STATE OF FLORIDA

FY2016 SECTION 319(h) GRANT
WORK PLAN

Submitted September 2015

Florida Department of Environmental Protection

Division of Water Restoration Assistance
Nonpoint Source Management Section

Table of Contents

INTRODUCTION TO FLORIDA'S FY2016 SECTION 319(h)

This FY2016 Section 319(h) Draft Work Plan consists of ten projects that were selected for Section 319 grant funding from the 19 projects submitted for consideration, along with four additional projects to fund the state's nonpoint source management program. In the winter of 2015, grant solicitation packages were sent out statewide and placed upon the Department's website. Department staff reviewed and evaluated all of the proposals submitted. Projects were prioritized for grant funding using the Project Evaluation Criteria included in the grant solicitation package and the best professional judgment of Department staff. The projects were then presented to the Division's senior managers for final approval of the projects selected for funding.

The selected projects contribute to the implementation of the Department's Nonpoint Source Management Plan (Plan). There are four DEP program projects, one statewide education project with a state university and one urban stormwater project with a local government under the Program Funding category. The four DEP program projects are the NPS Administration activities, the Sediment and Erosion Control Inspector training program, the Green Industries BMP training program and the Bioassessment program. For two of the DEP program projects, there is an entire Section in the plan discussing each project. Section 2 of the NPS Management Plan (Plan) describes the NPS Grant and Funding Administrative activities and Section 10 of the Plan describes the Bioassessment Program activities. The Sediment and Erosion Control and Green Industries BMP programs are urban educational activities which are identified as a priority in addressing urban stormwater pollution. There are two projects funded with local or state governments that are outside of the BMAP areas. One is an agricultural demonstration project and the other is an urban stormwater project. Both of these projects affect areas of concern that have a section dedicated to the subject in the Management Plan, Agriculture and Urban.

There are eight projects with other government entities, local and state level, under the Watershed Funding category. The selected projects and the majority of the Watershed funded projects are in the high priority areas identified in the Plan. There are 7 BMAP areas (Tier I) that are identified as the higher priority out of the 20+ BMAP areas identified in the Plan. Five of the eight Watershed Funded projects are in these top seven, Tier I, priority BMAP areas. Three of the eight projects are targeted at reducing nutrients from urban stormwater which is identified in the Plan as a high priority for the Department. Three of the projects are targeted at reducing pollution from septic tanks, either through, inspection, education or elimination of septic systems. Septic systems are identified in the NPS Management Plan as being a source of nutrient pollution to Florida springs, surface and coastal systems. There is also one agriculture project and one demonstration project under the Watershed funding category.

The specific references on how the projects are linked to the NPS Management Plan are provided in Table 1.

NATIONAL WATER QUALITY INTIATIVE

The Department continues to work with the National Resource Conservation Service (NRCS) on the National Water Quality Initiative (NWQI). The Department is not requesting funding at this time for the NWQI but a state funded DEP staff coordinates with NRCS on the NWQI watershed selection and monitoring activities. There are currently three watersheds identified for the NWQI funding. Two are in the northeast part of the state, Deep Creek and Clarke's Creek, and one is in the panhandle, Little Scurlock Creek. Monitoring is currently going on at a farm in the Clarke's Creek area. NWQI funding will continue in these areas for the coming year.

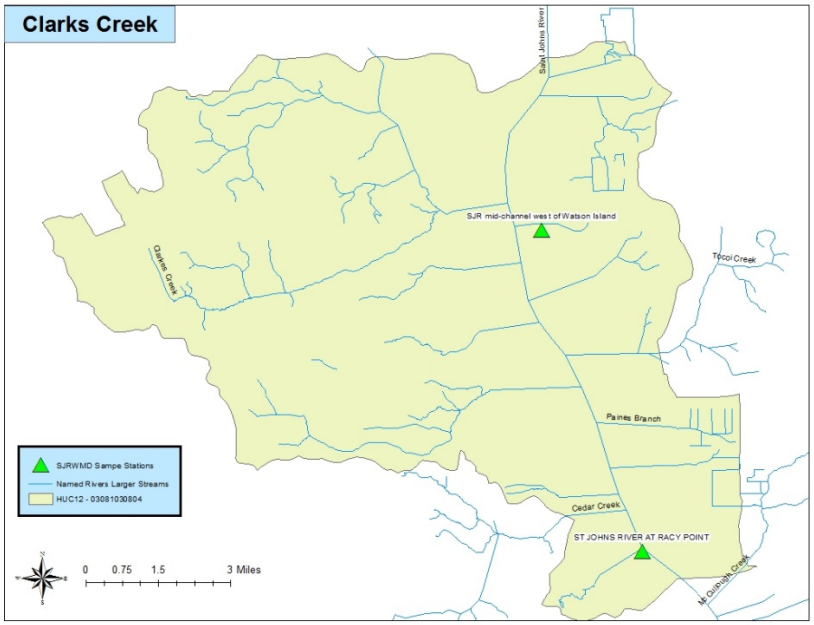
The Department is coordinating with the St. Johns Water Management District to obtain water quality data in the Clarks Creek and Deep Creek Watersheds. Department staffs are conducting the monitoring activities in the Little Scurlock Creek area. A summary of the ongoing monitoring activities is below.

The St. Johns Water Management District Monitors water quality in the Clarks Creek Watershed. Two locations are monitored monthly for the analytes in the table below.

Analysis Type	Parameters
Field Measurements	Dissolved Oxygen; pH; Salinity; Sample Depth; Secchi Depth; Specific Conductivity; Temperature
Water Quality Analysis	Alkalinity, Aluminum, Ammonia, Antimony, Arsenic, Barium, BOD-5 day, Cadmium, Calcium, Chloride, Chlorophyll-a, Chromium 3, Chromium III, Color, Copper, Iron, Lead, Magnesium, Manganese, Molybdenum, Nickel, Nitrite-Nitrate (NO2NO3), Pheophytin-a, Phosphorus, Potassium, Selenium, Silver, Sodium, Sulfate, Thallium, Total Kjehldahl Nitrogen, Total Organic Carbon, Total Silicon, Total Suspended Solids, Turbidity, Un-ionized Ammonia, Volatile Solids Suspended In Mixed Liquid, Zinc

Station ID	Station Name	Latitude	Longitude	Start Sample Date	*Last Sample Date
21FLSJWMSJWSIL	SJR mid-channel west of Watson Island	29.895	-81.594722	1997	Current
21FLSJWMSRP	ST JOHNS RIVER AT RACY POINT	29.798889	-81.564444	1997	Current

*The last sample date where data is available.

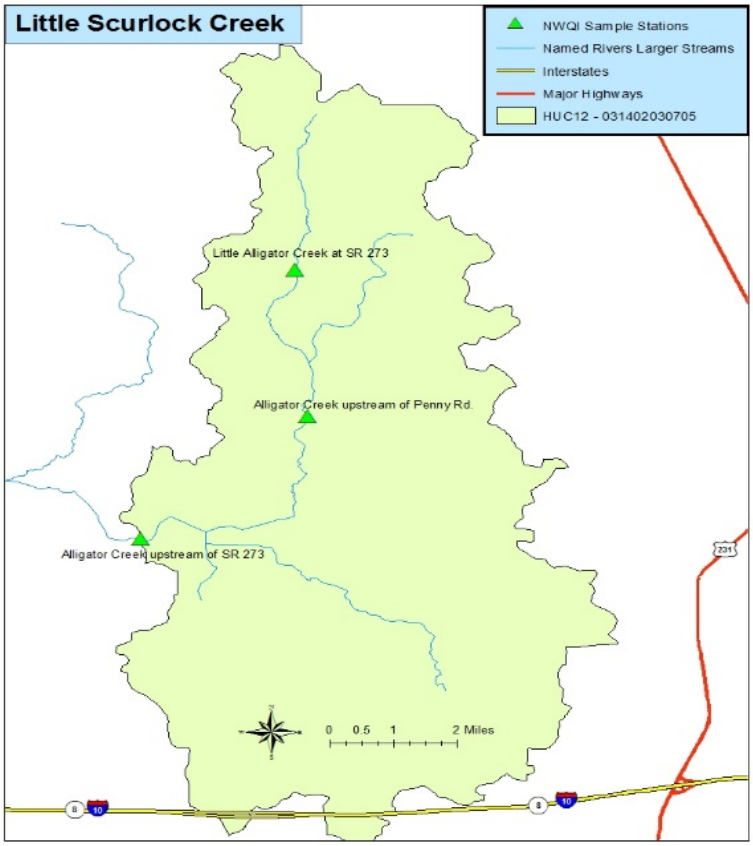


The Department's NWQI coordinator met with NRCS and the Department's sampling staff at the Little Scurlock site to develop a sampling plan for that area. The Florida Department of Environmental Protection is collecting water quality samples quarterly from three locations in the Little Scurlock Creek (also known as Alligator Creek) watershed for NWQI. Bioassessments will be collected twice in 2016 from one station as part of Florida's 303(d) assessment monitoring. The analytes being monitored are listed in the table below.

