CBP "Resilient" BMP Case Studies
Candidate Project Submissions
06.19.17

Project/Type	Description	Jurisdiction/Partner/Contact
Conquest Beach Living Shoreline	Between 2014 and 2016, the National Wildlife Federation, Maryland DNR, and Queen Anne's County designed and implemented a climate-smart living shoreline along the Chester River on Maryland's Eastern Shore. This project integrated a shingle-beach approach, using a combination of cobble stones, sand and marsh grass that will protect the shoreline while being able to migrate upland as sea level rises.	Maryland/MD DNR (Bhaskar Subramanian)
Ferry Point Living Shoreline	Maryland DNR worked with Queen Anne's County to design and implement a resilient living shoreline on the north end of Kent Narrows to protect $79 M in infrastructure associated with adjacent marinas and commercial/residential infrastructure. The project was designed to enhance habitat for local wildlife, reduce the dredge frequency of the Kent Narrows boat channel, and protect coastal economies.	Maryland/MD DNR (Bhaskar Subramanian)
Perry Center Stormwater project	The purpose was to reduce impervious surfaces, improve storm water management in our industrial center, test rainfall retention, improve outfalls, reduce erosion, & add BMP's to comply with MDE MS 4 permit (FY 2017) (gained 5.7 acres of credit). A coastal plan outfall was created to slow flow and cool water prior to entering College Creek. A 25,000 gallon tanking system with controlled transfer pump was installed under the parking lot with the capability to utilize a bio-retention pond for cycling of storm water instead of direct discharge – the pump is "net zero" powered by a solar panel system back-feeding to Bldg. #571 at Perry Center which can make use of the continuous available power. This project provided a test bed of concepts that are in design for a very large storm water management system on the Lower Yard at USNA that repairs aged infrastructure, mitigates flooding and exceeds MDE MS 4 permit requirements.	Maryland; USNA/ DOD (Joseph Zurzolo, NAVFAC Wash, PWD Annapolis)
Aquatic Organism Passage/Culvert Removal	Trout Unlimited, the West Virginia Division of Highways (WVDOH), and the West Virginia Conservation Agency (WVCA) partnered to reconnect 2.7 miles of headwater spring sources in Three Springs Run by mitigating a barrier to aquatic organism passage. WVDOH staff reconfigured the existing culvert structure by countersinking the pipe and installing additional flood relief culverts, making it passable for aquatic organisms. This project facilitates access to thermal refugia and spawning grounds for aquatic organisms and improves flood resiliency of this stream crossing, further ensuring access in and out of this community during high-flow events.	West Virginia; Trout Unlimited (Dustin Wichterman)

Storm water relief culverts	In partnership with the WVDOH and WVCA, storm water relief culverts were installed to divert storm runoff away from the spring head on Reed Spring Run, a spring fed tributary to Three Springs Run. During summer precipitation events, overland flow from clear-cuts and the adjacent road funneled into the spring and caused substantial spikes in stream temperatures, placing stress on aquatic organisms. Relief culverts diverted this water away from the main spring head and into nearby pasture fields to promote natural infiltration. Temperature monitoring data show significant reductions in summer time stream temperatures after rain events, by over 7 degrees centigrade.	West Virginia; Trout Unlimited (Dustin Wichterman
In-stream habitat restoration	A half-mile of in-stream habitat restoration was completed in Three Springs Run in 2016. In-stream restoration practices used natural wood and rock material to improve bank stability to reduce nutrient and sediment loads during high-flow events, and to restore pool habitat to reaches impacted by past timber harvests and livestock access. Increasing pool habitat can help maintain cooler water temperatures, and provides viable areas of refuge during extreme weather events like droughts and floods.	West Virginia; Trout Unlimited (Dustin Wichterman
Riparian Buffer Establishment	Trout Unlimited has partnered with the Farm Service Agency to enroll 25 acres in the CREP program. Livestock exclusion coupled with riparian tree plantings reduces nutrient and sediment loads and ambient stream temperatures. Additionally, conversion of pasture land into a forested riparian buffer will alleviate flooding issues by assisting with storm water infiltration and increasing transpiration.	West Virginia; Trout Unlimited (Dustin Wichterman
Perpetual Protection	Trout Unlimited in partnership with the National Fish and Wildlife Foundation and the Cacapon and Lost Rivers Land Trust, perpetually protected 1.25 miles of stream, and the surrounding 108 acres of riparian habitat through restrictive covenants in a conservation easement. Both the instream and riparian restoration work are highlighted in this article and will be completed by fall 2017.	West Virginia; Trout Unlimited (Dustin Wichterman
Moorefield, WV Stormwater and Heat Island Reduction Project	In December of 2014, approximately 12,676 square feet of permeable pavers were installed for parking in the heart of Moorefield, WV at the intersection of North Main Street and Winchester Avenue. This project was a partnership between the West Virginia Conservation Agency, Potomac Valley Conservation District, and Hardy County Rural Development Authority to maximize public parking in the town of Moorefield while also reducing stormwater runoff and heat island effects and beautify the town. Paver materials were provided by ACF Environmental and installation was performed by L. Scott Ltd. Co. The total project cost was $59,223.00, $30,000.00 of which was funded through EPA's Chesapeake Bay Program with the remainder funded through state and local matching funds. An article on the project is featured in the 2014-2015 Winter Issue of WV's Chesapeake Bay Newsletter.	West Virginia; Suzy Campbell, WVCA Chesapeake Bay Manager

Suggested Candidate Projects (need further examination):

From Jenn Volk (DE)

- Rockaways urban forestry
- Cover crop systems at Penn State
- Silvopasture at Dickinson College Farm in PA-A
- commercial nursery operation using irrigation management in MD
- Ditch practices at UMES
- pollinator and blueberry work at WVU
- a high tunnel at WVSU
- Monongahela National Forest featuring forest restoration
- UDC Urban Farm
- UD irrigation management for commercial grain production
- DSU high tunnels