. Utilize Precision Conservation assessments to target strategic farm locations. 2016 to present – market program to landowners in impaired segments. Aim for 3 farms per year for implementation	Bucknell, UCCD, other partners to be identified	Buffalo Creek Watershed Prioritizing Buffalo Creek mainstream, Beaver Run, Muddy Run/Coal Run, Little Buffalo, Rapid Run, Spruce Run, Panther Run, Black Run, Stony Run, Conley Run	2021-2025	Funding, landowner interest in BMPs, implementation partner coordination Reverification of existing farm BMPs			Design, permit, construction oversight 1 – New Environmental Specialist	\$500K per farm at \$1.5M per year → \$7.5M over 5 years \$75,000	2024: No progress to date. 2023: No progress to date. 2022: While project opportunities exist in the watershed, no funding currently applied to for the 2022 calendar year. Project opportunities include: manure storage installation, earthen manure decommissioning, buffers, and grassed waterway reconstruction. Buffalo Creek Watershed Association is actively working with landowners to identify new project opportunities. Due to CD capacity, staff turnover and additional workload of CAP and thinking about ACAP, nothing has been done with 319 implementation in 2022.
3.3	Accelerated Implementation of Rapid Delisting Catchment Strategy through the Precision Conservation Partnership	Have identified four priority catchments. Looking to identify 3-6 parcels per priority catchment Turtle Creek is priority number 1 with six catchments already identified for outreach	Chesapeake Conservancy, UCCD and Precision Conservation Partnership Stakeholders	Turtle Creek Headwaters, Turtle Creek South (Winfield Creek), Conley Run, and Cold Run Watersheds	2022-2025	Gaining landowner interest, design/permit/construction schedules, dedicated funding to support BMP implementation, Lack of technical assistance and engineering staff to support implementation. Can only work with 1-3 parcel owners per year based on current staffing.	Program management and GIS Landowner outreach		3 – additional FTE municipal/ environmental planners	\$390,000 per year \$100,000 dollars to complete rapid delisting program management per year = total cost \$500,000 Other funding identified in below initiatives	2024: UCCD continues to work with the Chesapeake Conservancy to implement the Rapid Delistment Catchment Strategy. By working efficiently with the Conservancy's RCPP funds, UCCD has targeted Ag BMP projects within the catchment area. UCCD also attends regular leadership meetings with RCPP and strategy meetings with the Conservancy for the Rapid Delisting efforts. 2023: UCCD continues to work with the Chesapeake Conservancy to implement the Rapid Delistment Catchment Strategy. By working efficiently with the Conservancy's RCPP funds, UCCD has targeted Ag BMP projects within the catchment area. UCCD also attends regular leadership meetings with RCPP and strategy meetings with the Conservancy for the Rapid Delisting efforts. 2022: Chesapeake Conservancy continues to advance Rapid Delisting efforts. In August, the Conservancy was awarded an RCPP application to support additional technical assistance and AG outreach. For RCPP the county are contributing a significant portion of funding as match to the application. Chesapeake Conservancy applied to Growing Greener for project funding to support 3 full farm restoration projects. Chesapeake Conservancy contracted with Huntingdon County Watershed Specialist to perform Macro, habitat and water chemistry monitoring in Turtle Creek South in the

3.4*	Help farmers and operators comply with state and federal requirements: Conservation and Nutrient Management Plans	Soil and Water Quality Conservation Plans (AG E&S) 10,000 21,000 acres Nutrient Management (Manure Management) 10,500 30,000 acres of Core N and 13,000 25,000 acres of Core P Work with ACT 38 operators (47), Preserved Farms (91), and certified organics to document plans already required Implementation challenges (continued): State agencies must work with integrators to ensure they are requiring compliance by farmers. Some integrators require compliance, but not all, great way to communicate with farmers as well.	4R Alliance, UCCD, Union County Farm Bureau, NRCS, Private Sector Agriculture Farm Visits, integrators (Bell and Evans, Country View, Pilgrims Pride, Empire Kosher, BJE Land O'Lakes, Dairy Farmers of America, Maryland and Virginia Milk Producers Cooperative, BJE Poultry, Chick to Chicken, Tyson, Purdue, Eggs for Vaccines, Smithfield Hatfield, Swift) ACT 38 farmers	Countywide Ag Land	2022-2025	Lack of DEP inspections. Reporting and verification of AG Plans, NRCS plans expire and do not get reverified, private plans are never entered. Lack of Technical assistance to support agriculture planning and implementation, one on one farm outreach is best way to capture existing plans. Act 38 and Preserved Farms not required to enter plans in PK, Recommended to require programs to enter plans into PK.	25 farms per year inspected	0.5 FTEs per year	6 – additional Ag Planners to work with farmers	\$780,000 per year \$15 per acre for a total cost of \$150,000 \$15 per acre for a total cost of \$195,000	2024: We will be completing 50 inspections for the calendar year 24-25. We were able to complete 50 inspections from January - September 2024. We are still utilizing the Growing Greener grant as much as possible for plans and soil testing implementation. 2023: A new round of inspections began on 7/1/2023. At this time, there have been 10 inspections completed to date. Plan writing and soil sampling Growing Greener grant is being implemented and participation is high(more details in earlier section). 2022: PACD recently announced their Growing Greener grant for Ag Plan Reimbursement. Farmers in Union County will be able to take advantage of this opportunity to produce Ag E&S and Manure Management Plans. HRG will be attending the rollout of this program to maximize opportunities to get farmers additional plans. From 2020 to 2021 progress scenario in CAST Union County has increased Soil and Water Quality Conservation Plan reporting by over 2,600 acres. Additionally, Nutrient Management Core N increased by 1,000 acres and Core P increased by over 2,000 acres. - 25 inspections completed in 2022 by UCCD staff (March-June 2022). Received 2021 Growing Greener Grant to work with local plan writers to develop manure management plans and AG E&S Plans. Approximately \$435,000 for cover cropping, plans, manure testing and soil testing. This funding also Created 10 Soil Health Ambassadors to promote plans and soil health practices. - 3000 acres of multispecies cover crop planted in the Fall of 2022.
