

**Phase 3 Watershed Implementation Plan (WIP) Annual Progress Update and Two-Year Milestones Report Northumberland 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    **Highlight changes for 2023-2024 milestone period**

Action # <b>Green</b> <b>Yellow</b> <b>Red</b>	Description	Performance Target(s)	Responsible Party(ies) and Partnerships	Geographic Location	Expected Timeline	Potential Implementation Challenges or Recommendations	Resources Available		Resources Needed		Annual Progress to Date (2021 + 2022) *add new 2022 progress above the existing 2021 progress. Date each entry	Reason for Change to Action Item (2023-2024 milestone period)
							Technical	Financial	Technical	Financial		
<b>Priority Initiative 1:</b>												
<b>1.1A</b>  <b>Green</b>	Implement County Comprehensive Plan policies and actions	Ensure that growth activities address existing water quality impairments through stormwater BMP implementation already required by local ordinances  Preservation of environmentally sensitive, economically important and culturally important lands – <b>Conserve 1,800 acres of forest</b> - <b>Conserve 70 acres of wetland</b>  Utilize conservation easements to protect land	NCPC, municipal engineers, NCCD, Municipalities, SEDA-COG, Keystone COG, ACT 167 Plan, Hazard Mitigation Plan, Greenway Plan	Multi-Municipality	Ongoing	Educating municipalities, Updating local plans and ordinances, Growth areas not consistent with Census Urbanized Areas  Local governments willing to propose to ordinances to protect economically and environmentally friendly landscapes	Education, outreach	1 NCPC staff person	1 – FTE Clean Water Coordinator for Planning Commission	\$130,000 per year  \$2,000 per acre of forest conserved through easement → Total \$3.6M  \$2,000 per acre of wetland conserved through easement → Total \$140K	2022 Green- the county developed and approved a ACT 167 plan. Twps. Must adopt the county plan or develop a more stringent plan.	
<b>1.1B*</b>  <b>Yellow</b>	Evaluate areas to establish riparian buffers to stabilize stream banks and limit encroachment	Identify landowners willing to participate and work with the partners to identify (5) buffer opportunities  Leverage municipal parks along creeks for education, BMP work, habitat value, etc.  Protect riparian greenways, promote establishment and maintenance of riparian forest buffers	CBF, Sunbury Chapter of TU, Chesapeake Conservancy, NRCS, NCCD, PAFBC, DCNR, North Central PA Conservancy, Merrill Linn Conservancy, Middle Susquehanna River Keepers,	Countywide	5-10 years	Adopting ordinances, may require a pilot project in a willing municipality to demonstrate success.  Lack of technical assistance to support implementation goals for forest buffers.	landowner outreach; on the ground riparian project execution		1 – FTE Clean Water Coordinator for Planning Commission  1 – Additional Watershed Specialist for Conservation District	\$130,000 per year  \$130,000 per year  Expand Buffer Bonus Program to provide \$5,000 per acre of buffer installed →	2022 The District has been working with landowners to have a working list for buffer installations in the future. We have three planned for next year contingent on funding. This is yellow because we did not anticipate the cost being so high. We created a Buffer incentive program and landowner agreement	

			Northumberland AOOA, Watershed groups LSCWA and SCRA, SEDA-COG, PennDOT, AG Land Preservation, Brush Valley Preservation Association, ACT 167 Plan, Greenway Plan			Buffer funding programs must include 5- to 10-year minimum maintenance plan, incentive money for landowners, along with volunteers to establish the buffer.				\$1,010,000 total  Maintenance equipment/contract \$50,000 per year for upkeep		
1.2  Yellow	Northumberland County Hazard Mitigation Plan	<p>Improve flood prone areas with BMPs that also enhance water quality</p> <p>Develop a stream corridor restoration plan to protect the Susquehanna River Banks and Creek</p> <p>Enforce flood plain development regulations</p> <p>Promote open space preservation and purchase flood prone easements</p>	NCPC, municipal engineers, NCCD, Municipalities, SEDA-COG, Keystone COG, County Comprehensive Plan, ACT 167 Plan	Countywide  West Milton and Kelly Township	2022-2025	<p>Funding, land for BMPs, willing landowners to implement projects</p> <p>Enforcement and compliance with local zoning ordinances</p>			1 – FTE Clean Water Coordinator for Planning Commission	<p>\$130,000 per year</p> <p>\$2,000 per acre of flood prone easement → total easement TBD</p> <p>\$100,000 Stream Restoration Corridor Plan</p>	The District is delegated under the Chapter 105 program to ensure no encroachment activities happens within the floodway. Ongoing delegation	

