

State Fiscal Year 2017
Nonpoint Source Pollution Control Project Descriptions

1. Continue Implementation of the Manalapan Watershed Based Plan (WBP)

Grantee: South Jersey Resource Conservation and Development Program

Funding Amount: \$450,000

Manalapan Brook is 105 miles in length, originates in Monmouth County and drains north into Middlesex County where it joins the Lower Raritan River. Thus, Manalapan Brook is considered part of the Lower, Non-Tidal Raritan watershed. The Manalapan Brook watershed drains 43 square miles, and includes portions of ten municipalities in New Jersey. A total phosphorus (TP) TMDL was established for Manalapan Lake in 2003 and Princeton Hydro was hired by the NJWSA to develop a Restoration Plan that addresses the TMDL. Through this study it was determined that a Management Plan should focus on total suspended solids (TSS) as much as TP and that the Plan should be expanded to include the entire length of Manalapan Brook instead of just the lake. Thus, Princeton Hydro was hired to develop a detailed Restoration and Protection Plan for Manalapan Brook. Additionally, there are other pollutants of recognized concern in the Manalapan Brook watershed, such as *E. coli*, that are addressed as part of this proposed Scope of Work.

The Manalapan Brook Watershed Implementation Plan was completed in 2010 and included the installation of a biofiltration system at a parking lot in Thompson Park as well as some shoreline plantings. The completed Plan was subsequently used to obtain funds through the SFY2013 NJDEP 319-grant program. The projects associated with this SFY2013 grant will be completed in the first half of 2018 and are estimated to remove approximately 43 lbs of TP and 27,027 lbs of TSS from Manalapan Brook per year. The large and inclusive group of participating agencies and stakeholders, the Manalapan Brook Watershed Projects Committee (MBWPC) would like to continue to move through the implementation of projects in the Manalapan Watershed Implementation Plan. Thus, this SFY2017 proposed 319-grant application would include:

- The design and installation of a road-side, water quality swales in Manalapan Township,
- The implementation of a shovel ready project where an existing dry retention basin in Monroe Township would be retrofitted into a wetland / water quality basin,
- The design and installation of a stormwater “treatment train” of BMPs in the Thompson Park Zoo to address TP and TSS as well as microbiological NPS pollutants such as *E. coli* and fecal coliform,
- Continuing the in-lake monitoring of Manalapan Lake over three years (three sampling events per year) to quantify how the lake is responding to the implemented watershed projects,
- Implementing Phase Two of Rutgers Cooperative Extension’s Education & Outreach Program for the Manalapan Brook watershed, and
- Provide project administration and management services, including meetings, expanding the size of the MBWPC to be more inclusive of the lower portion of the watershed, and

the completion of a final report summarizing all projects activities.

It should be noted that collectively the proposed three implementation projects identified in this proposal are estimated to remove approximately 97 lbs of TP and 116,320 lbs of TSS from Manalapan Brook per year.

2. Whole Farm Agricultural Best Management Practices (BMPs) in Southern New Jersey

Grantee: New Jersey Audubon

Funding Amount: \$450,000

For this proposal, the New Jersey Audubon Society (NJA) is seeking funding to implement agricultural BMPs that address water quality, educate the agricultural community on BMPs, and engage the public. This three-year project aims to enroll at least 850 acres in BMPs by leveraging federal and private funding sources to implement activities described in each Watershed Based Plan. The goal will be achieved by working with at least 3 farmers in the Upper Cohansey River Watershed and 3 farmers in the Upper Salem River Watershed to adopt a whole farm approach.

The whole farm approach is defined as a single farm implementing multiple BMPs at one time to achieve a higher conservation standard. For this project, no-till planting, multi-species cover crops, native vegetative buffers, livestock fencing, and stream crossing maintenance will be implemented simultaneously on each farm as needed. No-till methods can improve water quality by reducing soil erosion and increasing infiltration and organic material in the soil. A multi-species cover crop can further address water quality concerns by decreasing soil compaction, increasing organic material and nitrogen in the soil, enhancing weed suppression, and reducing soil erosion, among other benefits. Vegetative buffers, when properly installed and maintained, will compliment no-till practices and multi-species cover crops by slowing additional soil erosion and catching excess nutrients before entering waterways. On livestock operations, stream fencing, well-maintained stream crossings, and vegetative buffers will work simultaneously to filter runoff and reduce soil erosion and livestock waste from entering waterways. Furthermore, NJA will work with the Rutgers Cooperative Extension (RCE) to implement precision fertilizer/manure spreading on at least two farms in the Upper Salem River Watershed. This synergistic concept of incorporating multiple BMPs can be described by using various models, including Stroud Water Research Center's Model My Watershed and the Academy of Natural Science's Stream Reach Assessment Tool.

