

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)	Partners	Geographic Location	Expected Timeline	Potential Implementation Challenges or Recommendations	Resources Available				Resources Needed			
							Technical	Source	Financial	Source	Technical	Suggested Source	Financial	Suggested Source
Priority Initiative 1: County Programmatic Initiatives														
1.1A	<p>Implement County Comprehensive Plan policies and actions</p> <p>Update County Comprehensive plan beginning 2021/2022</p>	<p>Ensure that growth activities address existing water quality impairments through stormwater BMP implementation already required by local ordinance</p> <p>Preserve Environmentally sensitive areas from new development through zoning, ordinances and land trusts.</p> <p>Conserve 1,500 acres of forest.</p> <p>Conserve 125 acres of wetlands.</p>	<p>Union County Planning Commission (UCPC), growth boundary municipalities, Union County Hazard Mitigation Plan (CHMP), Act 167, Union County Greenway Plan, Municipalities</p>	Countywide	<p>Begin update to County Comprehensive plan beginning 2021/2022</p>	<p>Educating municipalities, Updating local plans and ordinances, Growth areas not consistent with Census Urbanized Areas</p> <p>Local governments willing to propose ordinances to protect economically and environmentally friendly landscapes</p>	Education, outreach	1 UCPC staff person			1 – FTE Clean Water Coordinator for UCPC	UCPC	<p>\$130,000 per year</p> <p>\$2,000 per acre of forest conserved through easement → Total \$3.0M</p> <p>\$2,000 per acre of wetland conserved through easement → Total \$250K</p> <p>\$40,000 to support Comprehensive plan implementation</p>	<p>Department of Environmental Protection (DEP)</p> <p>Funding Options:</p> <p>PA Department of Conservation and Natural Resources (DCNR) Community Conservation Partnerships Program</p> <p>CFA Greenways, Trails, and Recreation Program</p>

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1.1B	<p>Advance local comprehensive planning efforts</p> <p>Implement the Source Water Protection (SWP) Plan</p> <p>Preparation and implementation of an effective stormwater management (SWM) plan</p>	<p>Protecting Union County’s surface water and groundwater as a viable resource is critical to preserving water quality and healthy communities</p> <p>Work with municipal authorities to educate on the benefits of SWP Plan – work with DEP on development of Plans.</p>	<p>Municipalities, DEP NRCO Staff to assist with SWP, New Berlin and Mifflinburg Borough</p>	<p>Countywide</p> <p>New Berlin and Mifflinburg Boroughs</p>	1-2 years	<p>Reinforcing the municipal role in coordinating with the water authorities to perform education and outreach.</p> <p>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.</p>					<p>1 – FTE Clean Water Coordinator for UCPC</p> <p>SWP development</p>	<p>UCPC</p> <p>PADEP Northcentral Regional Office, utility staff, private sector</p>	<p>\$130,000 per year</p> <p>\$100,000</p>	<p>DEP</p> <p>USDA/FSA/NR WA SWP Program</p>

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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 County GIS staff person, 2 UCCD staff people, Chesapeake Conservancy			1 – FTE Clean Water Coordinator for UCCP 1 – Clean Water Coordinator for UCCD	UCPC 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	DEP DEP Funding Options: CFA Watershed Restoration and Protection Program PA Fish and Boat Commission CBF, Alliance for the Bay DCNR, Growing Greener, National Fish and Wildlife Foundation (NFWF)

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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	Municipalities	1 – FTE Clean Water Coordinator for UCPC	UCPC	\$130,000 per year \$1,000,000 funding to update willing municipalities	DEP DEP/DCED/CAP Grant/PennVEST
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	FEMA Region III STAFF		Engineering Feasibility Study 1 – FTE Clean Water Coordinator for UCPC Project Implementation	Consultants UCPC Consultants	\$150,000 \$130,000 \$500,000	PEMA/FEMA DEP PEMA/FEMA	

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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	Municipal engineers – assume 6 for well-rounded local background			1 – FTE Clean Water Coordinator for UCPC	UCPC	\$130,000	DEP

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1.4*	Continue to Implement County Farmland Preservation Program.	<p>Total preservation farm goal (91 farms in program currently – 10,000 acres)</p> <p>Look to fund 300 acres (2-3 farms) per year in preservation program. – 1,300 acres of farmland conservation</p> <p>Preservation of Agriculture and Open Space Land Use through the encouragement of local governments to implement effective land use ordinances</p> <p>Utilize conservation easements to protect land</p>	Agricultural Preservation Coordinator, Natural Resource Conservation Service (NRCS), UCCD, Farm Bureau, Land Trusts	Prime farmland soils countywide	2022-2023 – explore incentive opportunities	<p>Operator acceptance, additional resources for plan development incentivize BMP installation as a farmland preservation goal.</p> <p>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.</p> <p>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.</p>					<p>Technical assistance for program management</p> <p>1 – FTE Clean Water Coordinator for UCCD</p> <p>1 – administrative assistant</p> <p>6 – Ag planners to assist with technical assistance</p>	<p>PDA</p> <p>UCCD</p> <p>UCCD</p> <p>UCCD</p>	<p>Assume \$250,000 per farm → \$3,000,000</p> <p>\$130,000 per year</p> <p>\$75,000 per year</p> <p>\$780,000 per year</p>	<p>NFWF, GG. Increased UCCD budget</p> <p>DEP</p> <p>DEP</p> <p>PDA/SCC/NRCS/DEP</p>