<p><b>1.3*</b> <b>Green</b></p>	<p>Continue to Implement ACT 167 requirements, look to update requirements where opportunities exist to improve water quality benefits</p>	<p>Revise existing model stormwater ordinance where needed. Look to incentivize additional protections for streams</p> <p>Enforce urban forest and landscape management policies for stormwater management</p> <p>Encourage the development of a wellhead protection plan where appropriate</p>	<p>NCPC, municipal engineers, NCCD, Municipalities, SEDA-COG, Keystone COG, Hazard Mitigation Plan, Comprehensive Plan</p>	<p>Countywide</p>	<p>2022-2025</p>	<p>Should local involvement exist, funding to support coordination of ACT 167 requirements</p>	<p>Institutional knowledge</p>		<p>1 – FTE Clean Water Coordinator for Planning Commission</p>	<p>\$130,000 per year</p>	<p>2022 The County approved the ACT 167 Plan.</p>	
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<p><b>1.4B*</b> <b>Green</b></p>	<p>Identify new funding to support the implementation of Acid Mine Drainage treatment systems</p>	<p>Opportunities still exist to address AMD runoff into local streams. New passive and active treatment systems are needed to support water quality improvements. Work with DEP and other identified partners to find funding to support the implementation of new treatment systems</p>	<p>PA DEP Bureau of Mining, Conservation District, watershed groups, NRCS, Stream Restoration INC. Office of Surface Mining, AOAA</p>	<p>Countywide Shamokin Creek Mahantango Creek</p>	<p>2022-2025</p>	<p>Need to support legislation regarding the RECLAIM Act to support funding of new treatment systems.</p> <p>Lack of technical assistance to support restoration efforts</p> <p>Work with USGS to monitor Shamokin Creek prior to restoration efforts to display the nutrient benefits of AMD treatment. CAST acceptance of results to depict nutrient reductions associated with in stream AMD repair</p>			<p>Coordination of restoration</p> <p>Monitoring Shamokin Creek</p> <p>1 – FTE Clean Water Coordinator for Conservation District</p>	<p>\$10,000,000</p> <p>\$150,000</p> <p>\$130,000 per year</p>	<p>2022 The District continues to work with watershed group to seek out grant opportunities to address AMD.</p>	
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<p><b>1.5</b> <b>RED</b></p>	<p>Anthracite Outdoor Adventure Area (AOAA) Authority conservation measures</p>	<p>6,500 acres to conserve, implement BMPs, implement AMD and recreational activities – specific BMP targets to be identified at a later date</p>	<p>AAOA, NCCD, Keep PA Beautiful, PennDOT, Shingara Enterprises, SEDA-COG, COG Rail Authority, American Chestnut Foundation, Carbon Run Initiative, Shamokin Creek Restoration Alliances</p>	<p>AOAA</p>	<p>2022-2025</p>	<p>Funding and technical assistance to support restoration work</p> <p>Additional AMD needs funding to improve water quality</p>			<p>1 – FTE Clean Water Coordinator for Conservation District</p>	<p>\$130,000 per year</p>	<p><b>No progress has been made.</b></p>	
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<p><b>1.6*</b> <b>Yellow</b></p>	<p>Implement County Farmland Preservation Program with farmland preservation program incentives enhancement</p>	<p><b>Total farmland preservation 9,104 acres currently in preservation</b></p> <p><b>54 farms waiting to enter Ag Land Preservation – goal is to enroll as many as funding allows</b></p> <p>Utilize conservation easements to protect and preserve agriculture land</p>	<p>4R Alliance, NCCD, Northumberland County Farm Bureau, NRCS, Private Sector Agriculture Farm Visits, FSA, Ag Land Preservation, Greenway Plan</p>	<p>Ag land use area that fits farmland preservation criteria</p>	<p>2022-2023 – explore incentive opportunities</p>	<p>Operator acceptance, additional resources for plan development to incentivize BMP installation as a farmland preservation goal, need funding to support farmers wanting to enter farmland preservation 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. Sharing NRCS data must comply with 1619 form.</p>			<p>Technical assistance for program management</p> <p>1 – FTE Clean Water Coordinator for Conservation District</p>	<p>Assume \$150,000 per farm → \$8,100,000</p> <p>\$130,000 per year</p>	<p>2022 The District continues to implement the program. The lack of funding hinders the amount of Agland that can be Preserved.</p>	
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<p><b>1.7**</b> <b>Green</b></p>	<p>Establish funding/staff support to assist the Agricultural community (day to day support)</p> <p>728 farms exist in Northumberland County</p> <p>Approximately 100 farms have their plans in Northumberland County</p>	<p><b>The goal is to Complete 200 total farms by 2025</b></p> <p>Work with private consultants to document plans.</p> <p>In order to communicate effectively with the farming community one on one farmer outreach must be conducted. The most effective way to capture and report BMPs is through one-on-one farm visits. Farmers do not participate in surveys or other methods.</p> <p>Work with agricultural community to implement BMPs consistent with E&amp;S regulations</p>	<p>4R Alliance, NCCD, Northumberland County Farm Bureau, NRCS, Private Sector Agriculture Farm Visits, FSA, Ag Land Preservation, Northumberland County Greenways Plan</p>	<p>Countywide AG Land</p>	<p>2022-2025</p>	<p>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&amp;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 ACT 38 and Persevered Farm programs to require PracticeKeeper reporting.</p>	<p>Field verification, troubleshooting</p>	<p>N/A</p>	<p>6 – additional Ag Planners to provide technical assistance and ag planning</p> <p>3 – FTE Design, Permit construction Services</p> <p>3 – FTE Design, Permit construction Services</p> <p>1 – FTE Clean Water Coordinator for Conservation District</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>Since 2018 The district administers the Bay program in our county and works with farmers to ensure they have the proper plans they are required to have. 2022 Rachael began writing plans for farmers as needed. We hired another staff member fulltime to assist with the CAP implementation and coordinator position.</p>	
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<p><b>1.8</b> <b>Yellow</b></p>	<p>Bloomsburg, Susquehanna, and Bucknell University Partnership - Implementation</p>	<p>Develop undergraduate and graduate students so that they can effectively engage in landowner outreach during implementation years.</p>	<p>Bloomsburg University, Susquehanna University, Bucknell University</p>	<p>319 Priority Watershed Riparian properties Preserved farms Priority Corridor Watersheds – Warrior Run, Mahantango, Shamokin</p>	<p>2022-2025</p>	<p>Continued undergraduate/graduate engagement as students graduate through program, implementation funding  Lack of technical assistance professionals to mentor students and develop workforce development.  Lack of competitive paying job opportunities that ensure long term sustainable for recently graduated students</p>	<p>Outreach boots on the ground</p>	<p>N/A</p>	<p>5 – Student Internships to Support CAP Implementation</p>	<p>\$50,000  See 3.3 for funding needs on plan development and reporting</p>	<p>The district had one intern during the summer of 2022. Matt went out with staff to learn different aspects of the district.</p>	
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<p><b>1.9A</b> <b>Green</b></p>	<p>Water quality communication plan, leveraging existing documents and covering topics including Comprehensive Plan, Greenway, Plan, ACT 167 Plan, Hazard Mitigation Plan, Watershed Implementation Plans</p>	<p>Develop messages and audience; execute plan and distribute messaging through staff and partners</p>	<p>CBF, Sunbury Chapter of TU, Chesapeake Conservancy, NRCS, NCCD, NCPC PAFBC, DCNR, North Central PA Conservancy, Merrill Linn Conservancy, Middle Susquehanna River Keepers, Northumberland AOAA, Watershed groups LSCWA and SCRA, Universities, Other Recreational groups, Universities, etc.</p>	<p>Countywide</p>	<p>2022 – develop local content, timing, identify responsible staff</p>	<p>Simplifying the resources that are available</p>	<p>Website Development</p>	<p>N/A</p>	<p>Website development and continued maintenance</p> <p>1 – FTE Marketing and Outreach Coordinator</p> <p>1 – FTE Clean Water Coordinator for Planning Commission</p>	<p>\$30,000 per year</p> <p>\$130,000 per year</p> <p>\$130,000 per year</p>	<p>2022 The district has been collaborating with landowners to develop stream restoration plans for future stream projects. These efforts support our WIP.</p>	
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<p><b>1.9B</b> <b>Green</b></p>	<p>Agricultural Communication Strategy</p>	<p>One-on-one farm outreach is the best way to communicate with farmers in addition to reporting practices. Work to develop a plan to complete one on one farm visits.</p> <p>Work to develop a communication plan to engage integrators.</p> <p>Partner with external ag partners to present CAP goals at meeting.</p> <p>Utilize Farm Bureau Newsletters for announcements</p>	<p>CD, County Farm Bureau, Integrators, Ag Land Preservation, PSU Extension, NRCS</p>	<p>Countywide</p>	<p>2022-2025</p>	<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>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 Conservation District</p>	<p>\$780,000 per year</p> <p>\$130,000 per year</p> <p>\$130,000 per year</p> <p>See 1.9A for website costs.</p> <p>Costs for meeting attendance and administration is covered through other funding requests.</p>	<p>2022 District staff has been going on farm visits for inspections and BMP verification.</p>	
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Priority Initiative 2:

<p><b>2.1*</b> <b>Yellow</b></p>	<p>Existing BMP cataloguing (quantity and location) for select BMPs, expanding on general recommendations provided in QAPP</p> <p>BMPs = forest buffers, urban forest buffers, grass buffers, urban grass buffers, wet ponds and wetlands, fencing, cover crop and tillage management</p>	<p>Expand use of existing buffer layer with urban hydrology layer</p> <p>R&amp;D into distinguishing ag, pasture, and turf covers from grassed buffers</p> <p>Manual digitizing where leaf-off &lt;1 ft resolution imagery is available</p> <p>Back check with staff field views where required</p> <p>Add data to Practice Keeper or another batch upload option (FieldDoc)</p>	<p>Lead - Chesapeake Conservancy</p> <p>Stakeholder peer review – Bloomsburg University, USGS, Farm Bureau, PDA, EPA</p>	<p>Countywide</p>	<p>2022 – cataloguing</p> <p>2023 – Practice Keeper batch upload processing and field views</p>	<p>EPA acceptance of the approach, further refine guidance in QAPP to streamline the process, 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</p>	<p>Precision Conservation Tools</p> <p>General methodology outline</p> <p>BMP field backcheck</p>	<p>N/A</p>	<p>Further GIS and data processing/method refinement</p> <p>5 – Student Internships to Support CAP Implementation</p>	<p>\$46,000 (2022 only)</p> <p>\$50,000</p>	<p>2022 The district began the process but it has been limited due to the amount of staff available.</p>	
<p><b>2.2*</b> <b>RED</b></p>	<p>Identify future ag/urban project opportunities using automated means</p>	<p>BMP opportunity analysis – ag conservation, land retirement, alternative crop, forest conservation, stream restoration</p> <p>Back check with staff field views</p> <p>Batch upload to FieldDoc to calculate credit opportunity</p>	<p>Lead - Chesapeake Conservancy</p> <p>Stakeholder peer review – Bloomsburg University, USGS, Farm Bureau, PDA</p>	<p>Countywide</p>	<p>2022 – cataloguing</p> <p>2023 – batch upload processing and field views</p> <p>2024 – 2025 – implementation focus</p>	<p>Different data set scales/ precision</p>	<p>Precision Conservation Tools</p> <p>Batch upload processing</p> <p>BMP field backcheck</p>	<p>N/A</p>	<p>Further GIS and data processing/method refinement</p> <p>5 – Student Internships to Support CAP Implementation</p>	<p>\$44,000 (2022 only)</p> <p>\$50,000 per year</p>	<p>2022 No progress has been made.</p>	

