

## VIII. Project Idea Submission Form

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## VIII. Project Idea Submission Form

### Fiscal Year 2016 Project Proposal Forms for EPA GIT-Funding

#### Proposal 1.

<b>Goal Implementation Team:</b>	Sustainable Fisheries
<b>Project Title:</b>	Shell/habitat loss rates in oyster restoration and fishery management
<b>Project Type</b> (See Section IV of guidelines document):	Monitoring/tracking program development, assessments of data to evaluate progress on metrics
<b>Goal/Outcome:</b>	Oyster Restoration
<b>Estimated Cost:</b>	\$50-\$60K
<b>Justification:</b> Provide a 2 paragraph description of the work and why it is needed. It is recommended that you draw upon one or more work plans.	<p>Oyster shell is an essential component of oyster restoration efforts and supports healthy oyster reef ecosystems that provide habitat for many fish and shellfish species. The dynamics of the shell budget (accumulation and loss) in the Bay is complex and poorly quantified. Shell is an increasingly expensive, very limited resource that is insufficient in availability to support current bi-state restoration and fishery management goals.</p> <p>This project seeks to (1) develop salinity (upbay-downbay) dependent shell budgets for both high density (3D structures) restoration reefs and large area coverage shell plants (2D structures) in support of fisheries including rotational harvest; (2) from these shell budgets set critical baseline population demographics to sustain shell presence and reef/habitat integrity; and (3) project future shell needs under various restoration and fishery scenarios. Developing estimates of future shell resource availability and resource needs is important to support ongoing investment in and success of oyster restoration and other oyster activities in the Bay.</p>
<b>Methodology:</b> Provide a 1-2 paragraph description of how the work is likely to be accomplished.	<p>The project will use historical survey and replenishment data, revisit a time series of restoration sites, and include current short-term studies at new shell plants to generate shell dynamics data.</p> <p>Data sources include the VMRC-VIMS VA stock assessment (1993-present) archive, VMRC replenishment archives (1995-present) and the MD DNR stock assessment (1995-present) archive. Analysis will provide annual census of shell (standing stock), addition through mortality (from live oyster density and demographics) and loss rates (from difference by methods cited). Reef area estimates provide scaling functions.</p>
<b>Cross-Goal Benefits:</b> What other goals may be advanced through this work?	Sustainable Fisheries, Vital Habitats
<b>Are you willing to serve as GIT lead</b> (see description of the role in Section VI) If no, suggest other GIT lead	Stephanie Westby

**Proposal 2.**

<b>Goal Implementation Team:</b>	Sustainable Fisheries
<b>Project Title:</b>	Blue Crab Stock Assessment (Select Terms of Reference)
<b>Project Type</b> (See Section IV of guidelines document):	Support for science needed to develop metrics, metric/indicator development, performance measure development, data collection program development, assessments of data to evaluate progress on metrics
<b>Goal/Outcome:</b>	Blue Crab Abundance Blue Crab Management
<b>Estimated Cost:</b>	\$75k (only covers a subset of analysis listed below)
<b>Justification:</b> Provide a 2 paragraph description of the work and why it is needed. It is recommended that you draw upon one or more work plans.	<p>The blue crab (<i>Callinectes sapidus</i>) is an icon for the Chesapeake Bay region and the commercial fishery for blue crab remains one of the most valuable fisheries in the Bay. Ecologically, the blue crab is an important component of the ecosystem. Sound and sustainable management of blue crabs is based on the best available science which is generated through benchmark stock assessments, academic research, and the annual winter dredge survey. This proposal requests a benchmark stock assessment for blue crab, which is a full analysis and review of the stock condition, focusing on the consideration of new data sources and newer or improved assessment models that is generally conducted every five years. The last benchmark assessment was completed in 2011 and resulted in the current female specific management framework and the 215 million adult female abundance target.</p> <p>The assessment will be comprised of a subset or all of the following terms of reference: (i) critically reviewing, and where necessary revising the life history parameters of blue crab in the Chesapeake Bay that are relevant to an assessment of the stock with particular attention to the extent and scale of inter-annual variation, (ii) describing and quantifying patterns in fishery-independent surveys, (iii) describing and quantifying patterns in catch and effort by sector and region including analyses that examine the impacts of reporting changes and trends in catch-per-unit-effort (CPUE), (iv) evaluating the utility of incorporating a commercial CPUE index in the assessment, (v) updating the assessment with relevant new data assessment models used previously in assessing the Chesapeake Bay, (vi) evaluate the feasibility of assessment models that operate on a sub-annual time-step and/or finer spatial resolutions, (vii) evaluating and providing recommendations for sex-specific and aggregate biological reference points for the Chesapeake Bay blue crab population, (viii) providing an evaluation of the status of the stock relative to recommended reference points, (ix) characterizing uncertainty in assessment estimates, and (x) evaluating the potential for ecosystem-based considerations.</p>
<b>Methodology:</b> Provide a 1-2 paragraph description of how	The stock assessment will be conducted based on a subset of the terms of reference outlined above as selected by the Sustainable Fisheries Goal

the work is likely to be accomplished.	Implementation Team Executive Committee. Stock assessment scientists and staff from the blue crab management jurisdictions would work together to compile and work-up the necessary data for the assessment. Scientists will use the most recent scientific information and data to update and run the stock assessment models from the 2011 blue crab benchmark stock assessment. Scientists will also review reference points for the stock.
<b>Cross-Goal Benefits:</b> What other goals may be advanced through this work?	If evaluating the potential for ecosystem-based considerations, from above is funded, factors influencing blue crab populations would be identified and help identify other outcomes that most affect blue crab.
<b>Are you willing to serve as GIT lead</b> (see description of the role in Section VI) If no, suggest other GIT lead	Request NOAA rep for lead

#### Proposal 4.

<b>Your Name:</b>	Mary Andrews
<b>Goal Implementation Team:</b>	Habitat
<b>Project Title:</b>	Updates to the Chesapeake Fish Passage Tool
<b>Project Type</b> (See Section IV above):	<ul style="list-style-type: none"> <li>● Data collection program development</li> <li>● Assessments of data to evaluate progress on metrics</li> <li>● Database development</li> <li>● Mapping, lands assessment</li> </ul>
<b>Goal/Outcome:</b>	Fish Passage
<b>Estimated Cost:</b>	\$70,000
<b>Justification:</b> Provide a 2 paragraph description of the work and why it is needed. It is recommended that you draw upon one or more work plans.	<p>The Fish Passage Work Group (FPWG) has an online tool called the Chesapeake Fish Passage Prioritization Tool (<a href="http://maps.tnc.org/EROF_ChesapeakeFPP/">http://maps.tnc.org/EROF_ChesapeakeFPP/</a>) that assists the group in identifying high priority projects. In addition, the tool serves as the FPWG's database to track progress towards meeting the CBP goals (i.e. it calculates the "miles opened" for each project we complete). The FPWG agreed periodic upgrades and updates are needed every 2 years as technology quickly changes and is improved. The tasks below outline the needed improvements to the tool:</p> <p>(1) Moving the tool from "flash" to "java script." Our tool is written in flash and this script is no longer supported (i.e. you cannot use the tool on iPad for example). The Flash platform will be completely phased out in the coming months/years rendering our Fish Passage Tool unusable.</p> <p>(2) Performing updates including updating the dam database. Our dam database is the most comprehensive database in the watershed; however, changes are needed in the database as field assessments identify new dams and fish blockages. In addition, updated climate data layers related to impacts to anadromous fish (example: modeled stream temperature changes) would be added to the tool and used for future project prioritization, as available. Brook Trout data is currently housed in the database. Updates to the tool would also include updated information from the Brook Trout Joint Venture.</p>