Analysis Type	Parameters
Field Measurements	Dissolved Oxygen; pH; Salinity; Sample Depth; Secchi Depth; Specific Conductivity; Temperature
Water Quality Analysis	Alkalinity; Ammonia (NH4); BOD-5 day; Chloride; Chlorophyll-a (Corrected); Color (True); Fluoride; Nitrite-Nitrate (NO2NO3); Orthophosphate-filtered; Pheophytin-a; Sulfate; Total Dissolved Solids; Total Kjehldahl Nitrogen; Total Organic Carbon; Total Phosphorus; Total Suspended Solids; Turbidity
Bioassessments	Rapid Periphyton Survey, Linear Vegetation Survey

Station ID	Station Name	Latitude	Longitude	Start Sample Date	*Last Sample Date
G3WA0003	Alligator Creek upstream of Penny Rd.	30.8517	-85.4653	2015	2016
G3WA0005	Alligator Creek upstream of SR 273	30.819	-85.5042	2015	2016
G3WA0006	Little Alligator Creek at SR 273	30.88873	-85.46802	2015	2016

*The last sample date where data is available.

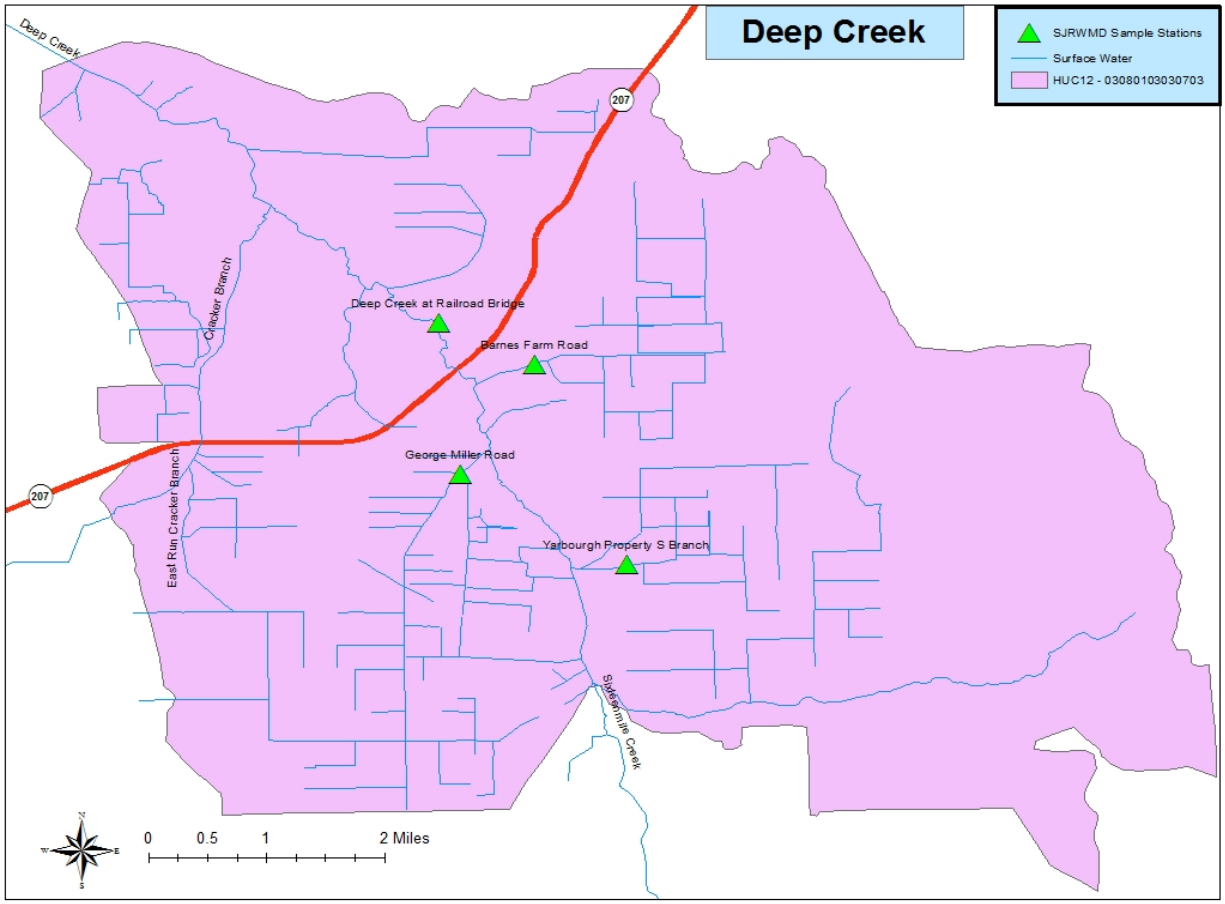


The St. Johns Water Management District monitors water quality in the Deep Creek watershed. Four locations are monitored monthly for the analytes in the table below.

Analysis Type	Parameters
Field Measurements	Dissolved Oxygen; pH; Salinity; Sample Depth; Secchi Depth; Specific Conductivity; Temperature
Water Quality Analysis	Alkalinity, Aluminum, Ammonia, Antimony, Arsenic, Barium, BOD-5 day, Cadmium, Calcium, Chloride, Chlorophyll-a, Chromium 3, Chromium III, Color, Copper, Iron, Lead, Magnesium, Manganese, Molybdenum, Nickel, Nitrite-Nitrate (NO2NO3), Pheophytin-a, Phosphorus, Potassium, Selenium, Silver, Sodium, Sulfate, Thallium, Total Kjehldahl Nitrogen, Total Organic Carbon, Total Silicon, Total Suspended Solids, Turbidity, Un-ionized Ammonia, Volatile Solids Suspended In Mixed Liquid, Zinc

Station ID	Station Name	Latitude	Longitude	Start Sample Date	*Last Sample Date
21FLSJWM3F05YARS	Yarbourgh Property S Branch	29.6988	-81.463836	1997	current
21FLSJWM3F07GMR	George Miller Road	29.710275	-81.484294	1997	current
21FLSJWM3F08BFR	Barnes Farm Road	29.724206	-81.475208	1997	current
21FLSJWMDPB	Deep Creek at Railroad Bridge	29.729575	-81.486978	1997	current

*The last sample date where data is available.



PROGRAM PROJECTS

Over the past 24 years, the state has implemented a wide variety of nonpoint source management programs involving numerous state agencies, the water management districts, and local

governments. These programs include non-regulatory and regulatory components, technical assistance, education, technology transfer, extensive interagency coordination and monitoring. The programs include both surface water and groundwater elements.

The Department's FY2016 program seeks to undertake projects that will increase the environmental effectiveness of our NPS programs, to continue expanding our knowledge about the potential effects of various nonpoint sources on ground and surface waters, and to continue expanding our knowledge about the effectiveness of Best Management Practices (BMPs) in protecting ground and surface waters.