<p><b>2.3*</b> <b>RED</b></p>	<p>Develop a local system to capture data collection on urban structural and non-structural practices</p>	<p>Add urban BMPs to CAST/FieldDoc so that as land use data sets are updated, there are accompanying BMPs</p> <p>Use Chapter 102 Permit Close Milestone to report BMPs</p>	<p>Municipal engineers, Chesapeake Conservancy, Keystone Council of Governments</p>	<p>Urban/suburban landscape</p>	<p>2022</p>	<p>Currently municipalities are not collecting BMP data because it is not required in Non-MS4 communities. Must incentivize communities to report, no existing system in place</p>	<p>Reporting platform</p>	<p>N/A</p>	<p>Training</p> <p>5 – Student Internships to Support CAP Implementation</p> <p>1 – municipal planner</p>	<p>N/A</p> <p>\$50,000 per year</p> <p>\$130,000 per year</p>	<p>2022 No progress has been made.</p>	
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<p><b>2.4*</b> <b>RED</b></p>	<p>Implement a documentation program for commercial and homeowner nutrient applications in developed lands</p> <p>Support current legislation for a fertilizer bill.</p>	<p>Support fertilizer legislation – where legislation requires reporting</p> <p>Legislation will support the implementation of <b>Urban Nutrient Management – 2,000 acres.</b></p>	<p>PSU Extension</p>	<p>Countywide</p>	<p>2022</p>	<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, 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>	<p>TBD based on fertilizer legislation, if passed</p>	<p>TBD based on fertilizer legislation if passed</p>	<p>1 – FTE Clean Water Coordinator for Planning Commission</p>	<p>\$130,000 per year</p> <p>Urban Nutrient Management \$10 per acre → \$20,000</p>	<p>2022 No progress has been made.</p>	
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<p><b>2.5*</b> <b>Green</b></p>	<p>Improve Agricultural BMP reporting utilizing PracticeKeeper, Capital RC&amp;D Transect Survey, PSU Survey, Manure Transport Reporting and Remote Sensing</p>	<p><b>Increase reporting of agriculture plans (30 per year) into PracticeKeeper</b></p> <p>Work with Capital RC&amp;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 Northumberland County</p> <p>Work with PDA/DEP to improve manure transport reporting</p>	<p>DEP, NCCD, NRCS, PDA, NRCS, Northumberland County Farm Bureau, Capital RC&amp;D, Chesapeake Conservancy, PSU Survey, Manure Brokers</p>	<p>Countywide</p>	<p>2022-2025</p>	<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&amp;D routes are not all inclusive and could be improved.</p> <p>Current response rates are low and miss a large demographic of Northumberland County farmers.</p> <p>Manure brokers are not required to report data annually. Data is not inclusive.</p>			<p>1 – FTE Clean Water Coordinator for Conservation District</p> <p>5 – Summer interns for reporting and verification</p>	<p>\$130,000 per year</p> <p>\$50,000 – paid internships</p> <p>See 3.5 for funding needs to improve cover crop reporting for capital RC&amp;D</p>	<p>2022 The district participated in the transect Survey in the spring and fall.</p>	
<p><b>2.6*</b> <b>RED</b></p>	<p>Standardized Reporting for Dairy Precision Feeding</p>	<p>County 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.</p>	<p>Chesapeake Bay Program, Penn State Extension, Dairy co-ops</p>	<p>Countywide</p>	<p>2022</p>	<p>It is recommended that MUN be an acceptable standard for reporting dairy precision feeding. Guidelines need to be posted on acceptable MUN rates and work with dairy</p>	<p>N/A</p>	<p>N/A</p>	<p>Reporting protocol</p>	<p>N/A</p>	<p>2022 No progress has been made.</p>	

		-1,000 animal units per year for dairy precision feeding				integrators to receive MUN data to report to DEP.						
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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  
Highlight changes for 2023-2024 milestone period

Action # <span style="color: green;">Green</span> <span style="color: orange;">Yellow</span> <span style="color: red;">Red</span>	Description	Performance Target(s)	Responsible Party(ies) and Partnerships	Geographic Location	Expected Timeline	Potential Implementation Challenges or Recommendations	Resources Available		Resources Needed		Annual Progress to Date (2021 + 2022) <small>*add new 2022 progress above the existing 2021 progress. Date each entry</small>	Reason for Change to Action Item (2023-2024 milestone period)
							Technical	Financial	Technical	Financial		