	<p>(3) The North Atlantic Aquatic Connectivity Collaborative data being collected on culverts (for which HGIT received funding in current cycle to expand to PA/VA) will be added to the database to show a more comprehensive picture of fish blockages in each watershed.</p> <p>(4) Updating the mileage calculations to account for "fish projects" versus "dam removals" to tell a better story on fish passage efforts in the Chesapeake.</p> <p>Please note that without switching the program platform from "flash" to "java script" soon, we will be left without a functional tool. The miles opened calculations we provide the CBP each year are derived directly from this tool - without an upgrade that calculation will not be possible.</p> <p>The data layers developed by this tool have been provided to other partnerships and efforts to support their individual prioritization efforts. For example, the dam database was supplied to NFWF for use in the development of the River Herring Business Plan and selection of priority watersheds. The FPWG has also supplied data to the Atlantic Coast Fish Habitat Partnership and assisted in the development of their decision support tools. By providing the FPWG's priority list of projects, we ensure all partners working on fish passage efforts are all focused on the highest priority projects. This allows multiple funding partners to allocate needed funds to the highest priority fish passage projects.</p>
<b>Methodology:</b> Provide a 1-2 paragraph description of how the work is likely to be accomplished.	The FPWG would develop of scope of work and request qualified bidders submit proposals. The proposals would be selected based on a combination of the bidder's qualifications and cost.
<b>Cross-Goal Benefits:</b> What other goals may be advanced through this work?	Brook Trout, Climate
<b>Are you willing to serve as GIT lead</b> (see description of the role in Section VI above) If no, suggest other GIT lead	Mary Andrews (yes, I am willing to serve.)

### Proposal 5.

<b>Your Name:</b>	Brooke Landry, Tom Ihde
<b>Goal Implementation Team:</b>	Habitat, Sustainable Fisheries
<b>Project Title:</b>	<a href="#">Watershed Group and Citizen Monitoring of Fish Habitat</a>
<b>Project Type</b> (See Section IV above):	Workplan implementation; Database development; Training; Mapping; Watershed assessment; Environmental monitoring; Citizen engagement
<b>Goal/Outcome:</b>	SAV / Sustainable Fisheries (as well as Climate Resiliency, Citizen Stewardship and Local Leadership)
<b>Estimated Cost:</b>	\$52,000 <ul style="list-style-type: none"> <li>• \$10,000 for each watershed group to monitor SAV x 4 watershed groups</li> </ul>
<b>Justification:</b> Provide a 2	SAV is a vital component of the Chesapeake Bay's ecosystem. SAV

	<ul style="list-style-type: none"> <li>• \$2000 for each watershed group to test fish and invertebrate sampling equipment</li> <li>• \$4000 for further development of smartphone app that would allow citizen volunteers to collect and convey data in real-time)</li> </ul>
<p>paragraph description of the work and why it is needed. It is recommended that you draw upon one or more work plans.</p>	<p>provides food and habitat for a number of commercially and ecologically important fish and shellfish. It reduces wave energy which decreases shoreline erosion. It acts as a carbon sink and has been identified as an extensively valuable form of “blue carbon” that prevents and reduces the effects of climate change. And it locks sediments in place to increase water clarity, which is used as an indicator and measure towards achievement of the Bay Program’s water quality goals.</p> <p>In 2015, STAR’s Indicator Action Team identified indicator support needs associated with outcomes of the new Bay Agreement. In 2016, STAR’s Integrated Monitoring Networks Workgroup held a STAC sponsored workshop to pilot a process for networking across GIT needs. Workshop participants ranged from having well-developed monitoring programs to those in need of new monitoring efforts, and to groups willing to collaborate on new or enhanced monitoring efforts. The final workshop mapping exercises highlighted opportunities for collaboration with an evolving Citizen Science program effort, enhancements to the annual SAV aerial survey, and opportunities to build out forage fish assessment strategies.</p> <p>While the annual SAV aerial survey provides location and density data for SAV beds throughout the Chesapeake Bay and its tributaries, it is unable to capture species data and SAV extent farther up tributaries where aerial imagery is difficult to collect.</p>
	<p>The primary objective of this project is to give Watershed groups with citizen science volunteers the knowledge and equipment necessary to collect SAV species diversity data in areas monitored by the VIMS survey as well as SAV abundance and diversity data in those areas not monitored. Additional habitat data would be collected simultaneously (ie. various water quality parameters, wetland data, shoreline type, and invasive species data). A secondary objective of the project is to test the suitability of various types of fish traps and benthic grabs in various fish habitats including both submerged and emergent vegetation. SAV and emergent marsh wetlands both provide habitat and forage to fish and shellfish throughout the Bay, but sampling for fish and invertebrates with traditional equipment in SAV beds or marshes is difficult and destructive to both.</p> <p>This data will fill monitoring needs and data gaps from shallow water habitats around the Bay. Data collected as a result of this project would be available for use in future trends analyses and ultimately help guide restoration and management of Bay resources.</p>
<p><b>Methodology:</b> Provide a 1-2 paragraph description of how the work is likely to be accomplished.</p>	<p>Grantees will be selected based on the following criteria: a proven ability to organize, train, and mobilize volunteers, an adequate number of volunteers throughout the watershed, and their geographic location and data monitoring needs in their watershed. Ideally tributaries throughout the watershed in both Virginia and Maryland will be represented.</p>

	<p>Representatives from the SAV Workgroup (Brooke Landry) and Fisheries GIT (Tom Ihde/Bruce Vogt) will train grantees on specific protocols to be used for sampling water quality, habitat, and forage data. Grantees would in turn train their staff and volunteers.</p> <p>Funds awarded from this grant would be used to travel to training exercises, hire staff, or purchase necessary equipment. Necessary equipment may include SAV keys, handheld GPS units, small boats such as kayaks or canoes, GoPros, secchi disks, snorkel gear, fish traps, benthic grabs, and any other equipment deemed necessary.</p> <p>Grantees will be responsible for data collection, data entry and management (of their data and data collected by their citizen volunteers), data reporting (to the appropriate agency), and a final report for each tributary monitored.</p>
<b>Cross-Goal Benefits:</b> What other goals may be advanced through this work?	Sustainable Fisheries, Climate Resiliency, Citizen Stewardship, Local Leadership, Wetlands. I see this as the first step in truly mobilizing the watershed groups by getting them some of the resources they need to collect and contribute significant data to the Bay's recovery efforts. All of the CBP goals could eventually benefit from their increased participation.
<b>Are you willing to serve as GIT lead</b> (see description of the role in Section VI above) If no, suggest other GIT lead	Yes.