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1.5*	<p>Establish funding/staff support to assist the Agricultural community (day to day support)</p> <p>574 farms exist in Union County</p>	<p>Approximately 350 have their plans in Union County, goal is to complete 450 by 2025.</p> <p>Support local farms with financial assistance from institutions</p> <p>Work with private ag consultants to document plan reporting.</p> <p>In order to communicate effectively with the farming community one on one farmer outreach must be conducted.</p> <p>Work to document Act 38 and preserved farms conservation and nutrient management plans.</p>	UCPC, UCCD, Contracted planners, Union County Farm Bureau, ACT 38 operators, organic farmers, preserved farms, integrators	Countywide	2022-2025	<p>Limited compliance activities by DEP.</p> <p>Lack of Technical assistance to support the farming community</p> <p>Private sector Ag plans are not required to be shared with District staff.</p> <p>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.</p>	<p>Field verification, troubleshooting</p> <p>25 farm visits per year</p> <p>Contracted Planners</p>	<p>UCCD, USDA NRCS, Private Consultants</p> <p>Chesapeake Bay Technician</p> <p>Growing Greener Grant - UCCD</p>	<p>Conservation Plan Inventory</p> <p>0.5 FTE (\$32,500)</p> <p>\$50/plan to be paid to contractor</p>	<p>Chesapeake Conservancy (NRCS grant)</p> <p>Chesapeake Bay Inspection Program</p> <p>Landowner</p>	<p>6 – additional Ag Planners to provide technical assistance and ag planning</p> <p>3 – FTE Design, Engineers, Permits</p> <p>3 – FTE inspector construction Services</p> <p>1 – FTE Clean Water Coordinator for UCCD</p> <p>0.5 FTE – Chesapeake Bay Technician to expand this position to a full-time position instead of currently half</p> <p>1 – administrative assistant</p>	<p>District/NRCS/Private Sector Farm Visits</p> <p>Private Sector/UCCD</p> <p>Private Sector/UCCD</p> <p>UCCD</p> <p>UCCD</p> <p>UCCD</p>	<p>\$780,000 per year</p> <p>\$420,000 per year</p> <p>\$315,000 per year</p> <p>\$130,000 per year</p> <p>\$32,500 per year</p> <p>\$75,000 per year</p>	<p>DEP/NRCS/SCC/PDA</p> <p>DEP/NRCS/SCC/PDA</p> <p>DEP/NRCS/SCC/PDA</p> <p>DEP</p> <p>DEP</p> <p>DEP</p>

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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	Bucknell students	N/A	N/A	5 – Student Internships to Support CAP Implementation	Bucknell or Other Students who live locally and attend other colleges	\$50,000 per year	TBD
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	1 County staff person, HRG (CAP coordinator)	N/A	N/A	5 – Student Internships to Support CAP Implementation	Bucknell or Other Students who live locally and attend other colleges	\$50,000 per year	TBD

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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.	<p>Work to Develop messages and audience; execute plan and distribute messaging through staff and partners.</p> <p>Utilize the Union County website as a source of consistent communication, website development is underway.</p>	<p>Board of Commissioner s 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</p>	Countywide	<p>2022-2023 Commence discussions and planning to develop a communication plan</p> <p>2023 – develop local content, timing, identify responsible staff</p>	Simplifying the resources that are available					<p>Website development and continued maintenance</p> <p>1 – FTE Marketing and Outreach Coordinator</p> <p>1 – FTE Clean Water Coordinator for UCPC</p>	<p>District/ UCPC</p> <p>UCPC</p> <p>UCPC</p>	<p>\$30,000 per year</p> <p>\$130,000 per year</p> <p>\$130,000 per year</p>	<p>Administrative budget tag-along to project-related grant award</p> <p>NFWF</p> <p>DEP</p>

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1.7B	Agricultural Communication Strategy	<p>Work to develop a communication plan to engage integrators:</p> <ol style="list-style-type: none"> 1. 1-4 mailings a year, for equip rental, ag preservation, etc. 2. Short postcard surveys to get feedback 3. Social Media 4. Trying to set up software that can email or text messages to our farmer lists 5. Outreach events - piggy backing on annual events hosted by partners (Extension, Commercial (Hoover Tractor), Community Events (Fair) 6. Stories or ads in local paper 7. Posters on bulletin boards at local businesses 8. Attending meetings of outside groups – Young Farmers, 4H, etc 	<p>UCCD, County Farm Bureau, Integrators, Ag Land Preservation, PSU Extension, NRCS, 4R Alliance, Young Farmers, Pesticide Meetings</p>	Countywide	2022-2025	<p>Funding to support the technical assistance required to complete one on one farm outreach</p> <p>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</p> <p>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.</p>					<p>6 – additional Ag Planners to provide technical assistance and ag planning</p> <p>1 – FTE Marketing and Outreach Coordinator</p> <p>1 – FTE Clean Water Coordinator for UCCD</p>	<p>District/NRCS/Private Sector Farm Visits</p> <p>UCPC</p> <p>UCCD</p>	<p>\$780,000 per year</p> <p>\$130,000 per year</p> <p>\$130,000 per year</p> <p>See 1.7A for website costs.</p> <p>Costs for meeting attendance and administration may be covered through other funding requests.</p>	<p>DEP/NRCS/SCC/PDA</p> <p>NFWF</p> <p>DEP</p>

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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	Chesapeake Conservancy QAPP Varies by BMP	N/A 	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	Chesapeake Conservancy Bucknell Student or local student attending nearby university etc. UCCD/NRCS/Private Sector Farm Visits	\$46,000 (2022 only) \$50,000 \$780,000 per year	EPA/DEP TBD PDA/SCC/NRCS/DEP