The projects described in this section of the draft work plan for program funding are intended to provide for:

- Administration of the program and management of selected sub-grantee projects;
- Improvement to the state's surface water NPS bioassessment program;
- Implementation of the Stormwater Erosion and Sedimentation Control Inspector training program;
- Oversight and coordination of the state's National Water Quality Initiative (NWQI) activities;
- Public education designed to reduce individual's contributions to the nonpoint pollution problem, including misuse and overuse of fertilizers;
- Florida yards and Neighbors Sustainability of the Florida Friendly Landscaping™ Program (FYN), continues to protect water resources by educating Florida residents on "Florida Friendly" landscaping practices that reduce nonpoint source pollution from yards and other landscapes. This year's grant request will: continue the statewide coordination of the county FYN programs to implement the milestones set forth in the Action Plan for NPS Management Program Administration dated 2015;
- Implementation of the Stormwater Erosion and Sedimentation Control Inspector training program;
- Onsite Sewage Treatment Disposal Systems (OSTDS) Management, continues to help local governments improve (OSTDS) management and to provide education on OSTDS issues. This program is intended to improve Florida's Coastal Zone Management Program for nonpoint source pollution from OSTDS and meet the intent behind the approved CZARA program relating to OSTDSs. This project implements the milestones set forth in the Action Plan for OSTDS in the NPS Management Program Administration 2014 Program Update.

Project 1, NPS Program Administration. Support of the Nonpoint Source Management Section includes supporting the state's efforts to manage the restoration contracts associated with the incremental funding, oversee the NWQI program, assist with development of the state's Best Management Practice manuals as well as for additional tasks, such as updating the EPA Grants Reporting Tracking System. This funding provides support for staff, equipment, travel, and other expenses that are otherwise unavailable. This project implements the milestones set forth in the Action Plan for NPS Management Program Administration in the 2015 Program Update.

Project 2, Implementation of the Florida Stormwater Erosion and Sedimentation Control Inspector Training Program. This program has been implemented since 1997 as a two-day course designed to train construction workers and consultants on proper sediment and erosion control BMP installation, maintenance, and inspection. This grant will continue to support the continuation of that program through its established, trained instructors. This grant will also support the implementation of an advanced course designed to further increase the effectiveness of the state's National Pollutant

Discharge Elimination System (NPDES) stormwater permitting program by assuring that properly trained inspectors are available for sites with disturbed soils. The advanced course will be designed to include an interactive field day that will highlight proper sediment and erosion control BMP installation, maintenance, and inspection. The advanced course will be aimed at construction workers and consultants and provide hands-on opportunities to learn about erosion and sedimentation control. This project implements the milestones set forth in the Action Plan for NPS Management Program Administration in the 2015 Program Update.

Project 3, Green Industries BMP Training Program. This program is designed to implement regional coordination of the Green Industries BMP training program throughout Florida in coordination with the Rookery Bay, Guana-Tolomato-Matanzas, and Apalachicola National Estuarine Research Reserves (NERRs). The Green Industries BMP program is a science-based educational program for Green Industry workers (lawn-care and landscape maintenance professionals) in order to teach environmentally safe landscaping practices that help conserve and protect Florida's ground and surface waters. Overall statewide coordination of this program will be managed through the University of Florida Institute of Food and Agricultural Sciences. This project implements the milestones set forth in the Action Plan for NPS Management Program Administration in the 2015 Program Update.

Project 4, Bioassessment Program. The responsibility for monitoring the condition of Florida's surface and ground water resources lies with Florida Department of Environmental Protection (DEP) and its restoration partners, including the WMDs and local governments. Overarching goals driving DEP's bioassessment program include assessment of waterbodies, determination of Total Maximum Daily Loads (TMDL), determination of appropriate Site Specific Alternative Criteria, allocation of loads, restoration of waterbodies, and development of scientifically-based assessment tools. This project is designed to increase our ability to monitor and assess the effects of NPS pollutants, the effectiveness of BMPs, and the effectiveness of the NPS management program. For the FY16 grant, this project provides for contract work for independent verification with up to four botanists. This project implements the milestones set forth in the Action Plan for NPS Management Program Administration in the 2015 Program Update.

Project 5, Florida Friendly Yards and Neighborhoods, University of Florida
The primary goal of the FFL program is to educate Floridians about the relationship between their landscaping choices and the environmental impacts of those choices. Through this education effort FFL seeks to change people's behavior so that they adopt landscape practices that protect Florida's water resources, as well as save time and money. This project continues more than twenty years of partnership between EPA, DEP, and UF/IFAS to support local and regional projects that introduce and increase awareness of FFL principles. The success of the program has led to more demand than ever for statewide oversight and guidance to further the implementation of a fully integrated statewide FFL program with regional flexibility.
The FFL program promotes urban landscape design and landscaping best management practices that reduce contaminant loading to surface and groundwater. The proposed FFL programs will help reinforce the FFL messages throughout the state by complementing current projects throughout Florida. This project will work in conjunction with previously DEP-funded FFL programs and FFL programs funded by other partners (i.e., Tampa Bay Water, utilities and counties).

Project 6 City of Fort Lauderdale River Oaks Preserve Project – Phase 1C

Project Summary: The proposed River Oaks Preserve area consists of 9.1 acres (ac.) of vacant land area that the City acquired in order to provide a solution to an existing flooding issue while providing a recreation preserve park for the residents The pollutant load reduction strategy employs a treatment train in the following order: swales, exfiltration trenches, bio-swales, dry retention, and wet detention in a wetland filter marsh. The City will develop a stormwater passive park featuring wetlands, elevated boardwalk, and a historic bascule bridge converted into a pedestrian boardwalk. The park will contain the outfall to the South Fork of the New River, and will attenuate and pre-treat the stormwater runoff from the adjacent River Oaks neighborhood, prior to discharge. Educational signage will be provided on plaques and at a kiosk next to the relocated CSX pedestrian bridge boardwalk to inform the general public about the treatment qualities of the wetlands, the historical reference for the relocated CSX pedestrian bridge, and the importance of preventing non-point source pollution and best management practices for stormwater treatment

Project 7 Northwest FL Water Management District: Jackson Blue Sod Rotation
The Northwest Florida Water Management District (District) is proposing to provide cost-share reimbursement funding to promote adoption of Sod-Based Crop Rotation (SBR) by existing row-crop producers within the TMDL and BMAP areas of Jackson Blue Spring and Merritts Mill Pond. The District proposal would provide funding for up to four producers to convert up to 160 irrigated acres and implement the SBR through a complete four-year rotation cycle. Concurrently, to provide match funding, the District will increase funding for the University of Florida Institute of Food and Agricultural Sciences (IFAS) SBR grant to continue data collection to support SBR as a best management practice (BMP); to provide a more comprehensive and active outreach program; and to provide producer adoption assistance.

WATERSHED PROGRAM PROJECTS

Projects 8 – 14: The remaining eight (8) projects selected for funding are competitive local projects that will meet a variety of urban and agricultural related stormwater needs. All of these selected projects implement Best Management Practices (BMP) in BMAPs (Basin Management Action Plans) and are identified as incremental projects. Additionally, these projects all meet the goals set out in the NPS Management Plan for NPS Management Program 2015 Program Update. Scopes for the selected projects are included below.

TABLE 1. FY16 Grant Funding Request, Project Selection

Program Funding Projects:

Project	Type/Mgmt Plan location	Title	Lead Agency	Watershed	FY16 319 Funding	FY16 319 Match Funds
1	NPS Admin, Mgmt Plan pg. 31/ Appendix 2.0	NPS Program Management	FL DEP	Statewide	694,875	586,693
2	Urban, Mgmt Plan Pg. 38/ Appendix 3.0	Stormwater, Erosion, and Sedimentation Control	FL DEP	Statewide	$121,623	N/A*
3	Urban, Mgmt Plan Pg. 38/ Appendix 3.0	GI BMP	University of Florida	Statewide	$311,243	N/A*
4	Urban, Mgmnt Plan pg. 112/ Appendix 10.0	Bioassessment	FL DEP	Statewide	$138,331	$122,983
5	Urban, Mgmt Plan Pg. 38/ Appendix 3.0	FL Friendly Yards and Landscaping	University of Florida	Statewide	$564,407.28	$376,271.52
6	Urban/Mgmt Plan Pg. 25, Appendix 1-3.2(a)	River Oaks Preserve Project	City of Fort Lauderdale	New River Canal SFWMD Basin	$629,695	$419,796.67
7	Ag/ Mgmt Plan pg 72, Appendix 6.1	Sod Based Crop Rotation: Jackson Blue Spring	Northwest Florida Water Management District	Jackson Blue Spring and Merritts Mill Pond	$480,032	$326,000
TOTAL PROGRAM					**$2,940,206.28**	**$1,831,744.19**

*Since these are DEP programs, there is no match needed. The other 2 DEP programs are using salaries for match.