### Proposal 6.

<b>Your Name:</b>	Wetland Workgroup Co-Chairs – Amy Jacobs and Erin McLaughlin
<b>Goal Implementation Team:</b>	Habitat GIT
<b>Project Title:</b>	<a href="#">Increasing Landowner Participation in Wetland Programs Through Improved Information access and Program Staff Cross-Training</a>
<b>Project Type</b> (See Section IV above):	Workplan Implementation
<b>Goal/Outcome:</b>	To further enhance outreach to landowners and increase implementation of wetland restoration projects
<b>Estimated Cost:</b>	\$50,000
<b>Justification:</b> Provide a 2 paragraph description of the work and why it is needed. It is recommended that you draw upon one or more work plans.	In support of our workplan to advance and accelerate wetland restoration in the Bay Watershed, the Wetland Workgroup has collaborated with partners to identify major obstacles to implementing wetland restoration projects. Multiple studies and facilitated discussions have identified obstacles from the perspective of both landowners and practitioners including a The Nature Conservancy and Ducks Unlimited NFWF-funded survey of wetland practitioners, FY14 GIT-funded survey of agricultural landowners, and the Delaware Wetland Conference workshop on marketing to private landowners. This proposal was developed from the results and recommendations of these efforts. One of the key obstacles identified was a universal understanding of all the programs available to private landowners who are interested in restoring wetlands. Often, individual agencies interact with landowners, but are only knowledgeable about their program and if it

	<p>does not meet the needs of the landowner, an opportunity to restore a wetland may be lost. Having a central location/website for each region would allow practitioners from any organization or private landowners to review all the available options for a property and identify a program that works best for individual landowner interests. Additionally, training on the use of the website, program eligibility requirements, specifications, and enrollment process would be critical to bring awareness to the new tool and direct practitioners to broaden their knowledge about the variety of programs.</p> <p>To bridge the gaps identified by the Wetland Workgroup efforts, we propose to hire a contractor to establish a website with all available wetland programs per region, develop a marketing and outreach plan for each region, and provide training to wetland practitioners including Soil Conservation District and other implementation staff. These objectives will help the Wetland Workgroup achieve Key Action Four (Develop solutions to address barriers and improve outreach), under Management Approach Two (Identify barriers to wetland restoration and develop solutions to address them) in the Wetland Outcome Two-Year Work Plan. Our goal is to provide accurate wetland program information to both landowners and restoration implementation staff, and to develop marketing and outreach plans for each region in the Chesapeake Bay Watershed to increase participation in wetland restoration programs and thus increase the number of acres restored. In the landowners surveys completed last year, 31% of landowners were definitely or probably interested in restoring wetlands on their property illustrating the untapped opportunity if they have access to more information on programs that match their interests.</p>
<p><b>Methodology:</b> Provide a 1-2 paragraph description of how the work is likely to be accomplished.</p>	<p>Using the recommendations from the OpinionWorks survey and report, the contractor will advance a marketing and outreach strategy to increase participation in wetland restoration programs.</p> <ol style="list-style-type: none"> <li>1. The contractor will develop a website that provides information on wetland restoration programs by jurisdiction/watershed in an easy to follow format for practitioners and landowners. Contacts for each area will be provided for more information.</li> <li>2. The contractor will develop printed brochures that appeal to landowners in different regions on the opportunities to restore wetlands and programs and other assistance that is available.</li> <li>3. The contractor will facilitate regional training opportunities via webinar trainings or in person for wetland practitioners and implementation staff (i.e. Soil Conservation District employees, etc.). These trainings will also be used to gain feedback on the regional brochures and the audience to send the information.</li> <li>4. The contractor will finalize and distribute the brochures through multiple media outlets (mail, offices, farmer groups etc.).</li> </ol>
<p><b>Cross-Goal Benefits:</b> What other goals may be advanced through this work?</p>	<p>This project will serve as a demonstration for other Outcomes with similar obstacles – landowner willingness and training of middle managers.</p>
<p><b>Are you willing to serve as GIT lead?</b> (see description of</p>	<p>Yes.</p>

the role in Section VI above)	
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**Proposal 7.**

<b>Your Name:</b>	Matt Keefer
<b>Goal Implementation Team:</b>	Water Quality GIT; Forestry Workgroup
<b>Project Title:</b>	<u>Assessing Multifunctional Riparian Forest Buffer Benefits</u>
<b>Project Type</b> (See Section IV above):	Work plan implementation Project: Includes components of Economic modeling, Baseline analyses, Environmental monitoring, and Environmental demonstration and assessment project
<b>Goal/Outcome:</b>	Vital Habitats Goal; Forest Buffer Outcome
<b>Estimated Cost:</b>	\$65,000
<b>Justification:</b> Provide a 2 paragraph description of the work and why it is needed. It is recommended that you draw upon one or more work plans.	<p>Riparian forest buffers are a key BMP identified in each jurisdiction’s watershed improvement plan. Recent enrollments of riparian forest buffers in have declined across the Bay watershed. Without additional tools beyond the current offerings, Pennsylvania is unlikely to meet its goal. Adding greater flexibility in landowner eligibility, riparian forest buffer designs, allowable plant materials, and other elements, without compromising water quality, will help to reinvigorate interest in riparian forest buffers and accelerate participation across the Bay watershed. Allowing landowners to harvest products and produce an income from woody plants provides additional incentives to landowners to establish riparian forest buffers, to maintain them, and to retain them for the long-term. Virginia Tech has had some success with multifunctional buffer establishment.</p> <p>As previously mentioned, this project directly addresses several management approaches and key actions identified in the Forestry Workgroup’s 2-year RFB work plan; including Leadership through establishing pilot projects; RFB Enhancements by establishing need for alternative funding options; RFB Technical Assistance by appealing to landowners’ preferences and addressing their concerns; and more.</p>
<b>Methodology:</b> Provide a 1-2 paragraph description of how the work is likely to be accomplished.	Funding would be provided to install multi-functional RFBs on private and/or public land in PA. These pilot sites would include several planting/buffer designs on a number of different sites/environmental conditions including a core, conventional buffer of at least 15 to 35 feet wide, and then alternative designs for a multifunctional buffer. Funding would also support an accompanying monitoring program to assess water quality improvements and tree and shrub species success and survivability. Our current assumption is that these designs and plantings would meet the definition of and receive the same level of credit as “Forest Buffers” in the Bay Model. Additionally, the project would explore potential markets for products produced from the buffers. Data would be compiled, analyzed, and reported to the Forestry Workgroup and other appropriate Goal Teams.
<b>Cross-Goal Benefits:</b> What other goals may be advanced through this work?	<p>This project can help to advance the work of several Management Strategies:</p> <ul style="list-style-type: none"> <li>● Tree Canopy: these alternative buffers could be planted on</li> </ul>

	<p>non-farmland; thus increasing tree canopy in developed areas</p> <ul style="list-style-type: none"> <li>● Stream Health: by providing baseline data</li> <li>● Healthy Watersheds: relates to several key actions related to forest cover</li> </ul>
	<ul style="list-style-type: none"> <li>● Citizen Stewardship: by providing potential volunteer opportunities in the form of planting or maintenance; and also supporting community engagement in watershed improvement activities and understanding local food markets</li> <li>● 2017 and 2025 WIPs: Forest Buffers are a key BMP identified in each jurisdiction's watershed implementation plan.</li> </ul>
<p><b>Are you willing to serve as GIT lead</b> (see description of the role in Section VI above) If no, suggest other GIT lead</p>	<p>Yes. Matt Keefer or Tracey Coulter from PA DCNR are willing to serve as GIT lead.</p>