3.5	Advanced Nutrient Management (4R) Practice Education and Implementation	Transition manure management plans (MMP) to nutrient management plans and incentivize implementation Increase reporting of supplemental nutrient management BMPs through existing programs and initiatives. Increase existing 4R practice (N Rate by 3,450 acres, N Timing by 7,200-3,000 acres and N Placement by 4,300 acres, P Rate/Placement/Timing by 3,000 acres)	4R Alliance, UCCD, Union County Farm Bureau, NRCS, Private Sector Agriculture Farm Visits, PA Game Commission	Countywide Ag Land	2022-2025	Landowner interest, BMP verification (annual) Lack of Technical assistance to support agriculture planning and implementation Additional funding to support soil testing. Soil testing is key to meeting the recommendations of supplemental BMPs. Machine dependent for most farming operations Cost of fertilizer is self-regulating farmers to use less fertilizer; therefore, lower rates are applied. Explore the idea of increasing PSNT or Chlorophyl testing to district program participants.	25 farms per year inspected	\$32,500 per year	6 – additional Ag Planners to work with farmers to meet 4R standards	\$780,000 per year \$10 per acre of advanced nutrient management planning per type 2 total cost for all is \$149,500	2024: See Action #1.7b. 2,000+ acres and growing exponentially. Year end numbers should be around 3,000 acres. 2023: UCCD continues to promote 4R through NRCS resources being distributed at outreach events. UCCD is continuing to implement (year 2 of 3) of their Growing Greener Grant for soil and manure testing. HRG has worked with the counties on methods to integrate supplement NM reporting into current workflows in the Chesapeake bay Contract, Nutrient Management Contract, current PSNT programs, and equipment rental programs. HRG also provided outreach at several events to increase adoption of 4R practices within the region. 2022: In 2021, UCCD received a Growing Greener grant for soil and manure testing. Testing will help farmers to meet the 4R application rates. Sustainable Chesapeake's manure incorporation grant to NFWF MEB will also support 4R implementation. In the spring of 2022, the nutrient management guidelines were updated to include additional guidance for 4R reporting. No testing was conducted in 2022. However, as outreach and education, 6 farmers buried underwear for 60 days as part of "Soil Your Undies". It was found that the field with permanent hay had the best sign of microbiology. This was conducted to be something catchy and out of the box and farmers have seemed receptive. These findings have been shared at different events conducted by the CD and may be a way forward for outreach in the future.