In addition to implementing agricultural BMPs, NJA will expand the reach of this project by offering farmer workshops that allow individual farmers to showcase their whole farm approach to others in the agricultural community. NJA will also extend outreach efforts by offering site visits, recommendations, and conservation plan development to at least 15 farmers across both watersheds.

NJA has also partnered with both the New Jersey Youth Corps (NJYC) of Camden and the Center for Aquatic Sciences Community and Urban Science Enrichment (CAUSE) program to

assist with riparian buffer planting and maintenance, and basic water quality monitoring. This will be an effective and meaningful way to engage the public about water resources.

3. Restoration of Beden Brook

Grantee: Stony Brook Millstone Watershed Association

Funding Amount: \$400,000

The Watershed Association has an actively funded 319(h) project (Grant: WM15-015), the main objective of which is to perform Impervious Cover Assessments (ICAs) for the public/commercial properties of 16 different municipalities, and design Reduction Action Plans (RAPs) for those sites that are considered high priority. One of the long-term goals of SBWMA's Impervious Cover Assessment project is to inform municipalities, and to lay the groundwork with "ready-to-go" assessments and RAPs for implementation as part of stormwater management implementation strategy.

Four (4) project properties in the Borough have been chosen based on the Watershed Association's developed ICAs and RAP selection/design process under the existing grant. These properties are also important because of other criteria including: their proximity to the headwaters of the Eastern Hopewell Borough tributary; level of willingness demonstrated by property owner to implement green infrastructure (GI) on-site or at sister sites; and because the SBMWA chosen project could coincide with the property owner's preexisting plans to redevelop their site, potentially giving the added benefits of local fund matching for renovating with green/non-structural BMPs. Stormwater from the chosen project properties either flow directly into the tributary through stormwater drains capturing runoff into the streets, or via buried downspouts. This is compounded by the fact that the tributary is piped below ground. The overarching goal of this project is to capture the runoff from a large amount of impervious cover using GI and empirically monitor the effect on discharge and pollutant loading during rain events both prior to, and after, project completion. While the stormwater management practices that are proposed will target reductions in phosphorus, *E. coli*, and those pollutants associated with high levels of runoff, the movement of other common stormwater contaminants (e.g. pathogens, pesticides, floatables, and petroleum products) into receiving waters should also be reduced. The project proposed will involve some combination of permeable pavers, bioretention, bioswales, and rain gardens at 52, 62, 65 and 71 East Broad Street in Hopewell Borough, Mercer County.

4. Naval Weapons Station Earle Living Shoreline

Grantee: NY/NJ Baykeeper

Funding Amount: \$165,000

The devastation caused by Superstorm Sandy is causing coastal communities to now consider resiliency solutions that address sea level rise-induced flooding and shoreline erosion. Although Living Shoreline projects are being implemented on the NY side of Raritan Bay (i.e.

ReBuild by Design pilot (SCAPE's Living and Growing Breakwaters), there is an absence of data on the efficacy of oyster reefs as protective structures in the NJ portion of Raritan Bay. The NY/NJ Baykeeper (Baykeeper) research site at Naval Weapons Station (NWS) Earle in Middletown, NJ, offers a unique opportunity to study the oyster's role in shoreline resiliency efforts. The Baykeeper, in partnership with Rutgers University Center for Urban Environmental Sustainability (CUES) and New Jersey City University (NJCU), seeks to expand the Living Shoreline installed at NWS Earle in August 2016, which consists of 137 oyster castles seeded with 50,000 juvenile oysters.

The goals of the Naval Weapons Station Earle Living Shoreline Project are to: 1) Enhance Raritan Bay and Ware Creek shoreline stabilization while reducing erosion and 2) Quantitatively measure how the presence of living shorelines supports increased biodiversity of associated marine species.

Ware Creek is a 200-acre salt marsh located between the Belford commercial fishing harbor and NWS Earle piers. Dune protection on the creek's eastern shore has eroded away and the beach has lost extensive amounts of sand. There is a small remnant native cord grass marsh on the eastern edge of Ware Creek and ribbed mussels are embedded in the root zone of the grasses. Existing site conditions leave no question that shoreline protection is desperately needed in the face of rising Raritan Bay sea levels. Much of the marsh is in the FEMA V-Zone and normal spring tides overtop the beach dunes. Without stabilization, the Ware Creek marshes will "drown" due to storm surges, runoff, and erosion. Using a living shorelines approach with oysters set on supportive structures could contribute to stabilization of the remaining dune system. Adding 3-dimensional habitat adjacent to the shoreline will enhance the existing mudflat and increase biodiversity.