**Proposal 8.**

<b>Your Name:</b>	Normand Goulet, Urban Stormwater Workgroup Chair
<b>Goal Implementation Team:</b>	Water Quality
<b>Project Title:</b>	<a href="#">Development of Chesapeake Bay Chesapeake Bay Technology Assessment Protocol for Manufactured Stormwater Treatment Devices</a>
<b>Project Type</b> (See Section IV above):	Performance Measure Development
<b>Goal/Outcome:</b>	Water Quality/ 2017 and 2025 WIP Outcomes
<b>Estimated Cost:</b>	\$50,000
<b>Justification:</b> Provide a 2 paragraph description of the work and why it is needed. It is recommended that you draw upon one or more work plans.	<p>Develop a stormwater manufactured treatment devices (MTD) testing protocol designed to quantify the nutrient and sediment reduction efficiencies for proprietary devices completing the testing protocol. Upon completion of the testing protocol and approval of the USWG, these BMPs would be approved for incorporation in the Chesapeake Bay modeling tools.</p> <p>In March of last year a Chesapeake Bay Science and Technology Advisory Committee (STAC) Workshop was held to discuss the challenges of incorporating MTDs into the Chesapeake Bay TMDL framework.</p>
	<p>Currently the Chesapeake Bay Program (CBP) does not provide water quality nutrient or sediment credit to the States for MTDs installed in its modeling for TMDL attainment. Workshop participants reached an overwhelming consensus that an MTD evaluation program is necessary, and that because of the water quality treatment needs associated with the Chesapeake Bay TMDL, the CBP may provide an excellent venue for such a program. Workshop participants strongly recommended that an advisory panel be formed through the leadership of the CBP's Urban Stormwater Workgroup (USWG) to design this program.</p> <p>Clearly a challenge exists in balancing the need to monitor and verify nutrient removal performance of MTDs and the need to establish a reasonable process that continues to encourage innovation and MTD</p>

	<p>product development. Some may argue that testing is too expensive and presents a barrier to enter into a competitive industry, or that monitoring may stifle design innovation. The counterargument is that testing and verification is not new to industry at all and that it sets a bar and levels the playing field for all. Within the regulated community, there is a clear need for a rigorous, consistent, and scientifically defensible process that is both transparent and affords manufacturers a clear path towards approval.</p>
	<p>The private companies that have invested hundreds of thousands of dollars into research and design are hopeful that the Chesapeake Bay Program and its partnership can reach a consensus</p>
<p><b>Methodology:</b> Provide a 1-2 paragraph description of how the work is likely to be accomplished.</p>	<p>As with all Chesapeake Bay partnership actions, it will start with the development of an advisory panel. Ideally, this panel would be represented by members of the various MTD sectors; including the MTD industry, regulatory community, engineering consultant, academic research and practitioners. To benefit from work in the prior development of existing MTD protocols such as TARP and TAPE, the panel will establish lines of communication with the respective agencies to involve them in the discussion and coordinate efforts.</p> <p>The Panel will need to determine a specific protocol framework, its programmatic depth and how the process will be administered. For programmatic depth, options range in complexity from self-verification to 3<sup>rd</sup> Party to certification.</p> <p>It is anticipated that the initial approach of the Panel might be to start the development of Chesapeake Bay Technology Assessment Protocol (CBTAP) utilizing the framework of the recently withdrawn Virginia Technology Acceptance Protocol (VTAP). The previously described limitations and concerns in regard to existing protocols lead to Virginia’s effort to develop the VTAP as a means of addressing MTDs within the Commonwealth. Unfortunately, this protocol was withdrawn by the Virginia Department of Environmental Quality (DEQ). While the existing protocol will need to be refined, and certainly to accommodate the Bay Watershed as a whole, the framework should serve as an excellent starting point.</p>
	<p>Ideally, the final protocol would result in a manufacturer’s testing protocol which will produce nitrogen/phosphorus/sediment removal efficiencies which can then be incorporated into the Chesapeake Bay modeling framework with a degree of confidence. Successful completion of the testing protocol will also enable the manufacture to market the device throughout the watershed and be able to claim an associated load reduction that a developer/local government can then claim credit for in a TMDL Action Plan.</p>
<p><b>Cross-Goal Benefits:</b> What other goals may be advanced through this work?</p>	
<p><b>Are you willing to serve as</b></p>	<p>Yes</p>

<b>GIT lead</b> (see description of the role in Section VI above) If no, suggest other GIT lead	
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### Proposal 9.

<b>Your Name:</b>	Toxic Contaminants Workgroup (Allen and Phillips)
<b>Goal Implementation Team:</b>	Water Quality
<b>Project Title:</b>	Assessing Benefits of Wastewater Treatment Plant Nutrient Control Upgrades on Toxic Contaminants
<b>Project Type</b> (See Section IV above):	Policy Research and Recommendations; Environmental Monitoring
<b>Goal/Outcome:</b>	Toxic Contaminants Goal; Research Outcome and Policy/Prevention Outcome
<b>Estimated Cost:</b>	\$40,000
<b>Justification:</b> Provide a 2 paragraph description of the work and why it is needed. It is recommended that you draw upon one or more work plans.	<p>Enhanced nutrient controls implemented at wastewater treatment facilities for the Bay nutrient and sediment TMDL are expected to provide co-benefits of reducing toxic contaminants in effluent. However, additional data are needed to demonstrate the manner and extent of those co-benefits.</p> <p>This project will provide information to address Toxics Policy and Prevention Management Strategy item to better characterize reductions of PCBs from WWTP. The information will help inform potential co-benefits of nutrient and toxic contaminants reductions (with an emphasis on PCBs) from WWTP. Finally, the findings will also help design monitoring of PCB concentrations in wastewater effluent as a strategy for measuring progress towards achievement of the Toxic Contaminant Reduction Goal.</p>
<b>Methodology:</b> Provide a 1-2 paragraph description of how the work is likely to be accomplished.	<p>Perform a review of published scientific literature on toxic contaminant reductions achieved through the implementation of nutrient controls at wastewater treatment facilities.</p> <p>Obtain and analyze available wastewater treatment facility influent and effluent data for a range of toxic contaminants. Summarize the potential benefits of the nutrient upgrades to WWTP on toxic contaminant loads based upon the literature review and available data. Recommend a study design to monitor toxic contaminant reductions from nutrient control measures at wastewater treatment facilities.</p>
<b>Cross-Goal Benefits:</b> What other goals may be advanced through this work?	2017 and 2025 WIPs and Water Quality Standards Attainment; Fish Habitat (e.g. improving water and sediment quality for fish health); Stream Health (e.g. providing information on PCBs related to stream health and condition.)
<b>Are you willing to serve as GIT lead</b> (see description of the role in Section VI above) If no, suggest other GIT lead	Yes