TABLE 2. FY16 Grant Funding Request, Project Selection (Continued)

Watershed Projects:

Project	Type/ Mgmt Plan Location	Title	Lead Agency	Watershed	FY16 319 Funding	FY16 319 Match Funds
8	Urban/Mgmt Plan Pg. 25, Appendix 1-3.2(a)	DeSoto Stormwater Treatment Retrofit Project	City of Satellite Beach	Banana River Lagoon	$560,500	$389,500
9	Agriculture/Mgmt Plan Pg. 72, Appendix 6.1	Istokpoga Marsh Watershed Improvement District WQ Project	Highlands County	Okeechobee River Basin	$450,000	$300,000
10	Urban/Mgmt Plan Pg. 25, Appendix 1-3.2(a)	BAM Water Quality Pilot Project	Florida Department of Transportation	Santa Fe River Basin	$438,000	$312,000
11	Urban/Mgmt Plan Pg 25, Appendix 1-3.3a	Brevard County Baffle Box Upgrades-Phase II	Brevard County Natural Resources Department	North Indian River Lagoon and Central Indian River Lagoon	$139,000	$94,180
12a	OSTDS/Mgmt Plan Pg 25; #8 OSTDS Program, page 99/ Appendix 1 – 8.1(a)	Lake Ruth Area Septic Tank Removal Project	City of Longwood	Middle St. Johns River – Lake Jesup	$210,240	$210,240
12b	OSTDS/Mgmt Plan Pg 25; #8 OSTDS Program, Pg. 99/ Appendix 1 – 8.1(a)	South Longwood Septic Tank Removal PRoject	City of Longwood	Middle St. Johns River – Lake Jesup	$958,054	$867,380
13	Other –Water Quality Demo/Mgmt Plan Pg. 25	C-43 Water Quality Treatment and Testing Project Phase I	South Florida Water Management District	Caloosahatchee and Lake Okeechobee	$208,000	$228,000
14	OSTDS/Mgmt Plan Pg. 25; #8 OSTDS Program, page 99/ Appendix 1 – 8.1(a)	Florida DOH Duval Nonpoint Source Septic Tank Enforcement Project	Florida DOH – Duval County	Lower St. Johns River	$183,000	$125,947.21
TOTAL WATERSHED					**$3,146,793.72**	**$2,524,247.21**
TOTAL FY16 GRANT REQUEST					**$6,087,000**	**$4,355,991.40**

FLORIDA'S FY2016 SECTION 319(h) Workplan

PROJECT 1

PROJECT NAME: NPS/Watershed Management Program Administration

PROJECT FUNDING: $694,875 **MATCH:** $586,693

LEAD ORGANIZATION: Florida Department of Environmental Protection

FISCAL YEAR: 2016

PROJECT ABSTRACT: Florida's NPS Management Program identifies the natural resource management programs, strategies, and resources that currently are in place or that are needed to minimize or prevent nonpoint source pollution effects. The Nonpoint Source Management Program identifies BMPs to control pollution from specific sources of nonpoint source pollution (e.g., agriculture, forestry, OSTDS, urban); identifies programs to assure implementation of programs, activities, and structural and nonstructural BMPs that will minimize or reduce NPS pollution; and coordinates restoration activities with other state and local entities, especially those leading to restoration of impaired waters. Section 319 grant financial support allows the Nonpoint Source Management Section staff to properly administer the grant, to assure that all projects are properly completed, and to enhance the effectiveness of the state NPS/watershed management program.

PROJECT DESCRIPTION: The funds will pay the salaries of 1) an Environmental Administrator to oversee management of the projects; 2) three Environmental Specialists to manage selected projects; and 3) two Environmental Specialist OPS positions to manage selected projects. Requested funding also covers travel expenses of DEP staff to meet with project sub-grantees on-site to ensure accountability of project funding and provide site-specific nonpoint source expertise and to provide for additional travel needed in order to assist in the development and implementation of TMDLs. Lastly, the funding is utilized to provide equipment, including monitoring equipment and office equipment (e.g., computers, projectors, etc.) as well as supplies, including monthly billing, printing costs for educational materials, and shipping costs.

PROJECT BUDGET – GRANT FUNDING

Project Funding Activity	319 (h) Amount
1 Environmental Administrator	$65,000
Fringe Benefits (67.47%)	$43,855
1 Environmental Specialist	$47,000
Fringe Benefits (67.47%)	$31,711
1 Environmental Specialist	$47,000
Fringe Benefits (67.47%)	$31,711
1 Environmental Specialist	$47,000
Fringe Benefits (67.47%)	$31,711
1 OPS Environmental Specialist	$45,000
Fringe	$30,362
1 OPS Environmental Specialist	$45,000
Fringe	$30,362
Indirect (33.52%)	$ 166,163
Travel	$20,000
Expense (Supplies)	$5,000
Expense (Printing)	$8,000
Total:	**$694,875**

MATCH FUNDED POSITIONS:

Project Funding Activity	Match Amount
1 Director, Division of Environmental Assessment and Restoration	$115,000
Fringe Benefits (67.47%)	$77,590
1 Environmental Consultant – Basin Management Action Plan Coordinator	$50,000
Fringe Benefits (67.47%)	$33,735
1 Environmental Consultant – Basin Management Action Plan Coordinator	$46,381
Fringe Benefits (67.47%)	$31,294
1 Environmental Consultant – Basin Management Action Plan Coordinator	$50,997
Fringe (67.47%)	$34,407
Indirect (33.52%)	$147,289
Total:	**$586,693**

GOALS AND MILESTONES:
Goal: Successfully manage the 319 grant program
Actions: Reduce the unliquidated obligation by shortening the timeframe for contract execution.
Evaluate and update the NPS Management Plan on an ongoing basis and at least every 5 years.
Improve the system for tracking project information.
Provide technical expertise and provide educational materials and training on NPS management.

PROJECT 2

PROJECT NAME: Stormwater, Erosion, and Sedimentation Control Certification Program

PROJECT FUNDING: $121,623

LEAD ORGANIZATION: Florida Department of Environmental Protection

FISCAL YEAR: 2016

PROJECT ABSTRACT:
PROJECT ABSTRACT: Implementation of the Florida Stormwater, Erosion, and Sedimentation Control *Inspector* Qualification Training program (FSESCI) began in late 1997. Since inception of the program, over 31,000 inspectors have been trained throughout the State of Florida. This training program is a two day class which follows the curriculum provided in the Florida Stormwater, Erosion, and Sedimentation Control *Inspector* Training Program Manual. Upon completion of the class, a proctored examination is administered. In order to obtain the qualification as an inspector, individuals must receive a minimum passing grade of 70 percent on the examination.

An outdoor workshop is also provided which is currently titled "Florida Muddy Water Blues." It is an outdoor portion of the regular FSESCI class, and allows attendees to observe various stormwater erosion and sedimentation control practices and BMPs in use. A variety of volunteer erosion sediment control suppliers are on hand to provide technical specifications of products and demonstration proper installations and applications.

Additionally, the Department offers train-the-trainer (T3) workshops designed to prepare new instructors for implementation of the inspector's training program. In order to attend the train-the-trainer workshop, all participants must be FDEP Qualified Inspectors prior to the scheduled workshop date. Prospective trainers must also achieve a minimum score of 80% on the FSESCI proctored examination. The T3 workshop covers procedures and guidelines that instructors are required to follow in order to teach the FSESCI class. Instructors must provide their resumes which are reviewed for experience levels and each instructor is evaluated on their teaching skills and speaking abilities prior to becoming a qualified instructor.

PROJECT DESCRIPTION: Florida's NPDES Stormwater regulatory program requires the use of appropriate BMPs during construction to minimize erosion and sedimentation and appropriate BMPs after construction to treat runoff as well as inspections every seven days and within 24 hours after a half inch rain event. The Stormwater, Erosion, and Sedimentation Control Certification Program has been in place since 1997.