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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	Chesapeake Conservancy DEP/Susquehanna River Basin Commission (SRBC) Varies by BMP Union County GIS Department	N/A	N/A	Further GIS and data processing/method refinement 5 – Student Internships to Support CAP Implementation	Chesapeake Conservancy, Union County GIS Department Bucknell Student or local student attending nearby university etc.	\$46,000 (2022 only) \$50,000	EPA/DEP TBD
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	FieldDoc	N/A	N/A	Training 5 – Student Internships to Support CAP Implementation 1 – municipal planner	DEP Bucknell Student or local student attending nearby university etc. UCPC, CKCOG, SEDA-COG Municipality, etc.	N/A \$50,000 per year \$130,000 per year	DEP TBD DEP

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2.4*	<p>Implement a documentation program for commercial and homeowner nutrient applications in developed lands</p> <p>Support current legislation for fertilizer bill.</p>	<p>Support fertilizer legislation – where legislation requires reporting, be the data clearinghouse</p> <p>Legislation will support the implementation of Urban Nutrient Management – 2,000 acres</p>	PSU Extension	Countywide	TBD	<p>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.</p> <p>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.</p>	TBD based on fertilizer legislation if passed	TBD based on fertilizer legislation if passed	TBD based on fertilizer legislation if passed	TBD based on fertilizer legislation if passed	1 – FTE Clean Water Coordinator for UCPC	UCPC	<p>\$130,000 per year</p> <p>Urban Nutrient Management \$10 per acre → \$20,000</p>	<p>DEP</p> <p>DEP/PDA</p>

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2.5*	Improve Agricultural BMP reporting utilizing PracticeKeeper, Capital RC&D Transect Survey, PSU Survey, Manure Transport Reporting and Remote Sensing	<p>Increase reporting of agriculture plans into PracticeKeeper</p> <p>Work with Capital RC&D to improve current transect survey routes to be more inclusive</p> <p>Work with PSU to produce better response rate to the PSU survey for Union County</p> <p>Work with PDA/DEP to improve manure reporting</p>	DEP, UCCD, NRCS, PDA, NRCS, Union County Farm Bureau, Capital RC&D, Chesapeake Conservancy, PSU Survey, Manure Brokers	Countywide	2022-2025	<p>Private sector ag planners do not have access to PracticeKeeper. Ag planners do not have time to report into PK.</p> <p>Current Capital RC&D routes are not all inclusive.</p> <p>Current response rates are low and miss a large demographic of Union County farmers.</p> <p>Manure brokers are not required to report data annually. Data is not all inclusive.</p>					5 – Summer interns for reporting and verification	Local University Student or local student attending nearby university etc.	\$50,000 – paid internships	DEP/PDA/SCC
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	N/A	N/A	Reporting protocol	Chesapeake Bay Program, Penn State Extension, Dairy co-ops	N/A	N/A

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Priority Initiative 3: Achieve New Pollutant Reductions														
3.1	Implement Union County Greenway Plan	<p>Protect 250 miles of riparian buffers using easements</p> <p>Install 200 acres of riparian buffers along the Susquehanna River</p> <p>Protect 50 acres of flood plain next to Koons Easement in Mifflinburg</p> <p>Permanently protect 1.5 miles of riverfront land in Great Stream Commons</p> <p>Make strategic additions to the state forest and other public lands</p>	UCPC, UCCD, Buffalo Creek Watershed Alliance, Land Trusts	Countywide	2021-2025	<p>Gaining landowner interest, design/permit/construction schedules, dedicated funding to support BMP implementation.</p> <p>Lack of technical assistance and engineering staff to support implementation.</p> <p>Lack of technical assistance to implement the plan.</p> <p>Lack of adequate funding to implement the plan.</p>					1 – FTE Clean Water Coordinator for UCPC	UCPC	<p>\$130,000 per year</p> <p>\$2,000 per acre of buffer conserved through easement → Total \$125K</p> <p>For buffer implementation see initiative 3.8</p> <p>\$2,000 per acre flood plain conserved through easement → Total \$100K</p>	<p>DEP</p> <p>TBD</p> <p>TBD</p>

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3.2	Implementation of the Buffalo Creek Watershed 319 Plan	<p>Conduct farm visits, windshield surveys, GIS Studies.</p> <p>Utilize Precision Conservation assessments to target strategic farm locations.</p> <p>2016 to present – market program to landowners in impaired segments.</p> <p>Aim for 3 farms per year for implementation</p>	Bucknell, UCCD, other partners to be identified	<p>Buffalo Creek Watershed</p> <p>Prioritizing Buffalo Creek mainstream, Beaver Run, Muddy Run/Coal Run, Little Buffalo, Rapid Run, Spruce Run, Panther Run, Black Run, Stony Run, Conley Run</p>	2021-2025	<p>Funding, landowner interest in BMPs, implementation partner coordination</p> <p>Reverification of existing farm BMPs</p>					<p>Design, permit, construction oversight</p> <p>1 – New Environmental Specialist</p>	<p>Private sector, US FWS, volunteers, UCCD, Bucknell</p> <p>UCCD</p>	<p>\$500K per farm at \$1.5M per year → \$7.5M over 5 years</p> <p>\$75,000</p>	<p>EPA 319 Funds, PADEP, NRCS, CBF, CREP, NFWF</p> <p>EPA 319 Grant</p>
3.3	Accelerated Implementation of Rapid Delisting Catchment Strategy through the Precision Conservation Partnership	<p>Have identified four priority catchments.</p> <p>Looking to identify 3-6 parcels per priority catchment</p> <p>Turtle Creek is priority number 1 with six catchments already identified for outreach</p>	Chesapeake Conservancy, UCCD and Precision Conservation Partnership Stakeholders	Turtle Creek Headwaters, Turtle Creek South (Winfield Creek), Conley Run, and Cold Run Watersheds	2022-2025	<p>Gaining landowner interest, design/permit/construction schedules, dedicated funding to support BMP implementation, Lack of technical assistance and engineering staff to support implementation.</p> <p>Can only work with 1-3 parcel owners per year based on current staffing.</p>	<p>Program management and GIS</p> <p>Landowner outreach</p>	Chesapeake Conservancy	Partnership stakeholders		<p>3 – additional FTE municipal/ environmental planners</p>	Chesapeake Conservancy, CBF, etc.	<p>\$390,000 per year</p> <p>\$100,000 dollars to complete rapid delisting program management per year → total cost \$500,000</p> <p>Other funding identified in below initiatives</p>	<p>DEP/NRCS/ SCC/PDA/ DCNR/NFWF/ Growing Greener/ EPA</p> <p>EPA/DEP</p>