### Proposal 10.

<b>Your Name:</b>	Peter Claggett
<b>Goal Implementation Team:</b>	Healthy Watersheds
<b>Project Title:</b>	<a href="#">Methodology for Developing High-Resolution Stream and Waterbody Datasets for the Chesapeake Bay Watershed</a>
<b>Project Type (See Section IV above):</b>	Workplan Implementation Project with relevance to Monitoring and Tracking Progress
<b>Goal/Outcome:</b>	Healthy Watersheds/ Healthy Watersheds
<b>Estimated Cost:</b>	\$75,000
<b>Justification:</b> Provide a 2 paragraph description of the work and why it is needed. It is recommended that you draw upon one or more work plans.	<p>The CBP Partners recently spent ~ \$3.5 million to produce high-resolution (1-meter) land cover data for the entire Chesapeake Bay watershed and intersecting counties. These data will be used to inform the next generation (Phase 6) of watershed models and serve as a baseline for tracking changes in land use backwards and forwards through time. The data will also inform new baseline measures for tracking changes tree canopy, impervious surfaces, and other important land cover/use types.</p> <p>Unfortunately, the majority of streams (1<sup>st</sup> to 3<sup>rd</sup> order) are under-represented in the high-resolution land cover data due to their narrow width, concealment beneath tree canopy and roads, or concealment due to sun glint, shadows, suspended sediment, low flow conditions, or aquatic vegetation and algae.</p> <p>No one currently knows how many stream miles there are in the Bay watershed. The extent of stream miles increases with scale and the most spatially accurate regional stream dataset that exists for the Chesapeake Bay watershed is the National Hydrography Dataset- High Resolution (NHD-H 1:24,000 scale). The NHD-H was derived from USGS Digital Line Graph (DLG) data developed over the past 30-40 years (e.g., the USGS 7.5” Quadrangle Maps). Some of the DLG data in the Bay watershed have not been updated since the late 1970’s and even the more recent data- updated in the late 1990’s- has an average horizontal position accuracy of +/- 12m. When overlaid on 1-m land cover data, the NHD-H streams may run through structures and parking lots and have bends or segments that no longer exist or never existed. Spatially accurate stream maps are necessary for defining the universe of streams that have or could be buffered by trees or otherwise restored to achieve habitat and water quality outcomes. As we develop a better understanding of how terrestrial and aquatic systems are connected through stream networks, having a better spatial map of those networks will improve our ability to forecast responses to environmental change and the most appropriate spatial scales for fish conservation and management.</p>
<b>Methodology:</b> Provide a 1-2 paragraph description of how the work is likely to be accomplished.	LiDAR imagery holds great potential for mapping streams at high-resolution because channels carved by running water are readily apparent in the Digital Elevation Models (DEM) derived from LiDAR. A variety of techniques have been developed to identify and extract stream channels from LiDAR. The most common approaches require hydrologically conditioning the DEMs to fill sinks, compute flow directions, and accumulate contributing areas. Streams can then be identified by identifying cells exceeding a particular contributing area

	<p>threshold. While able to depict stream channel location and stream banks at much higher resolution than coarse-scale DEMs, fine-scale LiDAR-derived DEMs present some unique challenges for drainage delineation using flow accumulation techniques. Hidden culverts under road and railways present apparent obstacles to flow that are not present in 10-meter or coarser models. Fortunately, techniques have been developed for dealing with these issues so that maximum value can be derived from LiDAR-based DEMS for updating the NHD with fine scale hydrology (Poppenga et al., 2013). While spatial delineation of stream channel locations is relatively straightforward, identification of stream origination from even high resolution LiDAR imagery is complex. True drainage area thresholds vary spatially based on climate, soils, physiography, geology and other factors requiring their customization for particular areas. Even in the field, biologists, geographers, and geomorphologists may disagree on the mapping threshold used to determine where streams begin.</p>
	<p>Finally, to incorporate streams into land cover datasets, they need to be represented in two dimensions as areas rather than in one dimension as lines. Worstell et al., (2014) have shown that the intensities of LiDAR returns are useful for mapping the areas of streams and waterbodies but these areas must be separated from other level surfaces (e.g., roads, parking lots, etc.). Fortunately, these impervious surfaces have already been identified in the high-res land cover data for the Bay watershed.</p> <p>This project will investigate and evaluate existing and novel methods for deriving streams from LiDAR imagery and prototype and recommend a mapping approach that is customized by physiographic province and to urban areas and meets the management needs of the CBP Partners for tracking riparian forest buffers, monitoring stream health, assessing habitat for brook trout, and modeling hydrology and sediment. The approach will be prototyped in select watersheds within each major physiographic province of the Chesapeake Bay Watershed and within both urban and rural watersheds. A detailed product workflow will be designed for broad-scale implementation of the methods throughout the Chesapeake Bay watershed. This project will provide the necessary foundation for mapping streams and surface waters at high-resolution in all parts of the Chesapeake Bay watershed where LiDAR imagery is available.</p>
<p><b>Cross-Goal Benefits:</b> What other goals may be advanced through this work?</p>	<p>Vital Habitats: Stream Health, Brook Trout, Forest Buffer</p>
<p><b>Are you willing to serve as GIT lead</b> (see description of the role in Section VI above) If no, suggest other GIT lead.</p>	<p>Yes.</p>

**Proposal 12.**

<p><b>Your Name:</b></p>	<p>Regina (Suzy) Campbell</p>
<p><b>Goal Implementation Team:</b></p>	<p>Healthy Watersheds; West Virginia</p>

<b>Project Title:</b>	Back Creek Watershed Demo- Getting Water Off The Road
<b>Project Type</b> (See Section IV above):	Environmental demonstration project
<b>Goal/Outcome:</b>	Reduce erosion from a dirt/gravel road; reduce amount of sediment entering Back Creek from eroding dirt/gravel road; and provide demonstration of an Environmentally Sensitive Maintenance (ESM) practice, recommended by Penn State’s Center for Direct and Gravel
<b>Goal/Outcome:</b>	Roads Studies, which will be demonstrated in conjunction with a Dirt and Gravel roads training, and ultimately lead to a wider adoption of ESM practices throughout the watershed.
<b>Estimated Cost:</b>	\$45,000
<b>Justification:</b> Provide a 2 paragraph description of the work and why it is needed. It is recommended that you draw upon one or more work plans.	<p>Back Creek originates in Virginia and ends in West Virginia, draining 274 square miles at the confluence with the Potomac River. The Back Creek Watershed is a unique and pristine watershed in the eastern panhandle that does not have any water quality impairments and has been described by WVDNR as a “High Quality Recreational Stream” for fishing, swimming, canoeing, and kayaking. In 2014, EPA approved the Back Creek Watershed Protection Plan, which references Penn State’s program and specifically identifies dirt roads as significant sediment contributors. Back Creek is a highly rural watershed and contains many miles of dirt and gravel roads that are in regular need of maintenance after heavy rain falls.</p> <p>This demonstration would be installed in conjunction with a previously planned Dirt and Gravel Roads training and assessment that funding has already been secured for through CWA Section 319 and State funding and conducted by Cacapon Institute, who have held multiple Dirt and Gravel Roads trainings/assessments with the Center for Dirt and Gravel Roads. The training will be offered to a broad audience of homeowners, watershed volunteers, contractors, etc. The demonstration will be installed on a publicly owned road and would feature the ESM practice of “Grade Breaks”, which are small intentional increases in road elevation on a downhill slope, which causes water to flow off of the road surface to both sides into ditches or dispersal areas.</p> <p>The main purpose of a grade break is to prevent erosion of road material caused by buildup of water volume and velocity in the travel lanes. The budget above assumes the worst case scenario; that the demonstration would be installed on a steep slope, where cross pipes would be installed in conjunction with the grade breaks and on a road in poor condition and in need of additional grading.</p>
	Under ideal conditions (moderate slope and good existing road bed condition), additional breaks could be installed on a longer length of road. In addition to the training held in conjunction with the installation of these features, education and outreach will be performed through the placement of permanent signage along with road explaining the benefits of and encouraging the use of ESM practices.