The goal of the Stormwater, Erosion, and Sedimentation Control Certification Program is to increase the proper design, construction and maintenance of erosion and sediment controls during construction and to assure the proper long-term operation and maintenance of stormwater systems after construction is completed. The primary program objective is to provide training throughout the State of Florida to both public and private employees in various construction-related fields. The target audience for the training program is inspectors, contractors, and engineers. The inspector training program is a two-day class that includes topics related to stormwater, erosion, and sediment control BMPs. At the end of the second day, a proctored exam made up of 100 multiple-choice questions is administered. In order to qualify as a certified inspector by the Department, a passing

score of 70% must be obtained. Additionally, classes are held to trainer instructors in the program. Prospective trainers must achieve a minimum score of 80% on the proctored exam.

Because of the wide success of the program, DEP now believes that it has trained enough instructors to carry on the existing program. DEP will continue to provide materials to those instructors who offer open-enrollment courses for free. DEP believes that advanced training is now needed to ensure that construction sites reduce and eliminate erosion and sedimentation that impact our waters. DEP has therefore created the new Construction Erosion and Sedimentation Control *Advanced* Certification Program. The advanced course will be designed to include an interactive field day that will highlight proper sediment and erosion control BMP installation, maintenance, and inspection. The advanced course will be aimed at construction workers and consultants and provide hands-on opportunities to learn about erosion and sedimentation control. At this time, this advanced course is intended to be implemented alongside the existing training program.

Federal grant funding will be used to continue the program's one staff position. This position coordinates the implementation of the training courses at locations throughout the state of the existing Stormwater, Erosion, and Sedimentation Control Certification Program. This person will also research and create a new Field Manual to be utilized in the new Construction Erosion and Sedimentation Control *Advanced* Certification Program. In addition to these responsibilities, over the next year the department intends to: develop an interactive CD-Rom for the inspector training class, conduct complete revision to the program manual, host a trainer workshop, which is intended to bring together the trainers from throughout the state to provide the latest revisions for the program, develop electronic class room training opportunities and lastly, strive to increase trainer participation throughout the state in order to meet the demands for the class.

PROJECT MILESTONES:

Action: Coordinate with local and regional stakeholders to "train the trainers" for the statewide training on erosion and sediment control BMPs, through BMP manuals, classroom training, outdoor exercises, and video-conferencing.

Milestone: Provide 18 classes annually

PROJECT BUDGET:

Project Funding Activity	**319 (h) Amount**
1 Environmental Specialist	$45,000
Fringe Benefits (67.47%)	$30,362
Indirect (33.52%)	$25,261
Expense (Supplies)	$500
Expense (printing)	$11,500
Travel	$9,000
Total:	**$121,623**

PROJECT 3

PROJECT NAME: Green Industries BMP Training for Professional Landscapers to Reduce Non-point Source Pollution

PROJECT FUNDING: $311,243

LEAD ORGANIZATION: University of Florida
FISCAL YEAR: 2016

COOPERATING PARTNERS:

PROJECT ABSTRACT: The Green Industries Best Management Practices (BMP) for Protection of Water Resources in Florida Training program was developed to provide Green Industry professionals with the knowledge, tools and skills to minimize the environmental impacts of non-point sources of pollution related to their business practices. This program is currently delivered statewide by the University of Florida's Institute for Food and Agricultural Sciences (IFAS) and is based on partnerships between Landscape and Green Industry businesses, local municipalities, scientists and homeowners. Regional coordination takes place through the UF-IFAS Extension offices across the state.
The Green Industries Best Management Practices (GI-BMPs) program grew out of the industry's desire to establish uniform professional standards of environmental responsibility. The GI-BMP program is a science-based educational program for Green Industry workers (lawn-care and landscape maintenance professionals) in order to teach environmentally safe landscaping practices that help conserve and protect Florida's ground and surface waters. The BMPs recommended by the program can save the service provider and the Florida homeowner money, time, and effort; increase the beauty of the home landscape; and protect the health of families, pets, and the environment.

PROJECT OBJECTIVE(S):
The goals of the program include:

- Deliver effective BMP training throughout the state;
- Provide enough of these high quality BMP training opportunities in convenient locations to meet local ordinances and state statutory requirements relating to BMPs;
- Provide train-the-trainer courses in order to allow the BMP training to be offered more frequently and consistently in other communities across the state;
- Support landscape businesses in meeting statutory requirements without undue burden, including tracking and reporting;
- Work with local governments to provide guidance in the development of local fertilizer ordinances; and
- Identify opportunities to partner with participating landscape companies and municipalities to educate homeowners, homeowner associations, garden centers and other related entities to minimize non-point source pollution and reinforce BMPs community-wide.

PROJECT DESCRIPTION: This project will provide funding to support Green Industries BMP Training Coordinators at three locations, to cover the entire state. These coordinators will carry out several functions. First, they will deliver/assist with delivering Green Industry BMP classes (in

English and Spanish) throughout their respective regions. Second, they will conduct Train-the-Trainer classes to increase the number of approved trainers for this program throughout the state. Third, they will provide oversight of trainers to ensure consistency and quality of the training program and work to educate the industry and communities on the importance of fertilizer and landscape management.

TASK: Education, Training and Outreach
The three GI-BMP coordinators will carry out the following activities:

- Create, produce, order, and distribute materials relating to the Green Industries BMP Training Program including workshop announcements, web postings, letters, decals, certification materials and other training materials as necessary.
- Conduct in-person trainings, including registration, tracking, attendance, materials, certification, and evaluation.
- Conduct online and DVD trainings, including registration, tracking, materials, certification, and evaluation.
- Identify, train and monitor a team of trainers in Florida with emphasis on those who speak Spanish and English.
- Conduct pre- and post-training surveys to measure behavior change and quantification of variations in non-point sources of pollution as a result of this program.
- Identify future funding partnerships.
- Meet regularly with program partners to accomplish project objectives and to constantly evaluate the program needs.
- Provide additional statewide support, as needed, to the GI-BMP program.

For measures of each of these tasks, please see the 2012 Program Update.

PROJECT BUDGET: Grant will fund 3 positions along with the associated costs, such as expenses, supplies and travel, required to carry out the activities described in the above task.

PROJECT MILESTONES:

Action: Action: Educate green industry professionals about BMPs.
Milestone: Provide 60 classes annually.

PROJECT 4

PROJECT NAME: Bioassessment Development and Quality Assurance

PROJECT TYPE (Check One): ☐ Urban ☐ Agricultural ☐ Education Only ☐ OSTDS
☑ Other (describe) **Programmatic (includes Education)**

PROJECT FUNDING REQUEST: $138,331 **MATCH COMMITMENT: $ 122,983**

PROJECT COST: $138,331

LEAD ORGANIZATION: Florida Department of Environmental Protection, Aquatic Ecology and Quality Assurance Section.

CONTACT INFORMATION:

NAME: NIJOLE (NIA) WELLENDORF
Street Address: 2600 Blair Stone Rd., MS 6511
City, State, Zip: Tallahassee, FL 32399
Tel: (850) 245-8190
Email: nijole.wellendorf@dep.state.fl.us

Geographic Location (city and county): Statewide

PROJECT OVERVIEW:

The Florida Department of Environmental Protection (Department) has a mature bioassessment program that has developed biological monitoring tools and associated quality assurance (QA) for more than 25 years. The Department currently uses the Stream Condition Index (SCI), Habitat Assessment (HA), Lake Vegetation Index (LVI), Rapid Periphyton Survey (RPS), and Linear Vegetation Survey (LVS) to determine biological impairment due to nonpoint source pollution of nutrients, sediment, metals, and other pollutants. A rigorous quality assurance component to this program is essential for accurate and scientifically defensible decision-making with bioassessment data. The requested funding would support quality assurance activities and further tool development for the Department's bioassessment activities.

The Environmental Protection Agency (EPA) will coordinate a National Wetland Condition Assessment in 2016, and the Department will work with the University of Florida (UF) Center for Wetlands to accomplish wetland sampling at Florida sites as part of that effort. The Department developed its own Florida Wetland Condition Index (FWCI) of biological integrity, and would use some of the requested funds to hire the UF staff to collect vegetative and macroinvertebrate FWCI data as part of that project. Funds would also be used to test and refine the FWCI method for use in Florida freshwater wetlands. These additional efforts are needed in order for the Department to have an assessment tool that can be used in all kinds of wetlands.