3.6*	Implement Practice to improve soil health and sustainability (Tillage Management and Cover Crops)	Determine feasibility of having a county/state cost share program to enhance adoption of the annual practice Implement tillage management and cover crops on an annual rate of 30,300 acres High Residue, 3,600 15,000 acres Conservation Tillage, 1,800 acres Low Residue, 900 31,100 acres of cover crops and 30,200 acres of cover crops with fall nutrients	UCCD, Union County Farm Bureau, NRCS, Private Sector Agriculture Farm Visits, PA Game Commission	Countywide Ag Land	2022 – investigation 2023 – next steps	Capacity to manage the program, landowner interest Lack of technical assistance and farm planners to work with farmers to transition to High Residue Tillage Current verification methods do not accurately capture implemented amounts – work with Capital RC&D to improve Transect Survey Routes Farmers are harvesting cover crops for forage, need accurate efficiency crediting for commodity cover crops Existing Cover Crop Programs have strict plant by date that does not work with changing weather patterns and wetter years	Transect survey Landowner education Existing No-Till farm equipment for Rent		6 – additional Ag Planners to transition farmers to high residue County UCCD – staff to administer the program Capital RC&D staff to complete Transect Survey	\$780,000 per year \$90 per acre traditional per year: \$81K for a 5-year total of \$405K (incentive payment, administration, Capital RC&D reporting) \$50 per acre fall nutrients per year = \$1.5M for 5-year total of \$7.55M \$50,000 for improvements to Capital RC&D Transect Survey	2024: 2,200 acres of multispecies cover crop. 237 soil tests. 13 manure tests. 4 nutrient management plans. 1 conservation plan. 16 manure management plans. 14 Ag E&S plans have been implemented through cost share with our Growing Greener Grant. 2023: The achievements made possible from the Growing Greener grant are: 1,000 acres of cover crop, 173 soil tests, 12 manure test, 2 nutrient management plans, 1 conversation plan, 5 manure management plans, and 4 ag e&s plans. We are halfway through the grant and these numbers will only continue to grow. 2022: \$435,000 awarded in a Growing Greener Grant to launch a program to help cost-share a cover crop program and in turn will have access to soil sample results. From 2020 to 2021 progress scenario in CAST Union County has increased Cover Crop implementation by over 8,000 acres.
3.7	Implement more pasture management BMPs Use Ag Land Preservation Goals to reach Pasture Management Goals	Prescribed grazing – 350 acres Forest buffers on fenced pasture corridor – 75 10 acres Forest buffers, narrow - 10 acres Forest buffers, narrow with fencing - 10 acres Grass buffers on fenced pasture corridor – 26 acres Grass buffers, narrow - 10 acres Grass buffers, narrow with fencing - 10 acres Pasture Alternative Watering - 350 acres Land Retirement to Ag Open Space - 75 acres	UCCD, NRCS, Private Ag Consultants, Chesapeake Bay Foundation (CBF), Chesapeake Conservancy	Countywide ag lands – landowners who raise horses, dairy, beef and other pasture grazing animals	2025	Landowner education, BMP funding for non-buffer work, plan updates, data gathering. Landowner education, BMP funding for non-buffer work, plan updates, data gathering. Lack of Technical assistance to support agriculture planning and implementation. Old NRCS plans need to be updated to comply with prescribed grazing definition – difficult to get landowner buy-in – fund alternative watering and fencing; most pastures are streamside. Increasing construction costs are resulting in cancelled NRCS contracts.			6 – additional Ag Planners to provide TA and ag planning 3 – additional FTE environmental technician	\$780,000 per year \$390,000 per year Prescribed grazing \$540 per acre: \$189K total FB Buffer W/ Exclusion \$10,500 per acre: \$787,500 total GB Buffer W/ Exclusion \$2,750 per acre: \$71,500 total	2024: 30.90 acres of prescribed grazing, 2 cattle stream crossings, 6750 sq ft of grassed buffer on fenced pasture corridor, and 3 watering facilities installed. 16 watering facilities, 74.9 acres of prescribed grazing, 23640 sq ft of animal trails and walkways, 1 stream crossing, are planned to be installed currently under contract NFWF Small Watershed Grant (\$500,000) in conjunction with NRCS and Chesapeake Conservancy will be targeting 5 farms within the Winfield Creek watershed; BMP implementation is completed on 1 (Moore), almost finished on 2 (M. Ulrich, I. Yoder), and by late Fall, the other 2 will be completed (K. Ulrich and J. Walter). 2023: There are pasture management bmps planned for installation in 2023 and 2024 through NRCS EQIP and the Union County Conservation District ACAP program. 2022: The Foundation for Pennsylvania Watersheds applied to NFWF MEB for Phase 2 of BMP Verification. If awarded Streambank Exclusion Fencing would be remotely sensed to identify existing BMP implementation. Field verification would occur on remotely sensed BMPs. The grant was not awarded. Due to a lack of certified Pasture planners in the UCCD office and the local NRCS, not a lot has been done to advance these plans.