<p><b>Methodology:</b> Provide a 1-2 paragraph description of how the work is likely to be accomplished.</p>	<p>This work will be accomplished using the specifications outlined in the technical bulletins hyperlinked below. Required equipment will be a bulldozer, grader, and roller. Materials will include Class 1 1 ½ inch crusher run stone, up to 24” plastic pipes, and additional fill if needed for cross pipe coverage. WV Division of Highways and the Center for Dirt and Gravel Roads will be consulted with regarding exact placement and spacing of features once final site for demonstration is selected.</p> <p><u>Technical Bulletins:</u>  <a href="#">Grade Breaks</a>  <a href="#">Cross Pipes</a></p>
<p><b>Cross-Goal Benefits:</b> What other goals may be advanced through this work?</p>	<p>Other goals advanced through this work include the following WV WIP strategies:</p> <ul style="list-style-type: none"> <li>-“Expand technical assistance for homeowners by working with university extension offices, homeowner associations, watershed groups, and others.”</li> <li>- “Train builders and developers, etc. on runoff reduction principles.”</li> </ul> <p>Additional goals are continued implementation of the Back Creek Watershed Protection plan and reduction of erosion and sedimentation from dirt and gravel roads affecting Back Creek, the Potomac River, and the Chesapeake Bay.</p>
<p><b>Are you willing to serve as GIT lead</b> (see description of the role in Section VI above) If no, suggest other GIT lead</p>	<p>Yes</p>

**Proposal 13.**

<p><b>Your Name:</b></p>	<p>Shannon Sprague</p>
<p><b>Goal Implementation Team:</b></p>	<p>Stewardship</p>
<p><b>Project Title:</b></p>	<p><a href="#">Stormwater on Urban/Suburban School Grounds</a></p>
<p><b>Project Type</b> (See Section IV above):</p>	<p>Work plan Implementation Projects</p>
<p><b>Goal/Outcome:</b></p>	<p>Environmental Literacy/ Sustainable Schools</p>
<p><b>Estimated Cost:</b></p>	<p>\$70,000</p>
<p><b>Justification:</b> Provide a 2 paragraph description of the work and why it is needed. It is recommended that you draw upon one or more work plans.</p>	<p>Schools occupy significant amounts of land in urban and suburban watersheds. However, in many areas they are an underutilized partner in reducing stormwater runoff pollution. Implementing BMPs on school grounds can not only stem the tide of pollution, they can beautify urban neighbors and provide an opportunity for meaningful, real-world student engagement in Science, Technology, Engineering, and Math (STEM) subjects. Long-term monitoring and maintenance of BMPs such as rain gardens, green roofs, rain barrels, impervious surface removal, tree plantings, and more, also provide opportunities to enrich job skills.</p>
	<p>Successful implementation of urban stormwater projects on school grounds requires coordination among stormwater managers, education professionals,</p>

	<p>and urban community leaders to ensure projects meet environmental objectives while also providing sustained, authentic learning. Some organizations have successfully implemented stormwater management projects on urban schools grounds, but large-scale implementation across multiple watershed sites requires development of training and outreach materials to broadly disseminate best practices for designing, implementing, and sustaining these complex projects. Many jurisdictions include development of similar training materials and “how-to” guides in their management strategy actions.</p>
<p><b>Methodology:</b> Provide a 1-2 paragraph description of how the work is likely to be accomplished.</p>	<p>The Education Workgroup seeks to partner with the Diversity and Urban Stormwater workgroups to develop comprehensive, user-friendly resources for implementing stormwater management projects on school grounds in urban and suburban areas. This project targets stormwater managers, school administrators, and local community leaders, and requires the coordination of multiple GIT workgroups. The emphasis is on both improving water quality (particularly for MS4 permittees) and engaging students in local stormwater projects. A focal point will be ensuring urban students and their communities have an active role in planning, implementing, and monitoring stormwater BMPs on their school grounds and surrounding neighborhoods.</p> <p>Specific activities will include the development of an online guide and outreach materials for planning implementing, and sustaining BMPs, as well as a dissemination strategy that may include in-person or online training for a range of audiences (school building administrators, stormwater managers, etc.). Case studies of completed or planned projects, such as an EPA demonstration project in Newport News, will be documented to highlight best practices and lessons learned. The Chesapeake Bay Program’s Bay Backpack website is the likely host the training guides, webpages, and videos that will be developed under this project. Partners include EPA Region 3, National Wildlife Federation, and Maryland Association for Environmental and Outdoor Education. The latter partners are the potential fiscal agents for this work, and will sub-contract with experts they currently work with to develop materials. We envision the Diversity workgroup will be involved to identify relevant members of local communities for consultation in materials development and training. Similarly, the urban stormwater workgroup will be engaged for technical input on material as well as identifying appropriate stormwater managers. Both workgroups will be heavily consulted during all phases of this project.</p>
<p><b>Cross-Goal Benefits:</b> What other goals may be advanced through this work?</p>	<p>The Diversity Goal, and specifically the “Enhancing Communication and Outreach” management approach could both benefit from and inform this project</p>
<p><b>Are you willing to serve as GIT lead</b> (see description of the role in Section VI above) If no, suggest other GIT lead</p>	<p>Yes.</p>

**Proposal 14.**

<b>Your Name:</b>	Kacey Wetzel, Al Todd
<b>Goal Implementation Team:</b>	Stewardship – GIT 5
<b>Project Title:</b>	<u>Stewardship Index</u>
<b>Project Type (See Section IV above):</b>	Indicator Development
<b>Goal/Outcome:</b>	Stewardship Goal / Stewardship Outcome
<b>Estimated Cost:</b>	Up to 75K
<b>Justification:</b> Provide a 2 paragraph description of the work and why it is needed. It is recommended that you draw upon one or more work plans.	<p>Building a larger, broader and more diverse community of citizen stewards for watershed restoration is needed to achieve the goals and outcomes outlined in the Chesapeake Bay Watershed Agreement. Citizen stewards bring the action element that will move work forward. More than 600 conservation and watershed organizations in our region educate and empower citizens to restore and protect local rivers and streams. Tens of thousands of local volunteers donate their time and talent to shared goals.</p> <p>The Citizen Stewardship Management Strategy stated that there must be a means to measure the progress and results of individual and collective citizen stewardship efforts in all communities across the watershed.</p> <p>In the first phase of this stewardship metric development process, methodology was developed to quantify the extent to which the public is taking or willing to take individual actions and behaviors. The actions and behaviors targeted in this measurement tool were selected using guiding criteria such as: (1) involves individual decision-making, (2) is repetitive and can be tracked over time, (3) can be broadly adopted, and (4) has an impact on water health. Pilot level data was collected via a randomly sampled general population survey in winter of 2016 to test the viability of the survey instrument as well as provide preliminary data to inform the development of an aggregate index of citizen stewardship.</p> <p>The Citizen Stewardship workgroup anticipates a number of valuable uses of this Indicator and the resulting data:</p> <ul style="list-style-type: none"> <li>• <b>Measuring Progress:</b> The Indicator will provide a scientifically-sound method of measuring progress towards the Citizen Stewardship Goal embodied in the Chesapeake Bay Watershed Agreement. It can be measured and tracked Bay-wide, and on a jurisdictional level.</li> <li>• <b>Targeting Limited Resources:</b> This effort will provide valuable guidance for local jurisdictions, NGOs, and others who are designing behavior change public outreach campaigns in pursuit of water quality goals, by quantifying the level of adoption and likelihood of future adoption of a broad suite of individual behaviors, helping these actors most effectively target their limited resources on the behaviors that are most likely to be changed and that will have the most impact.</li> <li>• <b>Reaching Focused Audiences:</b> Through its powerful segmentation capability, the Indicator will enable interested parties to understand the</li> </ul>