Training is an essential element of the bioassessment program, including field sampling method training for new employees and training for all staff on new tools and approaches to be used in conjunction with bioassessment methods. Some of the requested funds would be used to cover travel costs associated with staff attendance at bioassessment sampling training (as trainers and trainees) and the annual Biocriteria meeting. The Biocriteria meeting also serves as a means of educating other private and public entities throughout the state on use of the Department's biological assessment methods. We are also requesting funds for a stream geomorphology expert outside the Department to provide training to Department staff on elements of stream morphology and hydrology that impact aquatic communities.

One of the QA components for the Department's SCI, LVI, and LVS assessments is taxonomic verification by subject matter experts outside the Department for specimens with unknown identification or those specimens to be included in reference collections. Some of the requested funds would be used to support those external expert taxonomic verifications.

Bioassessment methods are used by the Department to determine if the aquatic life designated use is being met in Florida waters, and to identify those waters that have unique or exceptional aquatic life use and may warrant more stringent criteria for protection of that use.

Project evaluation elements include number of staff within and outside of the Department who are trained annually on Bioassessment sampling methods, number of participants in Biocriteria meetings, and assessment decisions made with the support of bioassessment data. Florida Wetland Condition Index (FWCI) development work would result in a final report outlining an expanded FWCI for use in regulatory and non-regulatory applications.

1. Project Funding and Timeline for Only the Grant and Committed Match Funded Portions

Description	Grant Funding	Match Funding	No. of months to complete task
Plant and Invert Taxonomic Verifications (Contract with State University)	$6,000	$0	Month 1 to Month 12 (ongoing as needed)
Stream Classification Workshops (Contract)	$24,000	$0	2 2-day workshops during the year
Biocriteria Meeting and SOP Trainings (Travel Funds)	$20,000	$0	1 Biocriteria meeting (3 days) and 2 training events during the year
Sampling and Analysis Supplies	$12,000	$0	N/A
Equipment Purchase-sampling probe	8,000	$0	
Wetland Condition Index Plant and Invert Sample Collection and Index Refinement (Contract with State University)	$68,331	$0	Sampling to be conducted during 2016 and 2017

MATCH FUNDED POSITION:

Project Funding Activity	**Match Amount**
1 Environmental Administrator, over the Bioassessment Section	$55,000
Fringe (67.47%)	$37,108
Indirect (33.52%)	$30,875
Total:	**$122,983**

Total Number of Months for the Project: 36

PROJECT 5

PROJECT NAME: CONTINUED EXPANSION AND SUSTAINABILITY OF THE FLORIDA-FRIENDLY LANDSCAPING™ PROGRAM TO PROTECT WATER QUALITY FROM STORMWATER RUNOFF AND NONPOINT SOURCE POLLUTION

PROJECT TYPE (Check One): ☐ Urban ☐ Agricultural ☑ Education Only ☐ OSTDS ☐ Other (describe)

PROJECT FUNDING REQUEST: $564,407.28 **Match**: $376,271.52

TOTAL PROJECT COST: $940,678.80

LEAD ORGANIZATION: **Florida Cooperative Extension Service**
University of Florida
Institute of Food and Agricultural Sciences

CONTACT information:
Esengul Momol, Director
Florida-Friendly Landscaping™ Program
University of Florida
Environmental Horticulture Department
PO Box 110675
Gainesville, FL 32611-0675
Phone: (352) 273-4520
Fax: (352) 392-1413
eam@ufl.edu

FEID NUMBER: 59-6002052

End Date of fiscal year (MM/DD): 06/30

FINANCIAL COOPERATING PARTNERS: University of Florida/IFAS

OTHER COOPERATING PARTNERS:
The Florida-Friendly Landscaping ™ (FFL) Program has grown to become a cooperative effort involving many organizations including the state's water management districts, utilities, city and county governments, the Suwannee River Partnership, DEP Florida Springs Initiative, Florida Nursery, Growers, and Landscape Association (FNGLA) and many other industry and civic groups, along with other UF/IFAS programs (Program for Resource Efficient Communities-PREC, Florida Master Gardener Program, Integrated Pest Management Florida, and the UF Water Institute).

PROJECT LOCATION AND WATERSHED CHARACTERISTICS:

FFL is an educational outreach program that covers the entire State of Florida.

Land Use *(Do not alter – All must be filled out; do not add categories; place a 0 for no acres)*	**Acres**	**%**
Residential Low Density (1100)	-	-
Residential Medium Density (1200)	-	-
Residential High Density (1300)	-	-
Commercial and Services (1400)	-	-
Industrial (1500)	-	-
Extractive (1600)	-	-

Institutional (1700)	**-**	**-**
Recreational (1800)	**-**	**-**
Open Land (1900)	**-**	**-**
Agriculture (2000)	**-**	**-**
Upland Non-Forested (3000)	**-**	**-**
Upland Forests (4000)	**-**	**-**
Water (5000)	**-**	**-**
Wetlands (6000)	**-**	**-**
Barren Land (7000)	**-**	**-**
Transportation, Communication, and Utilities (8000)	**-**	**-**
Land Use Totals (Acreage and %)	**-**	**100%**

PROJECT OVERVIEW: Please provide information for each of the 3 items below; item 4 is optional. Please give thorough descriptions, as the information provided in items 1-3 (and optional 4) will provide the overview needed to evaluate the project.

Objective: Provide a description of how the Best Management Practices (BMPs) in this project will reduce nonpoint source pollution. Include how they will benefit the impaired watershed and/or BMAP or how they will protect the unimpaired watershed.

The goal for this project is to protect Florida's water resources, both surface water and groundwater, by reducing nonpoint source pollution and nutrient leaching from urban landscapes.

The main objectives for this project are:

Educate target audiences who affect urban landscapes on the nine FFL principles.
Continue to respond to county and public requests for information and materials.
Provide programmatic/technical support to UF/IFAS Extension Service agents statewide who coordinate FFL activities.
Educate landscaping professionals on best management practices that protect surface and groundwater quality.

The primary goal of the FFL program is to educate Floridians about the relationship between their landscaping choices and the environmental impacts of those choices. Through this education effort FFL seeks to change people's behavior so that they adopt landscape practices that protect Florida's water resources, as well as save time and money. This project continues more than twenty years of partnership between EPA, DEP, and UF/IFAS to support local and regional projects that introduce and increase awareness of FFL principles. The success of the program has led to more demand than ever for statewide oversight and guidance to further the implementation of a fully integrated statewide FFL program with regional flexibility.

The FFL program promotes urban landscape design and landscaping best management practices that reduce contaminant loading to surface and groundwater. The proposed FFL programs will help reinforce the FFL messages throughout the state by complementing current projects throughout Florida. This project will work in conjunction with previously DEP-funded FFL programs and FFL programs funded by other partners (i.e., Tampa Bay Water, utilities and counties).

In 2015, 59 of Florida's 67 counties were active in some aspect of the FFL program, including 48 counties with specifically assigned FFL agents within their UF/IFAS Extension Service offices. FFL efforts by Extension offices are augmented through the Master Gardener program, whose participants advocate for and teach FFL principles during the events that they sponsor or in which they participate. The Master Gardener program is active in 59 of Florida's 67 counties and fields over 4,000 citizen volunteers.

Outreach efforts to audiences beyond homeowners, such as builders and developers, retail gardening centers, and landscape professionals, are continuing to gain momentum. This project will enhance the ability of the statewide office to provide technical and administrative support to county FFL programs, improve web and other distance learning opportunities for residents throughout the state, continue to seek additional funding to expand the number of counties offering the program, and provide updated materials for county programs to distribute to all audiences. It will maintain and strengthen the statewide FYN builder/developer component, to enhance outreach efforts to professionals involved in new construction, which is a key part of influencing major changes in landscape design and maintenance behaviors.

Description: Provide a description of the project itself and how it will work. Include the steps in the process. Indicate if this project is a phase of a larger project.