### Priority Initiative 3: Achieve New Pollutant Reductions

<b>3.1</b> <span style="color: green;">Green</span>	Implementation of the Warrior Run Watershed 319 Plan	Conduct farm visits, windshield surveys, GIS Studies	Bloomsburg University, NCCD, other partners to be identified	Warrior Run Watershed	2021-2025	Funding, landowner interest in BMPs, implementation partner coordination  Reverification of existing farm BMPs			1 – New Environmental Specialist	\$68,000.00  \$1,000,000 to support implementation of Warriors Run 319	2021-2022 NRCS has been working in watershed. To install streambank stabilization projects and barnyard/manure storages	
<b>3.2</b> <span style="background-color: yellow;">Yellow</span>	Accelerated Implementation of Rapid Delisting Catchment Strategy through the Precision Conservation Partnership	Would like to partner in the future with Chesapeake Conservancy to explore rapid delisting approach	Chesapeake Conservancy, NCCD and Precision Conservation Partnership Stakeholders	TBD with input from Chesapeake Conservancy	2022-2025	Gaining landowner interest, design/permit/construction schedules, dedicated funding to support BMP implementation, Lack of technical assistance and engineering staff to	Program management and GIS  Landowner outreach		3 – additional FTE environmental technician	\$390,000 per year  \$100,000 dollars to complete rapid delisting program management per year → total cost \$500,000	2022 The district has been working to get buffers installed and stream project completed. It is anything but “rapid”.	



						support implementation						
3.3*  Green	Help farmers and operators to be in compliance with state and federal Conservation and Nutrient Management Plans	<p><b>Soil and Water Quality Conservation Plans (AG E&amp;S) 25,000 new acres</b></p> <p><b>Nutrient Management (Manure Management) 31,000 new acres Core N, 17,500 new acres Core P</b></p> <p>Work with ACT 38 operators, Preserved Farms, and certified organics to document plans already required. 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</p>	4R Alliance, NCCD, Northumberland County Farm Bureau, NRCS, Private Sector Agriculture Farm Visits, FSA, Ag Land Preservation	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 Farm programs are not required to enter plans in PK, Recommendations to require all programs to enter plans into PK with farmers as well.	Educational support	CBF grant	Cost share support for equipment/maintenance/staff  6 – additional Ag Planners to work with farmers	\$150,000 cost share budget per year  \$780,000 per year  \$15 per acre for a total cost of \$375,000  \$15 per acre for a total cost of \$465,000	2022 The district has been collaborating with farmers to develop MMP and AG E&S plans. We are not able to work with ACT 38 operators per SCC.	
3.4  RED	Advanced Nutrient Management (4R) Practice Education and Implementation	<p>Transition manure management plans to nutrient management plans and incentivize implementation</p> <p><b>Increase existing 4R practice (N/P Rate by 2,300 acres, N/P Timing by 2,300 acres and N/P Placement by 2,300 acres)</b></p> <p>Explore the idea of increasing PSNT or Chlorophyll testing to district program participants</p>	4R Alliance, NCCD, Northumberland County Farm Bureau, NRCS, Private Sector Agriculture Farm Visits, FSA, Ag Land Preservation	Countywide AG Land	2022-2025	<p>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.</p> <p>Machine dependent for most farming operations</p> <p>Cost of fertilizer is self-regulating farmers to use less fertilizer; therefore, lower rates result</p>	Educational support	CBF grant	6 – additional Ag Planners to work with farmers to meet 4R standards	\$780,000 per year  See 3.3 for cost share budget for equipment rentals.  \$10 per acre of advanced nutrient management planning per type → total cost for all is \$138,000	2022 No progress has been made.	

						when PSNTs are done at the beginning of the growing season.						
<b>3.5*</b> <b>Green</b>	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  <b>Implement tillage management and cover crops on an annual rate of 58,000 acres High Residue, 7,000 acres Conservation Tillage, 4,000 acres Low Residue, 18,000 acres of cover crops and 10,000 acres of cover crops with fall nutrients</b>	NCCD, Northumberland County Farm Bureau, NRCS, Private Sector Agriculture Farm Visits, FSA, Ag Land Preservation	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 – Capital RC&D survey needs revised  Farmers are harvesting cover crops for forage, need accurate efficiency crediting for commodity cover crops	Transect survey  Landowner education  Existing No-Till farm equipment for Rent – no longer rents  Cover Crop Incentive Program	\$73,749 in 2019	6 – additional Ag Planners to transition farmers to high residue  County Conservation District – staff to administer the program  No-till drill rental program	\$780,000 per year  \$90 per acre traditional per year → \$1.62M for a 5 year total of \$8.1M (incentive payment, administration, capital RC&D reporting) \$50 per acre fall nutrients per year → \$500,000 for 5-year total of \$2.5M  \$150,000 for drill and maintenance, storage, admin	2022 The district has a cover crop program to fund \$65 per acre for multi-species cover crop. We have over 4600 acres enrolled.	