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3.4*	Help farmers and operators comply with state and federal requirements: Conservation and Nutrient Management Plans	<p>Soil and Water Quality Conservation Plans (AG E&S) 10,000 new acres</p> <p>Nutrient Management (Manure Management) 10,500 new acres of Core N and 13,000 new acres of Core P</p> <p>Work with ACT 38 operators (47), Preserved Farms (91), and certified organics to document plans already required</p> <p>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.</p>	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	<p>Lack of DEP inspections.</p> <p>Reporting and verification of AG Plans, NRCS plans expire and do not get reverified, private plans are never entered.</p> <p>Lack of Technical assistance to support agriculture planning and implementation, one on one farm outreach is best way to capture existing plans.</p> <p>Act 38 and Preserved Farms not required to enter plans in PK, Recommended to require programs to enter plans into PK.</p>	25 farms per year inspected	UCCD	0.5 FTEs per year	DEP Chesapeake Bay Inspection program	6 – additional Ag Planners to work with farmers	District/NRCS/Private Sector Farm Visits	\$780,000 per year	DEP/NRCS/SCC/PDA
							No-till drills and manure spreader equipment	UCCD				Conservation Plans	\$15 per acre for a total cost of \$150,000	DEP/SCC/PDA/NRCS
												Core N and Core P	\$15 per acre for a total cost of \$195,000	DEP/SCC/PDA/NRCS

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3.5	Advanced Nutrient Management (4R) Practice Education and Implementation	Transition manure management plans (MMP) to nutrient management plans and incentivize implementation Increase existing 4R practice (N Rate by 3,450 acres, N Timing by 7,200 acres and N Placement by 4,300 acres)	4R Alliance, UCCD, Union County Farm Bureau, NRCS, Private Sector Agriculture Farm Visits, PA Game Commission	Countywide Ag Land	2022-2025	<p>Landowner interest, BMP verification (annual)</p> <p>Lack of Technical assistance to support agriculture planning and implementation</p> <p>Additional funding to support soil testing. Soil testing is key to meeting the recommendations of supplemental BMPs.</p> <p>Machine dependent for most farming operations</p> <p>Cost of fertilizer is self-regulating farmers to use less fertilizer; therefore, lower rates are applied.</p> <p>Explore the idea of increasing PSNT or Chlorophyll testing to district program participants.</p>	<p>Educational support</p> <p>25 farms per year inspected</p> <p>Manure Spreader equipment</p>	<p>Bay Tech</p> <p>UCCD</p> <p>UCCD</p>	<p>\$32,500 per year</p> <p>0.5 FTEs</p>	<p>CBO Inspection Program</p> <p>Chesapeake Bay Inspection Program</p>	<p>6 – additional Ag Planners to work with farmers to meet 4R standards</p>	<p>District/NRCS/Private Sector Farm Visits</p>	<p>\$780,000 per year</p> <p>\$10 per acre of advanced nutrient management planning per type → total cost for all is \$149,500</p>	<p>DEP/NRCS/SCC/PDA</p> <p>DEP/PDA/SCC/NRCS</p>

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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 acres Conservation Tillage, 1,800 acres Low Residue, 900 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	Capital RC&D 1 UCCD staff person UCCD			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	District/NRCS/Private Sector Farm Visits Cover Crop Incentive Program Capital RC&D	\$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	DEP/NRCS/SCC/PDA PDA, SCC, Growing Greener, Pennsylvania Association of Conservation Districts (PACD) DEP

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3.7	Implement more pasture management BMPs	<p>Prescribed grazing – 350 acres</p> <p>Forest buffers on fenced pasture corridor – 75 acres</p> <p>Grass buffers on fenced pasture corridor – 26 acres</p>	<p>UCCD, NRCS, Private Ag Consultants, Chesapeake Bay Foundation (CBF), Chesapeake Conservancy</p>	<p>Countywide ag lands – landowners who raise horses, dairy, beef and other pasture grazing animals</p>	2025	<p>Landowner education, BMP funding for non-buffer work, plan updates, data gathering.</p> <p>Lack of Technical assistance to support agriculture planning and implementation.</p> <p>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.</p> <p>Increasing construction costs are resulting in cancelled NRCS contracts.</p>					<p>6 – additional Ag Planners to provide technical assistance and ag planning</p> <p>3 – additional FTE environmental technician</p>	<p>District/NRCS/Private Sector Farm Visits</p> <p>Chesapeake Conservancy, CBF, Clearwater Conservancy, etc.</p>	<p>\$780,000 per year</p> <p>\$390,000 per year</p> <p>Prescribed grazing \$540 per acre → \$189K total</p> <p>FB Buffer W/ Exclusion \$10,500 per acre → \$787,500 total</p> <p>GB Buffer W/ Exclusion \$2,750 per acre → \$71,500 total</p>	<p>DEP/NRCS/SCC/PDA</p> <p>DEP/NRCS/SCC/PDA/DCNR/NFWF/Growing Greener/ EPA</p> <p>DEP/NRCS/SCC/PDA/DCNR/NFWF/Growing Greener/ EPA</p> <p>DEP/NRCS/SCC/PDA/DCNR/NFWF/Growing Greener/ EPA</p>