3.8*	Riparian buffer and re-forestation BMPs	500 350 riparian forest buffer acres, (275) acres lost since 2017 need reverified 400 riparian grass buffer acres, (25) acres lost since 2017 need reverified 15 194 acres – Agriculture Tree Planting 60 5 acres – urban forest buffer 2 4 acres – urban tree canopy 100 acres – urban forest planting	CBF, Buffalo Creek Watershed Alliance, MLC, Chesapeake Conservancy, NRCS, UCCD, PA Game Commission, CBF	Countywide	2022 – line up landowners 2023-2025 – implementation	Landowner partnerships, landowner education, volunteer acceptance of buffer plantings, buffer maintenance guide for farmers, routine site visits to confirm buffers are thriving, invasive species removal during establishment. Flash grazing must be allowed with buffer installation. Funding program must include a 5-10-year maintenance program to establish buffers along with incentive program \$4K minimum per acre payment. Must revise ordinances to not cut down buffers because of “messy” appearance.	Materials	Mapping	Budget available to be determined	6 – additional Ag Planners to provide TA and ag planning 3 – additional FTE environmental technician	\$780,000 per year \$390,000 per year Forest Buffer \$10,000 per acre: 2.85M Grass Buffer \$2,500 per acre: \$937,500 Tree/Forest Planting \$10,000 per acre: \$1.161M	2024: A majority of the success we had this year was focused on post-planting establishment/maintenance on existing buffers. Some of the replanting that was done/will be completed this Fall come from Chesapeake Conservancy's live staking initiative and CBF's 10 million tree program. We established 3 (Sauers- CAP, Harvest Church- Live stakes/K-10, and Lauvers-K-10) new buffers within 2024, plan to install 3 (TCP-K-10, & Contract out Ulrich, and Walter- RFQs have been sent out) additional buffers in late Fall, and have one planned for Spring of 2025- CAP or NPC Partnership. 2023: Participated in planning and post implementation meetings, scheduled maintenance dates, Held the Spring Training Day with the Alliance for the Chesapeake Bay on 4/29/23.Coordinated locations for buffer training and maintenance, met new landowners with existing buffers; Ordered a Fall 2023 order of K-10 plants for some landowners/existing buffers as well as installation of anew buffer at Harvest Church (985 linear feet of UNT to Buffalo Creek). Training day had 12 people total-agencies such as DCNR, NRCS, Trout Unlimited, AmeriCorps and Chesapeake Conservancy attended. This year we also partnered with Susquehanna University and there are 4 interns who became certified for herbicide spraying; they reached 6 buffers that were planted in 2019- maintenance was performed on 25+ acres of buffers within Union County through partnership with Chesapeake Conservancy, SU, and the Alliance for the Chesapeake Bay. 2022: The Foundation for Pennsylvania Watersheds applied to NFWF MEB for Phase 2 of BMP Verification. If awarded Forest Buffers and Grassed Waterways would be remotely sensed to identify existing BMP implementation. Field verification would occur on remotely sensed BMPs. The grant was not awarded. Buffer easement completed for 15 acres of existing forest buffer and paid to convert cropland to permanent pasture. Established a Riparian Ranger Program in the summer of 2022. The Riparian Ranger Program planted approximately 10-site locations that required maintenance. To date 17 volunteers are currently signed up. It is anticipated additional volunteers will sign up in the fall. There is an additional training opportunity planned for the fall. In the fall of 2022, 5 acres of buffers will be planted. CBF K10 trees are coming in the fall for additional buffer plantings. Lewisburg Borough completed a buffer and stream restoration project as part of the Bull Run Greenway Plan.
3.9	Wetland restoration implementation on marginal production ag land	65 acres of Wetland Restoration 25 Acres of Wetland Enhancement and Rehabilitation Identify 1 large property owner from University of Vermont restorable wetland layer to help identify where to implement a large project	Chesapeake Conservancy, UCCD, NRCS, Buffalo Creek Watershed Alliance, MLC, PA Game Commission	Countywide	2022 –2025	Willing landowner; appropriate siting, design, and construction for successful restoration result. Lack of technical assistance for landowner outreach and agriculture planning to identify potential site locations. Lead time it takes to secure projects can take years.	Landowner outreach			3 – additional FTE environmental technician 2 – stream biologist	\$390,000 per year \$280,000 Wetland Restoration \$30,000 per acre @ \$2.7M	2024: HRG has been utilizing existing maps and outreach to determine potential locations for wetland restoration projects. From there HRG plans to develop a regional grant application for the SRBC Consumptive Use Grant. 2023: UCCD will be installing buffer work to supplement the Brown Wetland restoration project in the fall of 2023. No other wetland projects have been identified. 2022: UCCD completed the Brown Wetland restoration project paid for through CAP Block Grant dollars in Fall of 2022. East Buffalo Township applied for and was awarded a grant to acquire land and incorporate wetland restoration