Project partners Baykeeper, CUES, and NJCU will install and monitor a living shoreline composed of oyster castles set with juvenile oysters and native grasses. Sediment traps, settlement plates, cores, and fish traps will be used to monitor sediment deposition, epi faunal and benthic communities, fish, and invertebrate species. All methodologies replicate previous techniques used to monitor past and current restoration and living shoreline projects installed by project partners.

5. Living Shoreline Project to Provide Resiliency in the Barnegat Bay

Grantee: Little Egg Harbor Township

Funding Amount: \$400,000

The location of the proposed living shoreline at the Natural Land Trust Mystic Island Preserve adjoins a critical piece of infrastructure at Iowa Court in Little Egg Harbor. The construction of the living shoreline is intended to halt significant coastal erosion that has dangerously undermined the stability of the roadway and cul-de-sac. The location for the living shoreline currently consists of severely eroded beach area with debris and stone scattered from failed erosion protection measures. The limits of the living shoreline will be based on the historical limits of the Tidelands Claim Line, reestablishing the coastline up to 85 feet from its current

location. The goal is to provide resiliency for the nearby homes by reducing wave action, as well as creation of new marine habitat and restoration of ecologically sensitive area that have been subject to wave run up and impact from increasingly severe storm surge.

Due to the elevated erosive energy at the location due to high energy currents and larger waves associated with wide fetch, the living shoreline will feature a stone breakwater system, including a series of freestanding 30-foot wide wood plank structures extending above the mean low water line and strategically positioned in low intertidal and shallow subtidal areas to dampen incoming erosive waves and currents. Suitable sites for offshore breakwater systems are medium and high-energy shorelines where sand beaches, banks, marshes, and bluffs show a historic trend for rapid landward retreat.

The breakwaters will be segmented to encourage free movements of aquatic organisms and will stabilize sediments and encourage natural sedimentation. The elevations will be raised sufficiently to allow vascular plants and other aquatic vegetation to be planted in the quiescent areas landward of the structures. The total area of the new living shoreline will be 22,500 square feet with 1,750 cubic yards of stone and 1,350 cubic yards of clean sediment and sand planted with *spartina alterniflora* plugs.

6. Application of Green Infrastructure in Deal, Sunset and Wesley Lakes

Grantee: Deal Lake Commission

Funding Amount: \$735,000

The Deal Lake Commission has submitted this proposal as a cooperative effort of the Deal Lake Commission (DLC), Sunset Lake Commission (SLC), and the Wesley Lake Commission (WLC). The DLC will serve as the grant recipient and oversee this project. This project is focused on decreasing non-point source pathogen, nutrient and sediment loading to each of the three targeted coastal lakes using green infrastructure techniques as well as engaging and educating the public about the benefits of green infrastructure. The DLC developed a watershed plan under a previous 319(h) grant, and successfully implemented a bio-infiltration unit and Manufactured Treatment Device (MTD) under another (previous) 319(h) grant. As proposed this project will implement the following green infrastructure projects (all of which will be conducted on publicly owned and accessible lands located in Asbury Park):

- Deal Lake –
Curb-side Tree Boxes – Installation of (2) curb-side tree boxes;
Installation of a Stormceptor™ type MTD;
- Wesley Lake–
Curb-side Tree Boxes – Installation of (4) curb-side tree boxes;
Installation of a linear bioswale/vegetated filter strip;

- Sunset Lake –
Curb-side Tree Boxes – Installation of up to (5) curb-side tree boxes;
Floating Wetland Islands – Installation (2) floating wetland islands.

The proposed BMP projects for Deal Lake and Sunset Lake are consistent with the findings and recommendations of the NJDEP approved Deal Lake Watershed Protection Plan. The BMP projects proposed for Wesley Lake are consistent with the restoration and management recommendations contained in the 2008 Wesley Lake Comprehensive Rehabilitation Plan.