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3.8*	Riparian buffer and re-forestation BMPs	<p>500 riparian forest buffer acres, (275) acres lost since 2017 need reverified</p> <p>400 riparian grass buffer acres, (25) acres lost since 2017 need reverified</p> <p>15 acres – Agriculture Tree Planting</p> <p>60 acres – urban forest buffer</p> <p>2 acres – urban tree canopy</p> <p>100 acres – urban forest planting</p>	CBF, Buffalo Creek Watershed Alliance, MLC, Chesapeake Conservancy, NRCS, UCCD, PA Game Commission, CBF	Countywide	<p>2022 – line up landowners</p> <p>2023-2025 – implementation</p>	<p>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.</p> <p>Flash grazing must be allowed with buffer installation.</p> <p>Funding program must include a 5-10-year maintenance program to establish buffers along with incentive program \$4K minimum per acre payment.</p> <p>Must revise ordinances to not cut down buffers because of “messy” appearance.</p>	<p>Materials</p> <p>Mapping</p>	<p>UCCD (in-kind, annual tree sale efforts), CBF</p> <p>Chesapeake Conservancy</p>	<p>Budget available to be determined</p>	<p>CBF, NFWF, NFWS, NRCS - CREP</p>	<p>6 – additional Ag Planners to provide technical assistance and ag planning</p> <p>3 – additional FTE environmental technician</p>	<p>District/NRCS/Private Sector Farm Visits</p> <p>Chesapeake Conservancy, CBF, Clearwater Conservancy, etc.</p>	<p>\$780,000 per year</p> <p>\$390,000 per year</p> <p>Forest Buffer \$10,000 per acre → 2.85M</p> <p>Grass Buffer \$2,500 per acre → \$937,500</p> <p>Tree/Forest Planting \$10,000 per acre → \$1.161M</p>	<p>DEP/NRCS/SCC/PDA</p> <p>DEP/NRCS/SCC/PDA/DCNR</p> <p>DCNR, NFWF, PACD, TreeVitalize, DEP, Coldwater Heritage Partnership Implementation Grants, Landscape Scale Restoration (LSR) Grant Program – US Forest Service, Pennsylvania Habitat Stewardship Program, Alliance for the Bay, CBF, Chesapeake Conservancy</p>

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3.9	Wetland restoration implementation on marginal production ag land	<p>65 acres of Wetland Restoration</p> <p>25 Acres of Wetland Enhancement and Rehabilitation</p> <p>Identify 1 large property owner from University of Vermont restorable wetland layer to help identify where to implement a large project</p>	Chesapeake Conservancy, UCCD, NRCS, Buffalo Creek Watershed Alliance, MLC, PA Game Commission	Countywide	2022 – 2025	<p>Willing landowner; appropriate siting, design, and construction for successful restoration result.</p> <p>Lack of technical assistance for landowner outreach and agriculture planning to identify potential site locations.</p> <p>Lead time it takes to secure projects can take years.</p>	Landowner outreach	1 UCCD staff person			<p>3 – additional FTE environmental technician</p> <p>2 – stream biologist</p>	<p>Chesapeake Conservancy, CBF, Clearwater Conservancy, etc.</p> <p>PAFBC, USGS, UCCD, etc.</p>	<p>\$390,000 per year</p> <p>\$280,000</p> <p>Wetland Restoration \$30,000 per acre → \$2.7M</p>	<p>DEP/DCNR</p> <p>DEP/DCNR/PA FBC/USGS</p> <p>DEP/DCNR/USDA Conservation Reserve Program (CRP) or NRCS Wetlands Reserve Program (WRP)</p>
3.10	Stream Restoration (Urban and Agriculture)	<p>10,400 Linear feet (2 miles) Urban Stream Restoration</p> <p>15,000 Linear feet (~3 mile) Agriculture Stream Restoration</p>	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	<p>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.</p> <p>Lack of funding to cover engineering design.</p>	<p>GIS</p> <p>Design/GP-1 permit</p>	<p>Chesapeake Conservancy and partners</p> <p>Trout Unlimited, Municipalities</p>			<p>Design, permit, construction services</p> <p>2 – Municipal Engineers</p> <p>3 – FTE Design, Permit construction Services</p> <p>2 – stream biologist</p>	<p>Private sector, USFWS, TU</p> <p>Municipalities, UCPC, CKCOG, SEDA-COG</p> <p>Private Sector/ UCCD</p> <p>UCCD/ Environmental Group</p>	<p>Assume \$900/LF - \$9.36M – Urban</p> <p>Assume \$400/LF - \$6.0M Agriculture</p> <p>\$280,000 per year</p> <p>\$420,000</p> <p>\$280,000</p>	<p>Growing Greener, NFWF, DEP, DCNR, PAFBC, USGS</p> <p>DEP/NRCS/ SCC/PDA</p> <p>DEP/DCNR</p> <p>DEP/DCNR/PA FBC/USGS</p>