3.1	Stream Restoration (Urban and Agriculture)	10,400 Linear feet (2 miles) Urban Stream Restoration 15,000 5,000 Linear feet (1 mile) Agriculture Stream Restoration	CBF, Chesapeake Conservancy, TU National, NFWS, Buffalo Creek Watershed Alliance, MLC, PFBC Stream Restoration Team, NRCS	Rapid delisting areas are the top priority, and Countywide	2022 – 2025	Design/permit/construction cycle seems to work in two-year increments, there is an assumption that eroded/degraded streams exist based upon 403(d) listing – should that not be the case in the field, adjust quantitative goal down and ensure buffers are in place. Lack of funding to cover engineering design.	GIS		Design, permit, construction services 2 – Municipal Engineers 3 – FTE Design, Permit construction Services 2 – stream biologist	Assume \$900/LF - \$9.36M – Urban Assume \$400/LF - \$6.0M Agriculture \$280,000 per year \$420,000 \$280,000	2024: Stream restoration in 2024- 200 feet of Mudsill installation (Low Volume Road project) on Buffalo Creek, 50 feet of Mudsill installation (Dirt and Gravel Road project) on Buffalo Creek, 230 linear feet of stream stabilization on an UNT to Penns Creek with a tree/shrub riparian buffer, 1,370 linear feet of stream stabilization on Kern Run (Tributary to Buffalo Creek; Buffer install Spring 2025), 1,890 linear ft of stream stabilization on Winfield Creek (buffer following this Fall), and completed the second/final phase of Turtle Creek Park- another 1,200 linear ft. of stabilization (buffer planting this Fall) 2023: Planted 2.5-acre buffer with 375 trees/shrubs in Winfield (UNT to Penns creek), a 2.5-acre buffer on Turkey Run in Mifflinburg, and a 2-acre buffer on Beaver Run in Lewisburg through CVST funding; Also expanded a buffer along Turtle creek from 2.6 to 9.0 acres; Contractor with 3-year maintenance on all buffer plantings is Native Creations. 2022: Stream restoration projects completed in 2022: Unnamed tributary to Turtle Creek - 2 stream crossings, 1,500 linear feet of stream restoration, and riparian buffer planting Beaver Run - 1,315 linear feet of stream restoration, riparian buffer planting, 2 stabilized stream crossings, and stream exclusion fencing SGL 252 - 2,100 linear feet of stream and habitat restoration Mifflinburg Borough - 600 linear feet of riparian buffer
3.11	Implement more barnyard runoff control/loafing lot management	22 80 acres of barnyard runoff controls. (18 acres need reverified) 3 acres of loafing lot management	UCCD, Chesapeake Conservancy, NRCS, Union County Farm Bureau, NRCS	Countywide Farms	2022-2025	Lack of Technical assistance to support agriculture planning and implementation Lack of funding to cover engineering design Increasing construction costs are cancelling NRCS contracts			6 – additional Ag Planners to provide TA and ag planning 3 – FTE Design, Engineer. Permit 3 – FTE inspector construction Services	\$780,000 per year \$420,000 per year \$315,000 per year Barnyard Runoff Control \$175K per project, assume 1 acre per project \$2.45M in total	2024: Decommission of an inactive earthen milkhouse waste and manure storage facility. Installation of 3,265' of access road. Installation of 2,090' of cattle walkway. Installation of one stream crossing (240 sq. feet). Installation of one frost free hydrant for animal watering and 40' of water pipe. 2023: Decommission of an inactive earthen bank manure storage facility 2. Barnyard BMPs- HUA (245 cubic yards), Manure storage (426 cubic yards), roof (6360 sq. ft.), gutters (316 linear ft.), perimeter drain (233 linear ft.), outlets (243 linear ft.), lined waterway (~100 ft), access road (216 sq. yd.), seeding, and fence (156 linear ft.). (Currently being installed) 3. Barnyard BMPs- reinforced gravel walkway (~12 ft x 465 ft) with fence (~185 ft), grassed waterway (~25 ft x 1280 ft), mulching (~32000 sq ft), pasture fence (~1350 ft) - conversion of crop field to pasture, streambank fence (~810 ft), removal of existing concrete pad (~32 ft x 22ft), roof gutters on existing heifer barn (~244 ft), roofed concrete heavy use area (~32 ft x 22 ft) with roof gutters (~32 ft) and fence (~50 ft), reinforced gravel access road (~12 ft x 260', ~12 ft x 350 ft), structure for water control (~1), underground outlets (~160 ft - 6", ~100 ft - 8"), and critical area planting (~.5 ac) 4. Barnyard BMPs-roofed stacking structure (~36 ft x 40 ft) with roof gutters (~40 ft) and fence (~112 ft), reinforced gravel walkway (~18 ft x 450 ft) with fence (~450 ft), streambank fence(~2620 ft), lined waterway or outlet (~56 sq ft), removal of existing roof structure (~20 ft x 20 ft),gutters on existing heifer barn (~80 ft), roofed concrete heavy use area (~20 ft x 40 ft) with roof gutters (~40 ft) and fence (~50 ft), reinforced gravel access road (~18 ft x 150 ft, ~18 ft x 660 ft), structure for water control (~2), subsurface drain (~80 ft), underground outlets (~10 ft - 4", ~60ft - 6", ~350 ft - 8"), equipment crossing, and critical area planting and mulching (~.5 ac)