7. Implementation of Green Infrastructure on Brownfield Site in Perth Amboy

Grantee: Perth Amboy Redevelopment Group

Funding Amount: \$4,600,000

The Perth Amboy Redevelopment Agency (PARA) and City of Perth Amboy are applying for a \$4.6 million Targeted Water Quality Restoration Grant for a Green Infrastructure Initiative in a CSO Community. The City will be leveraging \$600,000 from a remediation escrow account, \$1.8 million in Hazardous Discharge Site Remediation Funding, and \$100,000 of in-kind contributions to offset the remaining project costs. The proposed project will transform a six-acre former metal scrap yard that has sat vacant for 20 years into a cutting-edge public space with green infrastructure Best Management Practices and a living shoreline to improve quality of life, increase public access to the Raritan River, provide for habitat restoration, mitigate environmental concerns, reduce CSO events, and provide desperately needed open space. The City and PARA decided to develop this prime waterfront land as recreational open space as opposed to selling it for private development to address the current significant deficit in recreational and open space opportunities for an urban community of this size. Additionally, for over one hundred years, the residents of the City have been cut off from most of the beautiful 3.5-mile waterfront because of active or former industrial users. The administration and redevelopment agency made it a priority to restore public access as these properties turnover and return the waterfront to the people. With this grant, this project will further highlight our commitment to sustainable and equitable growth with balanced social, economic and environmental interests.

8. Stormwater Basin Retrofits Phase 1 Franklin Township, Somerset County

Grantee: New Jersey Water Supply Authority

Funding Amount: \$600,000

This project is a continuation of the previously funded 319(h)/CBT grants that were designated for the implementation of the approved watershed plan for the D&R Canal. This project proposes to implement retrofits on 5 stormwater basins in Franklin Township associated in Cedar Grove Creek (D&R Canal in fall 32). Retrofits of stormwater basins will be designed and implemented at the Franklin Township Municipal Building, Laird Terrace, Renior Way,

Gauguin Way and Dellwood Lane. A buffer restoration will also be completed along the Cedar Grove Brook and remaining funds will be utilized for small scale stormwater projects such as disconnection of impervious surfaces, riparian buffer improvement, and agricultural BMP's

9. Raritan Agricultural Mini-Grants

Grantee: New Jersey Water Supply Authority

Funding Amount: \$145,000

This project is a continuation of the previously funded SFY2008 CBT grant that was designed to initiate an agricultural cost share in priority areas of the Raritan River basin and will utilize the remaining funds from the closure of that grant. As proposed this project will implement BMP's on 10 specific farms (named in the proposal) within priority areas of the Raritan River Basin, leveraging Farm Bill funding to cover the majority of the costs. The New Jersey Water Supply Authority (NJWSA) will work with individual farms to shepherd them through the NRCS Farm Bill funding application process and cover any matching costs required by the specific Farm Bill programs.

10. Implementation of a Sussex County Watershed Restoration and Stewardship Initiative

Grantee: Sussex County Utilities Authority/Wallkill River Watershed Management Group

Funding Amount: \$800,000

The Wallkill River Watershed Management Group (WRWMG) seeks to continue their successful agricultural cost share and restoration programs initiated through a previous 319(h) grant. The WRWMG will continue to coordinate efforts for "on-the-ground" restoration projects, provide education and outreach opportunities for residents, and implement strategies to reduce non-point source pollutant loadings to improve water quality and ecological health, all while increasing the capacity for NJDEP funding to be incorporated into more projects across a broader spectrum of Sussex County. Specifically, the WRWMG is seeking funding from the Department's program priority to address non-point source pollution by partnering with USDA-Natural Resources Conservation Service and other conservation partners. To meet these objectives, the SCMUA-WRWMG has established a Watershed Stewardship Initiative to provide the centralized leadership, oversight, coordination, and implementation of 3 priority watershed programs: (1) Agricultural outreach and assistance program, (2) Riparian restoration and ecosystem enhancement program, and (3) Stormwater management and assistance program.

11. Implementation of Green Infrastructure in Dominick Andjar Park, Camden

Grantee: The Trust for Public Land

Funding Amount: \$400,000

The City of Camden suffers from an outdated combined sewer/stormwater infrastructure system that dates back to the late 19th century. The system was not designed to handle the quantity of stormwater runoff from the vast impervious cover of Camden County, and the result is frequent flooding during storms in low-lying, disadvantaged neighborhoods, with untreated sewage often backing up into public areas and residences. Further, the city faces serious challenges of disinvestment, building abandonment, and high crime which have led to conditions that pose public health and environmental hazards that negatively affect residents' quality of life. Since 2011, the City of Camden and its partners have made strides to address environmental issues related to reducing combined sewer overflows, reclaiming vacant land for parks and stormwater management, and building community capacity to better manage natural systems.