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3.11	Implement more barnyard runoff control/loafing lot management	32 acres of barnyard runoff controls. (18 acres need reverified)	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 technical assistance and ag planning 3 – FTE Design, Engineer. Permit 3 – FTE inspector construction Services	District/NRCS/ Private Sector Farm Visits Private Sector/ UCCD Private Sector/ UCCD	\$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	DEP/NRCS/ SCC/PDA DEP/NRCS/ SCC/PDA DEP/NRCS/ SCC/PDA DEP/NRCS/ SCC/PDA

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3.12	Animal Waste Storage Systems	20,000 Animal Units of Animal Waste Management Systems (10,000 new AUs of livestock & 10,000 new AUs of poultry)	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	NRCS, UCCD, Private Ag Sector			6 – additional Ag Planners to provide technical assistance and ag planning 3 – FTE Design, Engineer. Permit 3 – FTE inspector construction services	District/NRCS/Private Sector Farm Visits Private Sector/UCCD Private Sector/UCCD	\$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	DEP/NRCS/SCC/PDA DEP/NRCS/SCC/PDA DEP/NRCS/SCC/PDA DEP/NRCS/SCC/PDA

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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	FieldDoc			5 – Summer interns for reporting and verification 2 – Municipal Engineers 1 – municipal planner	Bucknell Student or local student attending nearby university etc. Municipalities, UCPC, CKCOG, SEDA-COG UCPC, CKCOG, SEDA-COG, Municipality, etc.	\$50,000 – paid internships \$280,000 per year \$130,000 per year Stormwater Treatment \$1,815 → \$145,200	NRCS/PDA/DEP TBD DEP DEP
3.14	Conservation Landscaping/Turf to Meadow Conversion	Promote new program and enable one large tract landowners’ participation 80 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	Alliance for the Bay (in-kind)		1 – FTE Municipal Planner 3 – additional FTE environmental technician	UCPC Chesapeake Conservancy, CBF, Clearwater Conservancy, etc.	\$130,000 per year \$130,000 per year \$2,500 per acre meadow → \$200,000 budget for all	DEP/DCNR DEP/DCNR/SCC/PDA/NRCS DCNR	

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3.15*	Continue dirt and gravel road program	21 miles overall restored through past projects 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	UCCD, Center for Dirt & Gravel Road Studies, SCC	\$1.4 Million since 1998	State Conservation Commission	1 – FTE Clean Water Coordinator for UCCD	UCCD	\$130,000 per year Dirt and Gravel Roads \$10 per foot → TBD	DEP/PDA/ SCC SCC
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	UCPC UCCD	\$130,000 per year \$130,000 per year	DEP DEP/PDA/ SCC
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	UCCD	\$130,000 per year	DEP/PDA/ SCC

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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	HRG (CAP coordinator)			1 – FTE UCCD Grant Manager	UCCD	\$130,000	TBD
										1 – FTE UCPC Grant Manager	UCPC	\$130,000	TBD	
										2 – staff accountants	UCPC & UCCD	\$140,000 per year	TBD	

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Priority Initiative 4: Research, Education, and Training														
4.1*	<p>Incorporate existing water quality monitoring data into Chesapeake Data Explorer/ Chesapeake Monitoring Cooperative database</p> <p>&</p> <p>Initiate additional water quality monitoring sites that promote long-term trend evaluation at key locations in Union County</p>	<p>Location identification, financial and volunteer budget analysis, and initial landowner communication by end of 2021</p> <p>CAST-21 acknowledgment of our data</p> <p>Map existing monitoring locations</p> <p>Expand monitoring based on Corridors of Opportunity (COO) area monitoring gaps</p> <p>Buffalo Creek Watershed Association shared 10+ years of data with ALLARM</p> <p>Work with Bucknell to establish monitoring in Turtle Creek Watershed</p>	<p>ALLARM, Keystone Water Resources Center, Bucknell, Buffalo Creek Watershed Association, USGS, Susquehanna University</p>	Countywide	2022	<p>Land access, expanded volunteer need, equipment/materials budget, Consistent data collection, Quality Assurance Quality Control (QAQC) continuation.</p> <p>Data precision, QAQC, opportunity to educate landowners about local stream health and what they can do about it.</p> <p>Ensure USGS/DEP/SU continue monitoring in Turtle Creek.</p>	<p>\$30,000 intern salary budget</p> <p>QAQC</p>	<p>Bucknell</p> <p>Bucknell /ALLARM</p>			<p>Volunteers for Water quality monitoring</p> <p>New monitoring equipment</p> <p>3 – additional FTE environmental technician</p> <p>2 – stream biologist</p>	<p>Local environmental groups</p> <p>UCCD</p> <p>Chesapeake Conservancy, CBF, Clearwater Conservancy, etc.</p> <p>UCCD/ Environmental Group</p>	<p>N/A</p> <p>\$10,000</p> <p>\$130,000 per year</p> <p>\$280,000 per year</p>	<p>TBD</p> <p>ALLARM</p> <p>DEP/NRCS/DCNR/PDA</p> <p>DEP/DCNR/PAFBC/USGS</p>