											2022: The Foundation for Pennsylvania Watersheds applied to NFWF MEB for Phase 2 of BMP Verification. If awarded Barnyard Runoff Controls would be remotely sensed to identify existing BMP implementation. Field verification would occur on remotely sensed BMPs. The grant was not awarded. In the fall of 2021 completed a barnyard runoff project in Turtle Creek Watershed. Upcoming project opportunity in the Turtle Creek Watershed. Walter has planned project in Cassin, Cassport to implement Barnyard Runoff Controls
3.12	Animal Waste Storage Systems	20,000 85,000 Animal Units of Animal Waste Management Systems (10,000 new AUs of livestock & 10,000 new AUs of poultry) 3,500 AUs of animal mortality composting management	UCCD, SCC, CEG Program, County Farm Bureau, NRCS, Private Farm Visits, Ag Land Preservation, Chesapeake Conservancy, Integrators	Livestock & Poultry farms	2022-2025	Time to get through planning, design, and construction; outreach to smaller farms that likely need the assistance; match cash value for small farms; readiness to plan/implement projects when outreach efforts yield willing landowners. Lack of funding to cover engineering design.	Project implementation – 5 farms per year		6 – additional Ag Planners to provide TA and ag planning 3 – FTE Design, Engineer. Permit 3 – FTE inspector construction Services	\$780,000 per year \$420,000 per year \$315,000 per year Animal waste management system \$175,000 per project, assume 100 AUs per project \$35M in total	2024: Landowners have applied for a number of animal waste storage systems through the ACAP program. Applications have been ranked and contracts are waiting to be signed. There will be progress made on installation later this year. 2023: Landowners have applied for a number of animal waste storage systems through the ACAP program. Applications have been ranked and contracts are waiting to be signed. There will be progress made on installation later this year and throughout 2024. 2022: The Foundation for Pennsylvania Watersheds applied to NFWF MEB for Phase 2 of BMP Verification. If awarded Barnyard Runoff Controls would be remotely sensed to identify existing BMP implementation. Field verification would occur on remotely sensed BMPs. The grant was not awarded. From 2020 to 2021 progress scenario in CAST Union County has increased poultry waste management systems by over 1,400 animal units. 30 farm visits are scheduled by LFT to identify earthen Manure Pits to decommission. These visits will be completed in December of 2022. UCCD was awarded a NFWF Small Watershed Grant to help implement manure storage BMPs in Union County. This funding will target 2-3 farms and will be spent in 2023-24.
3.14*	Manure Transport out of Union County	Transport 1,500 dry tons per year out of county	UCCD, Chesapeake Conservancy, NRCS, Union County Farm Bureau, Manure haulers and brokers	Countywide	2022-2025	Current reporting standards do not require manure brokers and haulers to report manure transported. New regulations must be developed to require haulers and brokers to submit information to DEP.		Surface Water Assessment (SWAP)	1 – FTE Clean Water Coordinator for Conservation District	\$130,000 per year	2024: Tracking of manure in and out of Union County did not take place. 2023: New goal established in 2023.

3.13*	Urban SWM Non-Regulated Communities	Document existing ordinances and BMPs associated with implementation at local municipal level Catalogue existing BMPs that fit into this category and newly built ones Stormwater Treatment Performance Standard – 80 acres treated	UCPC, UCCD, developing municipalities, CKCOG	Countywide	Ongoing 2022-2025	Coordination/ training for municipal staff, FieldDoc batch upload opportunity, non-MS4 engagement (what’s in it for them?), difficulty obtaining past information (MS4s typically have databases from 2003-present).	Reporting platform		5 – Summer interns for reporting and verification 2 – Municipal Engineers 1 – municipal planner	\$50,000 – paid internships \$280,000 per year \$130,000 per year Stormwater Treatment \$1,815: \$145,200	2024: No progress to date. 2023: No progress to date. 2022: Working with the Buffalo Valley Lutheran Village Campus Master Greening Plan to retrofit existing stormwater basins. East Buffalo Township completed a raingarden, pervious pavement and wetland to control stormwater runoff.
3.14	Conservation Landscaping/Turf to Meadow Conversion	Promote new program and enable one large tract landowners’ participation 80 10 new acres of Conservation Landscaping	UCPC, DCNR, UCCD, Chesapeake Conservancy, Buffalo Creek Watershed Alliance, MLC	Developed areas in County municipalities	2022 - 2025	Landowner education and acceptance Existing mowing ordinances and weed ordinances can be a challenge to implementation	Planting plan assistance		1 – FTE Municipal Planner 3 – additional FTE environmental technician	\$130,000 per year \$130,000 per year	2024: No progress to date. 2023: UCCD is attempting to take advantage of the Lawn Conversion Grant through PACD but is having difficulty finding willing landowners to participate. 2022: Working to identify projects for pasture to forest/meadow conversion. A project that was identified stalled out due to the landowner not liking the aesthetics of the conversion. This seems to be an underlying concern of landowners and this initiative.