The statewide FFL program consists of two program areas 1) a Florida Yards and Neighborhoods (FYN) Program and 2) a Green Industries Best Management Practices (GI-BMP) Program. Each of these program areas is directed by a program coordinator. The FYN Program consists of the Homeowner, Builder and Developer, Homeowner Associations and other components that were previously separately managed. The GI-BMP program also has an education coordinator and a full time program assistant. The GI-BMP program previously operated under a separate DEP Agreement No. G0041 that expired in July 2009 at which time the program was fully merged with the other FFL programs.

The two program areas are supported by three (3) additional grant funded positions that are under the direction of the statewide FFL program director: (1) an information specialist, (2) a web and information technology coordinator, and (3) a program assistant (classified as part-time OPS). Additional support is provided by cooperating organizations such as the

University of Florida Center for Landscape Conservation and Ecology, the UF Program for Resource Efficient Communities (PREC), DEP, several state WMDs, local governments, and industry groups. There will be five (5) full time and two (1) part time positions funded under this Agreement, which will be under the direction of and/or supporting the FFL program director.

The FFL program director (a full time UF/IFAS extension funded position) maintains the integrity and quality of the FFL program statewide. Specific responsibilities are to ensure that all project areas have the educational materials that are necessary to carry out the FFL project, advise and participate in the regional training of coordinators, advisors and volunteers, offer programmatic support wherever and whenever it might be necessary, and help develop regional partnerships with other organizations that have a common interest in the well-being of Florida's environment and water quality that could translate into a possible funding relationship for the FFL project.

The FYN program coordinator serves as a liaison between the FFL statewide office and UF/IFAS county agents, FFL coordinators and program assistants, homeowners, and master gardeners. This position also works with FFL coordinators at Extension offices throughout the state to conduct programs to teach FFL principles to builders, developers, property owner association boards, and related audiences (e.g., landscape architects, planners, engineers, realtors) and to provide information on marketing FFL. The position also assists in recruiting, training and coordinating activities of FFL coordinators working with the above audiences.

The GI-BMP Program state coordinator serves as a liaison between UF/IFAS FFL Green Industries Program and county Extension agents, FDEP program management staff and regional coordinators, FDACS, WMDs and local governments, industry stakeholders and the public.

The GI-BMP education coordinator assists the GI-BMP state coordinator to schedule training sessions statewide and respond to phone and e-mail inquiries regarding GI-BMP training. Communicates regularly with Extension and DEP training coordinators and individual trainers through group and individual emails or other means as necessary to provide reminders of educational opportunities, trainer expiration dates, and training updates and changes. Ensures all trainers have adequate up-to-date materials for scheduled classes. Works with faculty to assure program quality is maintained. Grades tests, records scores in database and disseminates score results as needed, checks data and corrects errors, scans OMR tests and uploads data, prints and mails training certificates, exports/formats data records, maintains instructor certification records in Excel.

The GI-BMP program assistant works at the direction of the GI BMP education coordinator and state coordinator to enter student records and surveys into the project database or online forms, score tests (manually, using answer key), distribute files to training providers, compile quarterly training statistics in Excel, respond to phone and email requests, assist with administrative paperwork and filing, and otherwise assisting the GI-BMP program coordinator and FFL director as needed.

The FFL program assistant assists the FFL coordinators with all fiscal transactions and assists the county programs in hiring FFL staff, purchasing equipment, and keeping accounting records of operating expenses. The FFL program assistant also acts as a liaison between the fiscal entities of UF/IFAS (i.e., purchasing, payroll, personnel, travel, and accounting offices), the District Extension Directors' Office, and the individual county accounting staff.
The web and information technology coordinator helps to develop and maintain a central FFL web site, create multimedia features for web use, assists in the implementation and training of FFL coordinators and staff in the use of web-based applications and works on developing online modules for the GI-BMP program.

The information specialist assists in the development, distribution, training, marketing and revision of educational materials (exisiting and new) for all program areas under the direction of the FFL program director.

All listed positions work in consultation/cooperation with county FFL coordinators, commercial horticulture agents, UF's PREC and the Center for Landscape Conservation and Ecology to maximize efficiency, minimize redundancy and help create a single voice for UF's multi-faceted FFL programming efforts.

Effectiveness: Describe how the success of the project will be evaluated and timeframes associated with that demonstration of success (e.g, monitoring, surveys, etc.).

Appropriate use of fertilizers, pesticides and irrigation water by program participants will be measured by surveys conducted before FYN programs and six (6) months to one year afterwards. UF/IFAS Extension faculty and the FFL team

are working to develop standarized evaluation tools and protocols. Load reductions within the Total Maximum Daily Load (TMDL) Basin Management Action Plan (BMAP) process resulting from FFL education/outreach efforts will also be inventoried and tallied.

Additional Information: You may include other relevant information (e.g., the presence of protected species at the site).

PART III – TASKS, DELIVERABLES, BUDGET, and TIMELINE

The information in these fields will provide important project details. Please see Attachment 3 for examples of how to fill out these fields.

TASK INFORMATION

Task 1. FFL/FYN Program Implementation

Description

The purpose of this task is to implement the FYN component of the FFL program for homeowners, builders and developers, homeowner and community associations, youth audiences and more. In order to accomplish this task, the following approved activities will be completed by the FYN Program State Coordinator:

Act as a liaison between UF/IFAS county agents, FYN coordinators and program assistants, home owners, master gardeners and the FFL statewide office.
Provide program support for all program areas under the direction of the FFL statewide director
Train UF/IFAS FYN agents, FYN Coordinators, residential horticultural agents and Master Gardener FYN Yard Advisors, home owners and related audiences on principles and application of FFL practices and offer programmatic support whenever it is necessary. Assist in recruiting, training and coordinating activities of FYN coordinators.
Work cooperatively with staff of the Master Gardener Program and assist, coordinate activities, and attend Master Gardener Conferences.
Prepare teaching materials which include web-based, power point and curriculum modules.
Assist FFL Director to conduct in-service trainings (IST) and implement regional FYN programs.
Assist with evaluating needs of regional FYN programs for effective implementation.
Collect annual reports from counties to summarize outcomes/impacts/successes.
Develop working partnerships with public and private sectors to further the adoption of FFL principles and practices.
Identify and pursue sources of long-term funding for the position.
Participate in strategic planning efforts and focus groups to identify the need for additional outreach materials or revision of existing materials focusing on stormwater runoff, water quality, water conservation, sustainable land management, LID, and other FFL principles.
Update and continue responding to information requests from the public, distribute materials to county FYN programs as requested and assist FYN program staff in obtaining educational materials to implement their program.
Research relevant issues including land use and zoning practices, environmental impacts, and regulatory and extension criteria to develop and improve outreach content.
Summarize key facts of correspondence with and providing prompt and effective communication with the five water management districts, scientists and other specialists, commodity teams, local government, and the DEP.
Conduct site visits, plan reviews as requested and continue working in the field with FYN staff, teams and others.
Continue providing advisory support to FYN staff, and others working on FYN homeowners and other documents.
Attend meetings with extension staff (i.e., Green Teams), state office staff, and stakeholders where appropriate.
Represent the FYN program (attend, set up exhibits and/or give presentations) at relevant conferences and meetings, as appropriate.
Prepare and submit FYN component of quarterly reports and draft and final report.
Ensure that the goals and objectives of the FFL program are met through oversight of the FYN project component.
Ensure that all outputs and activities regarding the project are done in an efficient manner; and
Update and continue developing informational materials for the following targeted stakeholder groups:

HOMEOWNERS
Develop FYN toolkit for new and existing home owners, and update and enhance educational materials
Phone conversations with homeowners related to this project;
Preparing flyers for distribution;

Putting out flyers in neighborhoods announcing the project;
Providing consultation to homeowners and tenants who are available and are interested in being better informed by answering questions related to FYN
Providing homeowners and tenants with educational materials on FYN
Promote use of online FFL Yard Recognition database
Update FFL Yard Recognition database to include all yards that have already received recognition
Increase number of FFL recognized yards
County agents or Master Gardener volunteers will conduct inspections of all properties being considered for FFL yard recognition. These inspections will be performed according to a standard checklist that includes the following office and field duties:
researching addresses
referring requests to other staff as appropriate
GIS mapping of FFL recognized yards
issuance of official recognition notice