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Action #	Description	Performance Target(s)	Partners	Geographic Location	Expected Timeline	Potential Implementation Challenges or Recommendations	Resources Available				Resources Needed			
							Technical	Source	Financial	Source	Technical	Suggested Source	Financial	Suggested Source
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	County – department to be determined CAP Coordinator (HRG)			1 – FTE Clean Water Coordinator for UCPC 1 – FTE Clean Water Coordinator for UCCD	UCPC 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	DEP DEP/PDA/ SCC Budget to be included in project-related grant applications

Phase 3 Watershed Implementation Plan (WIP) Planning and Progress Template

Each county-based local area will use this template to identify:

1. Inputs – These are both existing and needed resources, public and private, to implement the identified priority initiative. These include both technical and financial resources, such as personnel, supplies, equipment, and funding.
2. Process – what is each partner able to do where and by when. These are the action items listed under each priority initiative.
3. Outputs and outcomes – both short and long-term. These are the priority initiatives identified by each county. The performance targets are the intermediate indicators that will measure progress.
4. Implementation challenges – any potential issues or roadblocks to implementation that could impede outputs and outcomes.

Asterisk: Place an asterisk next to the action number(s) for action items that appear in both the County Planning and Progress Template and the Programmatic Recommendations Template.

For each Priority Initiative or Program Element: Use the fields, as defined below, to identify the inputs and the process that will be followed to achieve each priority initiative. This is the “who, what, where, when and how” of the plan:

Description = What. This may include programs that address prevention, education, or as specific as planned BMP installations that will address the Priority Initiative. A programmatic or policy effort will require some ability to quantify the anticipated benefits which will allow calculation of the associated nutrient reductions.

Performance Target = How. This is an extension of the Description above. The Performance Target details the unique BMPs that will result from implementation of the Priority Initiative and serves as a benchmark to track progress in addressing the Priority Initiative. Performance Targets may be spread across multiple Responsible Parties, Geographies, and Timelines based on the specifics of the Initiative.

Responsible Party(ies) = Who. This is/are the key partner(s) who will implement the action items through outreach, assistance or funding, and who will be responsible for delivering the identified programs or practices.

Geographic Location = Where. This field identifies the geographic range of the planned implementation. This could extend to the entire county or down to a small watershed, based on the scale of the Priority Initiative, range of the Responsible Party, or planned funding/resources. *NOTE: Resource limitations alone should not limit potential implementation as additional funding may become available in the future.*

Expected Timeline = When. Provide the expected completion date for the planned activity. This should be a reasonable expectation, based on knowledge and experience, that will aid in tracking progress toward addressing the Priority Initiative.

Resources Available: Technical & Funding = This field will note technical and financial resources secured/available to implement the program (Description). This is the total of the resources identified in the County Resources Inventory Template below allocated to the priority initiative as a whole; or, if available, to each action.

Resources Needed: Technical & Funding = This field will note technical and financial resources needed/outstanding to implement the program (Description). This is the total of the additional resources projected and identified as needed in the County Resources Inventory Template below allocated to the priority initiative as a whole; or, if possible, to each action.

Potential Implementation Challenges/Issues = This field will note challenges and issues that may delay program implementation (Description).