Situated along Point Street between Erie and York Streets, Dominick Andjar Park is in the northwestern corner of Coopers Point, only one-tenth of one mile from the Delaware River and a quarter-mile from Camden City Outfall 018A. This project proposes increasing stormwater management capacity of the park by installing green stormwater management practices throughout, helping to reduce the occurrence of combined sewer overflows (CSOs) into the Delaware River and their associated negative impacts on water quality. In addition to its potential to help control CSOs, Dominick Andjar Park is an asset to the North Camden community. The park currently provides space for much-needed recreation and play for the community despite the limited condition of the existing amenities. In addition, it is located such that it has the potential to serve as a key access point to and from the multi-state Circuit Trail. In addition to increasing stormwater management capacity, this project proposes renovating and expanding the basketball and playground areas, adding a community gathering room, and adding a soccer field to increase opportunities for recreation and community cohesion

The objective of this initiative is to capture stormwater runoff before it enters the combined sewer system, thereby reducing the occurrence of combined sewer overflows and reducing negative water quality impacts on the Delaware River. The proposed project will increase stormwater management capacity to help enhance water quality and reduce the frequency of combined sewer overflows to the Delaware River with low-maintenance grassy bioswales, a stormwater basin, stormwater tree trenches, and a flood-capturing soccer field. By preventing runoff from entering the combined sewer system, the project will reduce pressure on existing water treatment facilities and ensure that the full volume of sewage can be treated. In addition, capture of stormwater runoff will help prevent surcharging of sewer manholes and alleviate sewer backups that contribute to severe human health problems from exposure to viruses, bacteria, and parasites in the raw sewage. Ultimately, the proposed project at Dominick Andjar Park aims to achieve benefits of both stormwater management through green infrastructure and community enhancement through added recreational and social infrastructure improvements.

12. Urban Waters Education Program

Grantee: Hackensack Riverkeeper

Funding Amount: \$125,000

Hackensack Riverkeeper is requesting \$125,000 to conduct the Urban Watershed Education Program (UWEP) at locations in the Newark Bay Complex, for a 5-year period. The Riverkeeper will conduct a total of (8) programs per school year, each school's program consists of (3) day sessions with 25 students per program for 5 years. (totaling 40 education programs reaching 1,000 students over a 5-year period).

This watershed/fishing education program is targeted to middle school science classes. Each UWEP consists of one (1) classroom day and two (2) field days. Main topics covered include: nonpoint source pollution, CSO infrastructure, climate change, water quality testing and the local fish consumption advisories. The programs begin in the classroom where students are introduced to the concepts and concerns of their watershed through presentations, games and hands-on demonstrations. On field days' students build on their knowledge and by correlating the classroom information with their observations and hands-on experiences, the students' understanding of their watershed deepens. In addition to focusing on how human actions affect their community's water resources, students explore ways that they can become part of the solution.

13. Statewide Volunteer Monitoring Program

Grantee: Stony Brook Millstone Watershed Association

Funding Amount: \$240,000

Citizen science and community-based monitoring programs have existed in New Jersey for decades. Formalized programs, such as the StreamWatch volunteer water monitoring program, were developed in the 1990's to provide a more intensive picture of water quality in streams and lakes that were not regularly monitored by the state. Several other similar programs were also developed in New Jersey at, each focusing on its own watershed region. NJDEP embraced the growing interest in volunteer monitoring, developing the tiered system as a framework for these groups to designate their respective data quality.

Historically, StreamWatch and most other New Jersey volunteer organizations communicated with NJDEP through the Volunteer Monitoring Coordinator, a dedicated staff person within the Division of Water Monitoring and Standards. This staff member facilitated the connection with NJDEP, allowing volunteers to receive thoughtful feedback on monitoring methods and quality assurance protocols, especially as standards changed within the Department. This back-and-forth collaboration empowered citizen scientists to be as effective as possible in assisting the state. The Volunteer Monitoring Coordinator position was gradually terminated over the last few years, as job titles and duties were redirected to other departmental needs. Volunteer groups no longer have a direct connection to someone at NJDEP who can support their needs. Establishing a volunteer monitoring network will provide a mechanism through which

community-based groups can effectively communicate with NJDEP. By investing in this network, the Department in turn invests in each monitoring group in the state, leading to improved water quality monitoring and assessment.

The main goal of the Community-Based Volunteer Monitoring Network is to produce a more comprehensive assessment of the quality of New Jersey's waterways. The following goals provide further detail on how the Network will achieve this.

- Increase quality of volunteer-collected data, thereby increasing the quantity of data made available for assessments made by the Integrated Report;
- Expand the geographic range of HUC-14's assessed in the state and coordinate sites between volunteers and the state more effectively;
- Develop and maintain consistency of methodology between volunteer programs;
- Improve sustainability of volunteer monitoring programs to continue monitoring activities independent of government-run monitoring programs.