3.15*	Continue dirt and gravel road program	21 miles overall restored through past projects Dirt & Gravel Road Erosion & Sediment Control - Driving Surface Aggregate with Outlets - 12,000 LF Continue to implement the program annually	UCCD, Trout Unlimited	Countywide	2025	Continue D&G Road program funding Expand Dirt and Gravel Road Program to include farm lanes	Education, technical assistance, project oversight 1 – technical staff administering the program	\$1.4 Million since 1998	1 – FTE Clean Water Coordinator for UCCD Dirt and Gravel Roads \$10 per foot TBD	\$130,000 per year	2024: There were 3 total projects contracted this year but 4 total completed; The stream crossing replacement on Polly Pine Road (Spruce Run culvert) was completed and closed out (\$160,000), Creekside Lane had drainage and road surface improvements along Buffalo Creek (\$90,900), and both Hoover (\$10,700) and Creek road (\$26,000) were contracted as stream stabilization projects as the roads were actively falling into the stream. FY 24-25 Allocations are \$100,000 for dirt and gravel and \$46,166 for low volume. 2023:There were 2 total projects contracted this year, one stream crossing under dirt and gravel funding on Polly Pine Road/Spruce Run in Millmont, PA and low volume project on Wolfland Road/Buffalo Creek in Lewisburg, PA. The engineer has been hired, stream profiling has been completed, GP-11 permit package has been started, and the hope is to begin construction on Polly Pine Road next April (after Class A wild trout stream regulations end). Wolfland road construction was completed 3/24-8/24 and the project will be closed out by 9/1/23. A calling for applications will be sent out November 1 st for next construction season. FY 23-24 Allocations are \$100,000 for dirt and gravel and \$46,640 for low volume. 2022: 2 projects will be completed by June of next year. An additional project to be completed in the fall of this year. Advertising for new applications in fall of 2022. \$100,000 for dirt and gravel and \$46,000 for low volume for next year.

3.16*	Work with PennDOT and local municipalities to improve roadside ditch and embankment maintenance programs	Educate local municipal leaders and work with PennDOT to address state-owned roads on the importance of maintaining healthy vegetation along roadside ditches and embankments to prevent erosion and increase nutrient uptake and reduce invasive species.	Municipalities, DEP and PennDOT	Countywide	2023	PennDOT's and Municipal willingness to cut back on mowing programs. DEP Chesapeake Bay Program will need to assist in the education of PennDOT.			1— FTE Clean Water Coordinator for UCPC 1— FTE Clean Water Coordinator for UCCD	\$130,000 per year \$130,000 per year	2023: No progress to date. 2022: No progress to date.
3.17*	Work with PA Game Commission to establish BMPs and conservation easements within Game Lands. Require farmland lessees to implement Comprehensive Nutrient Management Plan (CNMP) and Ag E&S plans	Approximately 3,200 acres of state Game Lands are managed in Union County.	PA Game Commission, UCCD, MLC	PA Game Lands 193, 201, 252 and 317	2025	Coordination with Game commission often challenging, requiring leases to implement plans when not currently required by lease contract.			1 – FTE Clean Water Coordinator for UCCD	\$130,000 per year	2024: No progress to date. 2023: UCCD continues to work with local PGC land manager and Director, David Carlini. Most land at this point is fallow. 2022: HRG had several discussion with the regional office. Most farming operations have ceased on state game lands. PA DEP was looking into crediting or land retirement statewide.

3.18	Private Funding & Grant Administration	Identify some private funding sources that may be able to supplement public funding sources/existing sources utilized for stakeholders, continue to work with partners to facilitate additional funding.	Existing project implementer networks	Countywide	2022-2025	Need to expand network, educational aspect of less common funders, logistics of utilizing unproven funding sources (or lesser known). Grant administration is a challenge due to limited staff and time-consuming nature of grant reporting and administration.	Financial services		1 – FTE UCCD Grant Manager 1 – FTE UCPC Grant Manager 2 – staff accountants	\$130,000 per year \$130,000 per year \$140,000 per year	2024: No progress to date. 2023: FFAR and Walton Family Foundation opportunities did not proceed. No progress to report from County-led activities. Chesapeake Conservancy continues to demonstrate project value to private foundations and those dollars eventually are invested on farms in the Rapid Delisting watersheds. 2022: HRG and LFT are exploring potential opportunities to apply to the Foundation for Food & Agriculture Research (FFAR) and the Walton Family Foundation's new program, Achieving Conservation through Targeting Information, Outreach and Networking (ACTION) to support innovative research that increases adoption of conservation practices. A potential grant application would bolster farm visits in Union County to increase the adoption of Conservation Practices. UCCD has an existing grant from foundation for Pa Watersheds to support easements in the county.