	<p>level of engagement and potential for engagement for many sub-audiences within the general population, including those that are traditionally under-represented in public outreach efforts.</p> <ul style="list-style-type: none"> <li>• Comparing Communities and Audiences: Similarly, this Indicator will give States and local communities the ability to benchmark their own progress against the Bay-wide norm, and against other similar jurisdictions and communities.</li> <li>• Improving Strategic Communications: Through its design, this instrument will help identify where there are gaps in public understanding and engagement, helping to sharpen and redirect the way the Bay restoration community frames discussion with the general public around these topics.</li> </ul> <p>The resulting survey instrument consists of 57 substantive questions on these topics:</p> <ul style="list-style-type: none"> <li>● Adoption of the individual stewardship behaviors</li> <li>● Likelihood of future adoption of each of those behaviors</li> <li>● Volunteerism, both generally and for water quality</li> <li>● Keys to individual engagement, which are eight attitudinal and perceptions measures that help create the environment for stewardship</li> <li>● Civic engagement</li> </ul>
<p><b>Methodology:</b> Provide a 1-2 paragraph description of how the work is likely to be accomplished.</p>	<p>This next phase will scale up implementation of the randomly sampled general population survey piloted in phase I in order have sufficient data compute a statistically significant stewardship index, e.g. baseline measure of citizen stewardship, at a state, regional, or county scale. All states will field the same question set during a similar time frame so that results can be compared and so that the Bay-wide measure has integrity. These costs include fielding the full survey questionnaire and access to the full data set for project sponsors.</p> <p>Stewardship behaviors, individual engagement, volunteerism, and civic engagement would be measured as was done in the pilot survey. Stewardship behaviors to be surveyed include pet waste, fertilizer use, pesticide use, leaves/lawn clippings, rain barrels, conservation landscaping/rain gardens, tree planting, fats, grease, contaminants down the drain, septic systems, litter and downspout disconnect.</p> <p>In addition to these topics, the survey instrument includes seven screening questions and twelve classification questions that serve to balance the sample, ensuring that the Indicator is measuring a true cross-section of the watershed’s population. These additional questions also allow for deep segmentation of the survey data for many population subgroups, including: geography, such as political jurisdiction and distance from the main stem of the Bay; demography, such as age, gender, and race/ethnicity; socio-economics, such as educational attainment and household income; housing type; connection to agriculture; and religious affiliation.</p>
<p><b>Cross-Goal Benefits:</b> What other goals may be advanced</p>	<p>There are many cross-goal benefits as a result of this metric development. The diversity and local leadership would most directly benefit from the data</p>

through this work?	collected. However, all goals would benefit as the data collected through this metric would contribute to an analysis that would generate an initial index of citizen behavior. This includes an intentional effort to collect data on demographics and social economic status that will enable the index to incorporate diversity of citizen stewardship as a key measure of progress. Understanding this behavior can assist in the development of local restoration and protection goals, design of local programs and strategies, and prioritization and targeting of future outreach and engagement actions.
<b>Are you willing to serve as GIT lead</b> (see description of the role in Section VI above) If no, suggest other GIT lead	Amy Handen

**Proposal 15.**

<b>Your Name:</b>	Reggie Parrish
<b>Goal Implementation Team:</b>	Stewardship
<b>Project Title:</b>	EJ Screen
<b>Project Type</b> (See Section IV above):	Workplan Implementation
<b>Goal/Outcome:</b>	Stewardship – Diversity
<b>Estimated Cost:</b>	\$30,000.00
<b>Justification:</b> Provide a 2 paragraph description of the work and why it is needed. It is recommended that you draw upon one or more work plans.	The goal of increasing diversity in the CBP is a cross cutting theme in the 2014 Watershed Agreement. This project will kick start the development of a comprehensive Chesapeake Bay watershed Environmental Justice Screening tool to provide jurisdictional, sub-watershed, and community level information on demographics and environmental conditions, and their relationship to selected Agreement outcomes. The tool will assist CBP (GITs, jurisdictions, etc.) as they identify workplan implementation priorities in relation to the impact of these priorities on Bay communities, especially on diverse communities. Additionally, the tool will assist community groups (including underrepresented communities) as they engage in community based environmental restoration and sustainability projects. This project is designed as a pilot for expansion, and at this stage will focus on the public access, toxic contaminants, and climate resiliency outcomes. In addition, the project will specifically help to identify those potential public access sites that could meet the needs of a diverse Bay community. These potential sites could then be targets for pre planning funding, when it becomes available, by the public access action team.
<b>Methodology:</b> Provide a 1-2 paragraph description of how the work is likely to be accomplished.	The project will build on demographic and environmental data pulled from the national EJ Screen tool to include Bay Program-specific indicators and greater localized data. Cross-GIT and diversity stakeholder input will be used to design the ideal EJ tool with regards to inputs and capabilities. Over the past year, GIS staff have compiled sample CBP Diversity web apps that interface with EJ screen data layers. The project will fund a programmer to assist the CBP GIS staff in designing a tool of the scale and detail necessary for use by GITs, with a customized reporting function. Funding will also be used to explore the usability of the tool for both the Bay partners and

	community groups.
<b>Cross-Goal Benefits:</b> What other goals may be advanced through this work?	Public Access, Toxics, Climate Resiliency (As Pilot) Ultimately Stewardship, Environmental Literacy, Local Leadership, Tree Canopy, Land Conservation
<b>Are you willing to serve as GIT lead</b> (see description of the role in Section VI above) If no, suggest other GIT lead	Yes