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Action # <b>Green</b> <b>Yellow</b> <b>Red</b>	Description	Performance Target(s)	Responsible Party(ies) and Partnerships	Geographic Location	Expected Timeline	Potential Implementation Challenges or Recommendations	Resources Available		Resources Needed		Annual Progress to Date (2021 + 2022) *add new 2022 progress above the existing 2021 progress. Date each entry	Reason for Change to Action Item (2023-2024 milestone period)
							Technical	Financial	Technical	Financial		
<b>3.6*</b> <b>Green</b>	Implement more pasture management BMPs	<p><b>Prescribed grazing – 800 acres</b></p> <p><b>Pasture Alternative Watering – 150 acres</b></p> <p><b>Grass buffers on fenced pasture corridor – 220 acres</b></p> <p><b>Forest buffers on fenced pasture corridor – 10 acres</b></p> <p><b>Land Retirement to Ag Open Space – 205 acres</b></p>	NCCD, Northumberland County Farm Bureau, NRCS, Private Sector Agriculture Farm Visits, FSA, Ag Land Preservation Chesapeake Bay Foundation, Chesapeake Conservancy	Countywide ag lands – landowners who raise horses, dairy, beef and other pasture grazing animals	2022-2025	<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 canceled NRCS contracts by landowners.</p>	Landowner education	CBF grant	<p>6 – additional Ag Planners to provide technical assistance and ag planning</p> <p>3 – additional FTE environmental technician</p>	<p>\$780,000 per year</p> <p>\$390,000 per year</p> <p>Prescribed grazing \$540 per acre → \$432,000 total</p> <p>Off stream watering \$500 per acre → \$75,000 total</p> <p>Land Retirement \$500 per acre → \$102,500 total</p> <p>FB Buffer W/ Exclusion \$10,500 per acre → \$105K total</p> <p>GB Buffer W/ Exclusion \$2,750 per acre → \$605K total</p>	2022 Byerly Ag BMP Project implements rotational grazing, a watering system, stream exclusion of livestock, installation of buffers, and environmentally sensitive area exclusion. This project is in the final stages of part 1. Part 2 will be buffers.	

<p><b>3.7*</b> <b>Yellow</b></p>	<p>Riparian buffer and re-forestation BMPs</p>	<p><b>410 riparian forest buffer acres;</b> Need to recredit additional acres lost since 2010</p> <p><b>62 riparian grass buffer acres;</b> Need to recredit additional acres lost since 2010</p> <p><b>40 acres – Agriculture Tree Planting</b></p> <p><b>80 acres – urban forest buffer</b></p> <p><b>2 acres – urban tree canopy</b></p> <p><b>120 acres – urban forest planting</b></p> <p><b>500 acres – forest harvesting practices</b></p>	<p>CBF, Sunbury Chapter of TU, Chesapeake Conservancy, NRCS, NCCD, PAFBC, DCNR, North Central PA Conservancy, Merrill Linn Conservancy, Middle Susquehanna River Keepers, Northumberland AOAA, Watershed groups LSCWA and SCRA, Universities, Other Recreational groups, DCNR, DEP BAMR</p>	<p>Countywide</p>	<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>Materials</p> <p>Mapping</p>	<p>Budget available to be determined</p>	<p>6 – additional Ag Planners to provide technical assistance and ag planning</p> <p>3 – additional FTE environmental technician</p>	<p>\$780,000 per year</p> <p>\$390,000 per year</p> <p>Forest Buffer \$5,000 per acre → \$250K</p> <p>Maintenance equipment/contract \$490K</p> <p>Grass Buffer \$2,500 per acre → \$100K</p> <p>Tree/Forest Planting \$10,000 per acre → \$1.2M</p> <p>Forest Harvesting \$60 per acre → \$30K total</p>	<p>The district received bids for installation of buffers. These bids exceeded the amount of money we are able to spend in 2022. They are on track if funded in 2023.</p>	
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Action # <b>Green</b> <b>Yellow</b> <b>Red</b>	Description	Performance Target(s)	Responsible Party(ies) and Partnerships	Geographic Location	Expected Timeline	Potential Implementation Challenges or Recommendations	Resources Available		Resources Needed		Annual Progress to Date (2021 + 2022) *add new 2022 progress above the existing 2021 progress. Date each entry	Reason for Change to Action Item (2023-2024 milestone period)
							Technical	Financial	Technical	Financial		
<b>3.8</b> <b>Green</b>	Wetland restoration implementation on marginal production ag land	<b>82 acres of Wetland Restoration</b>  Identify 1 large property owner from University of Vermont restorable wetland layer to install a wetland	CBF, Sunbury Chapter of TU, Chesapeake Conservancy, NRCS, NCCD, PAFBC, DCNR, North Central PA Conservancy, Merrill Linn Conservancy, Middle Susquehanna River Keepers, Northumberland AOAA, Watershed groups LSCWA and SCRA,	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 → \$2.46M	2022 Wetlands have been installed though a grant Montour county received in the northern end of Northumberland county.	