Priority Initiative 4: Research, Education, and Training											
4.1*	Incorporate existing water quality monitoring data into Chesapeake Data Explorer/Chesapeake Monitoring Cooperative database & Initiate additional water quality monitoring sites that promote long-term trend evaluation at key locations in Union County	Location identification, financial and volunteer budget analysis, and initial landowner communication by end of 2021 CAST-21 acknowledgement of our data Map existing monitoring locations Expand monitoring based on Corridors of Opportunity (COO) area monitoring gaps Buffalo Creek Watershed Association shared 10+ years of data with ALLARM Work with Bucknell to establish monitoring in Turtle Creek Watershed	ALLARM, Keystone Water Resources Center, Bucknell, Buffalo Creek Watershed Association, USGS, Susquehanna University	Countywide	2022	Land access, expanded volunteer need, equipment/materials budget, Consistent data collection, Quality Assurance Quality Control (QAQC) continuation. Data precision, QAQC, opportunity to educate landowners about local stream health and what they can do about it. Ensure USGS/DEP/SU continue monitoring in Turtle Creek.	\$30,000 intern salary budget QAQC		Volunteers for Water quality monitoring New monitoring equipment 3 – additional FTE environmental technician 2 – stream biologist	N/A \$10,000 \$130,000 per year \$280,000 per year	2024: The extent of water quality monitoring is typically Susquehanna and Bucknell Universities, but we also have the ability to partner with Logan Stenger at Chesapeake Conservancy to get pre-data prior to stream restoration projects. We sampled Kern Run this year, and plan to revisit that location as well as the sites in Winfield where projects have been completed. In 2023, SU visited both Winfield and Turtle Creek, 2024 they visited Winfield Creek again, and DEP biologists sampled throughout the Turtle Creek watershed. We also ran into Bucknell University students doing collections on Buffalo Creek, in conjunction with BCWA who still complete stream habitat evaluations (Conley Run), and collect water samples throughout the watershed. An important note was that DEP's 2024 integrated water quality report determined 2.2 miles of Turtle Creek are now delisted/no longer impaired. 2023: Capacity changes with the Coordinator and Conservation Districts has pushed the convening of the Watershed Specialists. We will reevaluate in 2024 if this should be a priority at the County level or if it should be scaled to the State or Federal level. 2022: In the spring of 2023, HRG will convene the Watershed Specialist to identify the largest ""gaps"" of water quality monitoring data, develop strategies to comprehensively incorporate new data to support CAP efforts. ALLARM is in the process of developing citizen scientist monitoring data collection protocols to assist with stream health data collection. Should the protocol be approved, it will be shared with all Counties." BCWA has been sampling for 15 years and work closely with Bucknell University to analyze the samples in their lab. BCWA is working with Bucknell University to sample for E-Coli; sampling for human, dairy, swine, poultry and waterfowl DNA in the Buffalo Creek Watershed.

4.2	Supporting watershed associations for short-term success and long-term sustainability aligning with their goals	Develop new or reestablish existing watershed associations to support with CAP implementation. Watershed organizations can support with outreach, engagement, new project identification and implementation. Enhance the capacity of local watershed associations for short-term success and long-term sustainability.	Buffalo Creek Watershed Alliance, MLC, Trout Unlimited, National Trout Unlimited	Countywide	Ongoing	Continued coordination among a lot of active groups, keep project leads list active so that watershed approach to grant applications can be developed well in advance of submittal deadlines.	Social media shares Project development support		1 – FTE Clean Water Coordinator for UCPC 1 – FTE Clean Water Coordinator for UCCD	\$130,000 per year \$130,000 per year \$5000 per organization to produce promotional materials (hats, shirts, stickers) for members ☐ \$15,000 total per year	2024: No progress to date. 2023: No progress to date. 2022: Streamside Tree Stewardship program - Our goal is to find volunteers and train them to perform maintenance on buffer sites. Partners are the Chesapeake Conservancy and the Union County Conservation District. Water Quality Monitoring. Our organization monitors 14 sites 4 times a year, many of them since 2007, all within the Buffalo Creek Watershed. With the help of ALLARM of Dickinson College, our data as of December 2020 is now available on the Chesapeake Monitoring Cooperative interactive map. We will be contacting ALLARM to add our more recent data BCWA - is completing headwaters project for Acid Deposition, PA DEP is looking into delisting the stream back to a Class A Trout Stream. Approximately 5 miles of impairment. BCWA has a restoration plan. Linn Conservancy is trying to buy land from PA American water for permanent easement. Recruiting members still remains an issue.
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