### Proposal 16.

<b>Your Name:</b>	Mary Gattis
<b>Goal Implementation Team:</b>	GIT 6 – Enhance Partnering, Leadership & Management
<b>Project Title:</b>	<a href="#">Local (Elected) Officials Watershed Education Program Coordination</a>
<b>Project Type</b> (See Section IV above):	Workplan Implementation
<b>Goal/Outcome:</b>	Stewardship – Local Leadership
<b>Estimated Cost:</b>	\$50,000
<b>Justification:</b> Provide a 2 paragraph description of the work and why it is needed. It is recommended that you draw upon one or more work plans.	<p>This project will directly support two approaches outlined in the Local Leadership Management Strategy: 1) to “develop, enhance and expand training and leadership programs” and 2) to “improve transfer of knowledge to local officials.” It will build on two previous GIT Funded projects, namely the “<i>Chesapeake Watershed Local Leadership Development Programs</i>” project conducted in 2015 (FY 2014 GIT funding) and “<i>Designing a Watershed Education Program</i>” project conducted in 2016 (FY2015 GIT funding, Ecologix Inc).</p> <p>A need exists for coordination and implementation of the Watershed Education Program being designed by Ecologix. The selected contractor would assist with creating the platform that results from implementing the recommendations in the Ecologix report. The platform will likely be comprised of a variety of communication approaches (e.g., web site, peer-to-peer networks, videos, etc.). This contractor would also serve as a single point of contact for the key participants in a watershed education program, including State Associations of Municipalities and Counties, American Planning Association State Chapters, and others identified as trusted sources by local officials. The contractor would also work with GIT Coordinators and Staffers to identify resource materials and training programs that are on-the-shelf and ready for delivery, and those that need to be developed or refined.</p>
<b>Methodology:</b> Provide a 1-2 paragraph description of how the work is likely to be accomplished.	The contractor will use input from the Local Leadership Workgroup, CBP GITs, other stakeholders and results of the Ecologix report, to complete two tasks: (1) create the institutional framework and a process for development of the Watershed Education Program (2) collect content to be used to advance the outcomes from the 2014 Watershed Agreement that is identified in CBP management strategies and workplans. As the content is finalized, the contractor will assist with matching content to delivery mechanisms that will effectively engage local officials and transfer the

	information. The Local Leadership Workgroup would be asked to serve as advisors.
<b>Cross-Goal Benefits:</b> What other goals may be advanced through this work?	This project has the potential to advance work towards all goals that place an emphasis on local leader engagement and action.
<b>Are you willing to serve as GIT lead</b> (see description of the role in Section VI above) If no, suggest other GIT lead	TBD

### Proposal 18.

<b>Your Name:</b>	Zoë Johnson, Climate Change Coordinator (NCBO)
<b>Goal Implementation Team:</b>	STAR Climate Resiliency Workgroup
<b>Project Title:</b>	<a href="#">Climate Change Indicators and Metrics</a>
<b>Project Type</b> (See Section IV above):	Metric Development and Tracking <ul style="list-style-type: none"> <li>• Support for science needed to develop metrics</li> <li>• Metric/indicator development</li> <li>• Performance measure development</li> </ul>
<b>Goal/Outcome:</b>	Climate Resiliency: Monitoring/Assessment and Adaptation
<b>Estimated Cost:</b>	\$75,000
<b>Justification:</b> Provide a 2 paragraph description of the work and why it is needed. It is recommended that you draw upon one or more work plans.	<p>Climatological trends, which vary both spatially and temporally throughout the Watershed, are altering the ecosystems, the watershed, and the human communities of the Chesapeake Bay and will require changes in policies, programs and projects to successfully achieve restoration, sustainability, and conservation and protection goals for the Chesapeake Bay watershed.</p> <p>The Climate Resiliency Goal was included in the 2014 Watershed Agreement for the first time. No framework for measuring or tracking climate trends and impacts or measuring progress toward building climate resiliency has been established. Therefore, the development of a suite of climate-related indicators that can be used to track and analyze trends, impacts and progress towards advancing “climate resiliency” is a high priority of the Climate Resiliency Workgroup.</p> <p>It is envisioned that this project will be the first step in the process to develop a suite of indicators, which can be implemented over time, to measure and assess trends or “factors influencing” (i.e., physical climate drivers); ecological and societal response (i.e. impacts); and, programmatic progress toward building an effective response (i.e., adaptation).</p> <p>The project will include the following deliverables: 1) Recommended suite of climate change indicators for CBP implementation; 2) Proposed methods and analysis process for a sub-set of indicators (2-3 for each indicator</p>

	<p>types); 3) Suggested schedule for Chesapeake Bay Program implementation.</p> <p>The project will also include a pilot component to more fully develop a draft Tidal Wetland Change Indicator. This component will result in a proposed indicator, the documented methods and analysis process, and initial implementation (data collection, analysis and methods documentation).</p>
<p><b>Methodology:</b> Provide a 1-2 paragraph description of how the work is likely to be accomplished.</p>	<p>Using the Chesapeake Bay Program Indicators Framework (November, 2015) as a guide, the project will focus on the developing recommendations for a suite of CBP climate-related indicators and a proposed implementation approach and schedule for three indicator types: 1) physical climate trends (e.g., sea level rise, temperature increase, precipitation change); 2) ecological and societal response (e.g., salinity change, tidal wetlands loss, societal preparedness); and, 3) “resiliency” progress measurement (e.g., metrics for evaluating programmatic progress toward making “climate-smart decisions”).</p>
	<p>The first step will involve assessing and analyzing a number of existing climate change indicator frameworks to determine suitability for application within the Chesapeake Bay Program. These include: the EPA Climate Change Indicators for the U.S.; the USGRCP Climate Change Indicators; the Department of the Interior Metrics Expert Group; and the UMCES Chesapeake Bay Report Card (2014) Climate Resilience Indicators.</p> <p>The second step will involve identifying a suite of potential indicators that the CBP could use to track and measure change of key physical climate trends and assess impacts. This activity will be informed by discussions (through targeted meetings or workshops) with various CBP Goal Implementation Teams and Workgroups to evaluate and prioritize most critical “factors influencing.”</p> <p>The project will also include an assessment of existing monitoring and tracking data being collected within the Chesapeake Bay Watershed, including data collected through NOAA’s Chesapeake Bay Interpretive Buoy System (CBIBS). A review of existing data and studies of past and ongoing trend and impact assessments conducted by USGS, NOAA, EPA, and the academic community will also be an element.</p> <p>The exploration and recommended set of “climate resiliency” progress indicators will involve a participatory process element. The objective is to recommend a set of indicators that are meaningful and useful to the program to not only track programmatic progress but can also be informative to decision-making processes to influence change. The participatory process will be undertaken using a combination of one-on-one interviews or facilitated or targeted workshops or meetings.</p> <p>The pilot component of the project will involve some independent mapping, modeling and trend analysis but will also require a strong collaborative process through in-person meetings and workshops. The objective for developing a Tidal Wetland Indicator is to track the status of wetland</p>

	<p>elevation dynamics and wetland vulnerability to sea level rise across the various Bay geographies, geomorphic types, vegetation communities, etc. The focus of the meetings and workshops will be to bring together a broad swath of researchers (including members of the Chesapeake Bay Sea Level Rise Sentinel Site Cooperative) with long-term data on marsh surface elevations, water level data and other wetland datasets (e.g. vegetation monitoring plots) to collectively work to develop the indicator, methods and analysis process, and ultimately to extract trends and synthesize data sets.</p>
<p><b>Cross-Goal Benefits:</b> What other goals may be advanced through this work?</p>	<p>This project is cross-outcome in nature, as climate change has been noted a significant “factor influencing” the success of a number of other goals/outcomes in the CB Agreement. In addition to the benefits to the Climate Resiliency Outcomes, the tidal wetland pilot component of the project supports Fish Habitat, Black Duck, and Water Quality specific Goals.</p>
<p><b>Are you willing to serve as GIT lead</b> (see description of the role in Section VI above) If no, suggest other GIT lead</p>	<p>Yes.</p>