<p><b>3.9</b> <b>Green</b></p>	<p>Stream Restoration (Urban and Agriculture)</p>	<p><b>10,000 Linear feet (~2 miles) Urban Stream Restoration</b>  <b>8,000 Linear feet (~1.5 mile) Agriculture Stream Restoration</b></p>	<p>CBF, Sunbury Chapter of TU, Chesapeake Conservancy, NRCS, NCCD, PAFBC, DCNR, North Central PA Conservancy, Merrill Linn Conservancy, Middle Susquehanna River Keepers, Northumberland AOA, Watershed groups LSCWA and SCRA,</p>	<p>Rapid delisting areas top priority &amp; Countywide</p>	<p>2022 – 2025</p>	<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 Lack of funding to cover engineering design</p>	<p>Design/GP-1 permit</p>		<p>Design, permit, construction services  2 – Municipal Engineers  3 – FTE Design, Permit construction Services  2 – stream biologist</p>	<p>Assume \$900/LF - \$9.0M – Urban  Assume \$400/LF - \$3.2M Agriculture  \$280,000 per year  \$420,000  \$280,000</p>	<p>2022 The district continues to install stream restoration projects in the county through the NPC partnership.</p>	
<p><b>3.10</b> <b>Green</b></p>	<p>Implement more barnyard runoff control/loafing lot management</p>	<p><b>49 acres of barnyard runoff controls</b>  <b>72 acres of agriculture drainage management</b></p>	<p>NCCD, Northumberland County Farm Bureau, NRCS, Private Sector Agriculture Farm Visits, FSA, Ag Land Preservation</p>	<p>Countywide Farms</p>	<p>2022-2025</p>	<p>Landowner buy-in and project development/funding  Lack of Technical assistance to support agriculture planning and implementation  Increasing construction costs are cancelling NRCS contracts  Lack of funding to cover engineering design</p>			<p>6 – additional Ag Planners to provide technical assistance and ag planning  3 – FTE Design, Permit construction Services  3 – FTE Design, Permit construction Services</p>	<p>\$780,000 per year  \$420,000 per year  \$315,000 per year  Barnyard Runoff Control \$175,000 per project, assume 1 acre per project \$5.6M in total  Agriculture Stormwater Management \$10,000 per project, assume 1 acre per project \$720K in total</p>	<p>2022 The district has been implementing projects in the warrior run watershed through the NPC partnership. The district also has a project lined up for plum creek watershed for barnyard runoff BMP's.</p>	

<p><b>3.11</b> <b>Yellow</b></p>	<p>Animal Waste Storage Systems</p>	<p><b>5,000 new AUs of livestock waste management systems</b></p> <p><b>10,000 new AUs of poultry waste management systems</b></p>	<p>NCCD, Northumberland County Farm Bureau, NRCS, Private Sector Agriculture Farm Visits, FSA, Ag Land Preservation</p>	<p>Livestock &amp; Poultry farms</p>	<p>2022-2025</p>	<p>Current capacity through NRCS and NCCD implements about 5 farms projects per year; 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</p> <p>Lack of funding to cover planning, I&amp;Es, and engineering design</p>	<p>Project implementation – 5 farms a year</p>		<p>6 – additional Ag Planners to provide technical assistance and ag planning</p> <p>3 – FTE Design, Permit construction Services</p> <p>3 – FTE Design, Permit construction Services</p>	<p>\$780,000 per year</p> <p>\$420,000 per year</p> <p>\$315,000 per year</p> <p>Animal waste management system \$175,000 per project, assume 100 AUs per project \$26.25M in total</p>	<p>2022 The district requested CAP funding but did not receive funding for a poultry storage. NRCS has funding to complete the project.</p>	
<p><b>3.12*</b> <b>Yellow</b></p>	<p>Urban Stormwater Management Non-Regulated Communities</p>	<p>Implement existing ordinances at local municipal level</p> <p><b>Stormwater Treatment Performance Standard – 16 acres treated</b></p> <p><b>Stormwater Treatment Performance Standard – 273 acres treated</b></p> <p><b>Advanced Grey Infrastructure – 190 acres treated</b></p> <p><b>Dry Detention Ponds – 65 acres treated</b></p> <p><b>Infiltration Practices – 58 acres treated</b></p> <p><b>Impervious Surface reduction – 1 acre</b></p>	<p>NCPC, NCCD, developing municipalities, Keystone Council of Governments, Sunbury Municipal Authority, SEDA-COG, DCED</p>	<p>County-wide</p>	<p>Ongoing 2022-2025</p>	<p>Coordination/training for municipal staff, FieldDoc batch opportunity, non-MS4 engagement (what’s in it for them?), very little reporting in the non-ms4 sector, must encourage more reporting</p> <p>Catalogue existing BMPs that fit into this category and newly built ones</p>	<p>Reporting platform</p>		<p>5 – Summer interns for reporting and verification</p> <p>2 – Municipal Engineers</p> <p>1 – municipal planner</p>	<p>\$50,000 – paid internships</p> <p>\$280,000 per year</p> <p>\$130,000 per year</p> <p>Stormwater Treatment \$1,815/acre → \$29,040</p> <p>Runoff Reduction \$4,162/acre → \$1.136M</p> <p>Advanced Grey Infrastructure \$132/acre → \$25,080</p> <p>Dry Detention Ponds \$7,917/acre → \$511,000</p> <p>Infiltration Practices</p>	<p>2022 The district administers the 102/105 program. NPDES permits approved, GP Permits for projects approved.</p>	

										\$7,917/acre → \$460,000 Impervious Surface reduction \$57,460/acre → \$57,460		
<b>3.13</b> <b>Red</b>	Conservation Landscaping/Turf to Meadow Conversion	Promote new program and enable one large tract landowners' participation  <b>120 new acres of Conservation Landscaping</b>	NCPC, NCCD, developing municipalities, Keystone Council of Governments, Sunbury Municipal Authority, SEDA-COG, Watershed organizations	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 environmenta l technician	\$130,000 per year  \$130,000 per year  \$2,500 per acre meadow → \$300,000 budget for all	2022 No progress has been made.	