GLOSSARY

- ACT 167 Plan** – The Pennsylvania SWM Act of 1978, or Act 167, required that each county must prepare and adopt a watershed SWM plan for each watershed located in the county as designated by DEP, in consultation with the municipalities located within each watershed.
- Ag E&S – Agricultural Erosion and Sedimentation Plan.** Agricultural Erosion and Sedimentation plans document best management practices on crop and pasture fields to mitigate erosion and protect soil health. Any landowner that disturbs the soil (including no tillage) more than 5,000 square feet (~ 1/10 acre) must have a written Agricultural Erosion & Sediment Control Plan according to Pennsylvania State law, Chapter 102.
- BMP – Best Management Practice.** Best management practices describe a type of water pollution control. Using agricultural BMPs can help to prevent or minimize the effects of nonpoint source pollution.
- CAST – Chesapeake Assessment Scenario Tool.** CAST is a web-based nitrogen, phosphorus and sediment load estimator tool that streamlines environmental planning.
- CBF – Chesapeake Bay Foundation.** The Chesapeake Bay Foundation is a non-profit organization devoted to the restoration and protection of the Chesapeake Bay in the United States.
- UCCD – Union County Conservation District.** The Union County Conservation District serves as the primary local source of assistance to all individuals and organizations who benefit from the county's natural resources that we collectively strive to sustain and improve.
- UCPC – Union County Planning Commission.** The Union County Planning Commission makes recommendations and decisions to maintain and enhance the high quality of life for all residents, in accordance with the Pennsylvania Municipalities Planning Code, and other laws and regulations of the Commonwealth of Pennsylvania and the County of Union.
- CHMP – County Hazard Mitigation Plan.** The Union County Hazard Mitigation Plan was developed for the purpose of providing a blueprint for reducing property damage and saving lives from the effects of future natural and human-caused disasters in Union County; Qualifying the County for pre-disaster and post-disaster grant funding; Complying with state and federal legislative requirements related to local hazard mitigation planning; Demonstrating a firm local commitment to hazard mitigation principles; and Improving community resiliency following a disaster event.
- CKCOG – Central Keystone Council of Governments.** The Central Keystone Council of Governments is an organization of municipalities pooling resources to more efficiently administer services for residents of local municipalities, thus providing services that would not otherwise be economically practical. They provide inspection and permitting services.
- CNMP – Comprehensive Nutrient Management Plan.** A Comprehensive Nutrient Management Plan is a whole farm, progressive document. It contains records of the current activities on a livestock operation, an evaluation of the existing environmental risks, and proposals to reduce the risk of negative impacts to the environment. The objective is to ensure both farm production and environmental goals (clean water, clean air, and healthy soils) are achieved on the farm.
- COO – of Opportunity.** Analysis completed comparing the County Comprehensive Plan goals to potential for co-benefits for local water quality. Since there are elevated nitrogen levels throughout Union County, the analysis helped focus the planning team on particular HUC12 watersheds for the most global benefit. Once the HUC12 watersheds are identified, the next step is to identify regulatory compliant (or in progress) farms, their neighbors, and preserved farms for targeted outreach and specific BMP installation options.
- DCNR – Department of Conservation and Natural Resources.** DCNR is responsible for maintaining and preserving state parks and forests; providing information on the state's natural resources; and working with communities to benefit local recreation and natural areas.
- DEP – Department of Environmental Protection.** The Department of Environmental Protection's mission is to protect Pennsylvania's air, land, and water from pollution and to provide for the health and safety of its citizens through a cleaner environment.
- EPA – Environmental Protection Agency.** The Environmental Protection Agency is a United States federal government agency whose mission is to protect human and environmental health.
- FEMA – Federal Emergency Management Agency.** FEMA supports citizens and emergency personnel to build, sustain, and improve the nation's capability to prepare for, protect against, respond to, recover from, and mitigate all hazards.
- FieldDoc – FieldDoc** is a protected, online database that uses geographic information to generate baseline nutrient and sediment loading information and calculate load reductions for planned BMPs.
- GIS – Geographic Information System.** GIS is a computer system that analyzes and displays geographically referenced information.
- HUC12 – Watershed.** A local sub-watershed level delineation that captures tributary systems draining into the larger Chesapeake Bay watershed.
- MLC – Merrill Linn Conservancy.** Local non-profit conservation organization serving the Central Susquehanna Valley.
- MMP – Manure Management Plan.** Manure management plans document how a landowner plans to capture, store, treat, and utilize animal manures in an environmentally sustainable manner. Every landowner that has livestock or spreads manure on their property must have a written Manure Management Plan according to Pennsylvania State law, Chapter 91.
- MS4 – Municipal Separate Storm Sewer System.** A separate storm sewer system is a collection of structures, including retention basins, ditches, roadside inlets, and underground pipes, designed to gather stormwater from built-up areas and discharge it, without treatment, into local streams and rivers.
- NFWF – National Fish and Wildlife Foundation.** NFWF works towards sustaining, restoring, and enhancing the nation's fish, wildlife, plants and habitats for current and future generations through innovative public and private partnerships, and by investing financial resources and intellectual capital into science-based programs designed to address conservation priorities and achieve measurable outcomes.
- NMP – Act 38 Nutrient Management Plan.** Nutrient management plans are required under Pennsylvania State law Act 38 which applies to operations with more than 2,000 pounds live animal weight per acre of pasture and crop fields.
- NRCS – Natural Resource Conservation Service.** NRCS's programs help farmers reduce soil erosion, enhance water supplies, improve water quality, increase wildlife habitat, and reduce damages caused by floods and other natural disasters.
- PACD – Pennsylvania Association of Conservation Districts.** Provides support for Pennsylvania's conservation districts.
- PEMA – Pennsylvania Emergency Management Agency.** PEMA is tasked with the response to, preparedness for, recovery from, and the mitigation or prevention of disasters and other emergencies.
- PK – PracticeKeeper.** PracticeKeeper is a protected, online database Used for reporting conservation plans, BMPs, E&S plans, nutrient management plans, watershed plans, complaints, DEP inspection reports and data exports to DEP.
- QAPP – Quality Assurance Project Plan.** A QA Project Plan documents the technical and quality aspects of a project, including project management, implementation, and assessment. It specifies responsibilities, monitoring objectives, sampling design, sample collection methods, analytical methods, quality control, data management and data validation activities. It is required by EPA prior to any monitoring or data collection.
- QAQC – Quality Assurance Quality Control.** QA/QC is the combination of quality assurance, the process or set of processes used to measure and assure the quality of a product, and quality control, the process of ensuring products and services meet consumer expectations.
- 4R Nutrient Stewardship – Precision Conservation.** Right fertilizer source at the Right rate, at the Right time and in the Right place for optimal crop management.
- SEDA-COG – SEDA – Council of Governments.** SEDA -Council of Governments is a public organization whose focus is related to economic development, community life, and the environment in Central Pennsylvania.

SRBC – Susquehanna River Basin Commission. SRBC’s mission is to enhance public welfare through comprehensive planning, water supply allocation, and management of the water resources of the Susquehanna River Basin.

SWM – Stormwater Management. Stormwater management is the effort to reduce runoff of rainwater or melted snow into streets, lawns and other sites and the improvement of water quality.

SWP – Source Water Protection. Source Water Protection is a planning process conducted by local water utilities, as well as regional or national government agencies, to protect drinking water sources from overuse and contamination.

USGS – United States Geological Survey. USGS provides science about the natural hazards that threaten lives and livelihoods; the water, energy, minerals, and other natural resources we rely on; the health of our ecosystems and environment; and the impacts of climate and land-use change.

WIP – Watershed Implementation Plan. Watershed Implementation Plans (WIPs) are the roadmap for how the Bay jurisdictions (including Pennsylvania), in partnership with federal and local governments, will achieve the Chesapeake Bay TMDL allocations.

WWTP – Wastewater Treatment Plant. Wastewater treatment plants process contaminants from wastewater or sewage and convert it into an effluent that can be returned to the water cycle with acceptable impact on the environment or reused for various purposes.