<p><b>3.14*</b> <b>Green</b></p>	<p>Continue dirt and gravel road program</p>	<p><b>34 miles overall restored through past projects and future projects</b></p> <p><b>5,000 new linear feet of D&amp;G Road improvements</b></p>	<p>NCCD</p>	<p>Countywide</p>	<p>2025</p>	<p>Continue D&amp;G Road program funding</p> <p>Expand Dirt and Gravel Road Program to include farm lanes</p>	<p>Education, technical assistance, project oversight</p>	<p>\$2.4 million since 1998</p>	<p>1 – FTE Clean Water Coordinator for Conservation District</p>	<p>\$130,000 per year</p> <p>Dirt and Gravel Roads \$40 per foot → \$200,000</p>	<p>2022 The district administers this program and has project funded and projects being installed.</p>	
<p><b>3.15*</b> <b>Red</b></p>	<p>Work with PennDOT and local municipalities to reduce frequency of mowing road ditches and along roadways</p>	<p>Educate local municipal leaders and PennDOT on the importance of keeping higher vegetation along roadways to prevent erosion and increase nutrient uptake.</p>	<p>Local Municipalities, DEP and PennDOT</p>	<p>Countywide</p>	<p>2023</p>	<p>PennDOT’s and Municipal willingness to cut back on mowing programs. DEP Chesapeake Bay Program will need to assist in the education of PennDOT.</p>			<p>1 – FTE Clean Water Coordinator for Planning Commission</p> <p>1 – FTE Clean Water Coordinator for Conservation District</p>	<p>\$130,000 per year</p> <p>\$130,000 per year</p>	<p>2022 No progress has been made.</p>	

<p><b>3.16</b> <b>Green</b></p>	<p>Private Funding &amp; Grant Administration</p>	<p>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</p>	<p>Existing project implementer networks</p>	<p>Countywide</p>	<p>2022-2023</p>	<p>Need to expand network, educational aspect of less common funders, logistics of utilizing unproven funding sources (or lesser known)</p> <p>Grant administration is a challenge due to limited staff and time-consuming nature of grant reporting and administration</p>	<p>Financial services</p>		<p>1 – FTE Conservation District Grant Manager</p> <p>1 – FTE Planning Commission Grant Manager</p> <p>2 – staff accountants</p>	<p>\$130,000</p> <p>\$130,000</p> <p>\$140,000 per year</p>	<p>2022 The district has been completing admin on grants and working with the watershed group that seeks private funding. For both LSCWA and SCRA.</p>	
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<b>Priority Initiative 4: Research, Education, and Training</b>												
<b>4.1*</b> <b>Yellow</b>	Develop new water quality monitoring data into Chesapeake Data Explorer/ Chesapeake Monitoring Cooperative database	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 area monitoring gaps	ALLARM, Bloomsburg University, Watershed Associations	To be determined	2022	Land access, expanded volunteer need, equipment/materials budget, Consistent data collection, QAQC continuation  Data precision, QAQC, opportunity to educate landowners about local stream health and what they can do about it  Consideration to expand the Keystone Water Resources Center			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	2022 The district purchased a water quality monitoring probe and has been collecting data. The district is not yet audited to submit the data for the model. Ben needs to have time to get audited and have time to collect samples.	
<b>4.2</b> <b>Green</b>	Enhance the capacity of local watershed associations for short-term success and long-term sustainability	Develop new or reestablish existing watershed associations to support with CAP implementation. Watershed organizations can support with outreach,	Watershed Associations, Trout Unlimited, National Trout Unlimited, Rivers Keeper,	Countywide	Ongoing	Willing volunteers and leaders to establish and run watershed organizations to be successful and support with implementation	Social media shares		1 – FTE Clean Water Coordinator for Planning Commission  1 – FTE Clean Water	\$130,000 per year  \$130,000 per year	2022 The district has been continuing to work with watershed groups in our county.	

		engagement, new project identification and implementation  Encourage project implementation on the watershed level so that these partners enhance their relationships with non-peers with a co-benefit of diversifying their membership	Shamokin Creek Restoration Alliance, Little Shamokin Creek Watershed Association, AOAA				Project development support		Coordinator for Conservation District	\$5000 per organization to produce promotional materials (hats, shirts, stickers) for members → \$15,000 total		
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### Phase 3 Watershed Implementation Plan (WIP) Progress and Milestones 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).

**Progress to Date** = This field will be used for annual reporting on priority initiatives. This is a description of the action(s) your county took toward achieving the priority initiative. Examples include education and outreach, programmatic changes, etc. For numeric priority initiatives your county can retrieve those numbers directly from *FieldDoc* or put in the column "See *FieldDoc*."

**Reason for Change to Action Item** = This field will be used for two-year milestone updates. This field allows for your county to adjust your original targets and goals based on progress to date. Your county may adjust goals and targets up or down based on your progress to date. This field requires a reason as to the reason of change, whether up or down.