HOMEOWNER, COMMERCIAL, COMMUNITY AND PROPERTY MANAGER ASSOCIATIONS
Develop CEU programs for CAMs, and PMs
Continue public outreach/training regarding implications of SB2080 through workshops with HOAs and property & community association managers

LANDSCAPE ARCHITECTS
Develop CEU programs for LAs

BUILDERS AND DEVELOPERS
Collaborate with the St. Johns River Water Management District for cross-promotion of Florida Water Star certification and FFL recognition.
Continue development of the statewide builder/developer program to facilitate FFL in new construction in collaboration with the five water management districts, the Florida Society of Landscape Architects (FSLA), the Florida Green Building Coalition (FGBC), and UF programs such as the Program for Resource Efficient Communities (PREC).
Conduct site visits, plan reviews as requested and continue working in the field with FYN B&D staff, building contractors, developer teams and others.
Provide advisory support to FYN staff, builders and developers and others working on FYN inspection standards, comprehensive planning amendments and other documents.
Attend meetings with extension staff (i.e., Green Teams), state office staff, and stakeholders where appropriate.
Represent the FYN B&D program (attend, set up exhibits and/or give presentations) at relevant conferences and meetings, as appropriate.
At the annual FFL In-Service Training, deliver a UF FYN extension in-service on working with B&D audiences.
Continue to communicate with FYN staff in counties to determine their needs for working with B&D audiences.
Participating in and serving on the selection board for the Community of Excellence Award program

YOUTH
Develop pilot curriculum and teacher training materials for 4H and other youth audiences
After curriculum coordinator review and approval by the 4H dean, pilot test 4H FFL curriculum in 3 different districts

ENFORCEMENT:
The FFL/FYN yard recognition program is strictly voluntary. There are no associated enforcement provisions; with the exception of simply revoking, or not renewing an awarded yard recognition should a homeowner change their landscaping/irrigation system to no longer meet the recognition criteria.
FFL activities may be subject to local government ordinances which typically follow the guidelines recommended in the state model ordinance for FFL practices.
The state FFL office provides education outreach regarding implications of (s373.185 FS) and local ordinances on FFL/FYN programs

<u>Deliverables</u>
Minimum performance will be verified by submittal each quarter of:
A spreadsheet indicating properties visited, the results of each visit, and a total number of education packets given out
In addition to the overall project quarterly reporting, the Grantee will submit records for each project staff detailing the work accomplished each quarter.

Number and locations of new yard recognitions
Number of Extension agents using database
Number of workshops that deliver FFL educational materials to the public and Extension communities
Number of HOAs, CAMs, PMs, LAs trained
Number and types of CEUs issued
Copies of publications developed
Database statistics
Evaluations from pilot test classes

Budget Table – Task 1 (FYN)

Task No.	Category	Grant Funding	Match Funding	Total Funding	Match Source
1	**Salaries**	**$46,565.06**	**$0**	**$46,565.06**	
	Fringe Benefits	**$15,413.04**	**$0**	**$15,413.04**	
	Travel	**$0.00**	**$0**	**$0.00**	
	Equipment Purchases	**$0.00**	**$0**	**$0.00**	
	Supplies/Other Expenses	**$0.00**	**$0**	**$0.00**	
	Subtotal	**$61,978.10**	**$0**	**$61,978.10**	
	Indirect	**$6,197.81**	**$0**	**$6,197.81**	
	Unrecovered Indirect	**$0**	**$0**	**$0**	
	TOTAL FOR TASK	**$68,175.91**	**$0**	**$68,175.91**	

Task 2. GI-BMP Program Implementation

Description
The purpose of this task is to implement the GI-BMP component of the FFL program. In order to accomplish this task the following approved activities will be completed:

The GI-BMP Program State Coordinator will:
Act as a liaison between UF/IFAS FFL Green Industries Program and county extension agents, DEP program management staff and regional coordinators, FDACS, WMDs and local governments, industry stakeholders and the public.
Provide program support for all program areas under the direction of the FFL statewide director
Work with FDACS, FNGLA, and others to ensure UF/IFAS taught courses qualify for appropriate Continuing Education Units (CEU).
Train UF/IFAS extension agents, Master Gardener Green Industry Yard Advisors, and other academically based Green Industry trainers and related audiences on Principles and Application of GI-BMP and offer programmatic support whenever it is necessary. Assist in recruiting, training and coordinating activities of Green Industry trainers.
Ensure proficiency of county faculty and other public school, college or university trainers.
Coordinate with DEP and others to prepare teaching materials which include web-based, power point and curriculum modules.
Coordinate training programs with extension agents and DEP NERR regional coordinators.
Assist FFL Director to conduct In-Service Trainings and implement regional GI-BMP programs.
At the annual Extension and FFL In-Service Training, deliver a UF/FFL extension in-service on working with GI-BMP and general FFL audiences.
Respond to information requests from the public, distribute materials to county GI-BMP programs as requested and assist regional program staff in obtaining educational materials to implement their program
Assist to evaluate needs of regional GI-BMP programs for effective implementation.
Develop, update and enhance educational materials.
Launch updated GI-BMP English online training
Launch new GI-BMP Spanish online and DVD training
Continue to develop the Haitian Creole language GI-BMP training program
Work with local governments, DEP project manager and regional coordinators, and with county extension staff to promote the program.

Evaluate and document impacts of Green Industries program activities, including effectiveness of outreach to various stakeholder groups.
Implement updated GI-BMP class evaluation survey (create new processing/reporting tools)
Collect annual reports from counties to summarize outcomes/impacts/successes of the program.
Develop working partnerships with public and private sectors to further the adoption of FFL principles and practices.
Identify and pursue sources of long-term funding for the position.
Participate in strategic planning efforts and focus groups to identify the need for additional outreach projects materials or revision of existing materials focusing on stormwater runoff, water quality, water conservation, sustainable land management, and LID, and other FFL principles.
Research relevant issues including land use and zoning practices, environmental impacts, and regulatory and extension criteria to develop and improve outreach content.
Summarize key facts of correspondence with and providing prompt and effective communication with the five water management districts, scientists and other specialists, commodity teams, local government, and the DEP.
Establish project timelines and practice extreme flexibility in adapting to changing priorities.
Speak and represent the GI-BMP program at conferences, meetings, and public events.
Meet strict deadlines.
Prepare and submit Green Industries Program materials for inclusion in statewide coordinator's quarterly reports and draft and final report.
Oversee GI-BMP Education Coordinator and Program Assistant

The GI-BMP Education Coordinator will:
Ensure timely public notice of upcoming classes and ensure all training needs are met and program integrity and accountability is maintained.
Provide program support for all program areas under the direction of the FFL statewide director
Ensure all trainers have adequate up-to-date materials for scheduled classes.
Communicate regularly with Extension and DEP training coordinators and individual trainers through group and individual emails or other means as necessary to provide reminders of educational opportunities, trainer expiration dates, and training updates and changes.
Mail training materials to distance learning applicants.
Grade exams returned by trainers.
Issue training certificates of completion.
Maintain trainee database: enter and update records for all trainees and trainers, including distance learning students.
Update data content of GI-BMP program on the website including a master calendar of all, including IFAS, DEP, public, and private (such as in-house corporate training), upcoming classes.
Coordinate with web manager to ensure remote database queries from public or local governments are user-friendly and up-to-date.
Assist GI-BMP Program Coordinator and Web Coordinator with collecting customized report data as needed.
Suggest improvements to improve the program and make the system more responsive, efficient, and accountable.
Improve SCANTRON data handling and procedures
Implement revised GI-BMP test bank and test versions – online and SCANTRON
Complete update of GI-BMP trainee database and related tools
Prepare data for Program Coordinator for quarterly reports and draft and final report.

The GI-BMP Program Assistant will assist the GI-BMP Education Coordinator to:
Enter student records and surveys into Access database or online forms
Check data and correct errors
Score tests (manually, using answer key)
Scan OMR tests and upload data
Print and mail training certificates
Export/format data records and distribute files to training providers
Compile quarterly training statistics in Excel
Maintain instructor certification records in Excel
Respond to phone and email requests
Conduct Administrative paperwork and filing
Assist GI-BMP Statewide Program Coordinator and FFL Director as needed

ENFORCEMENT:

Chapter 482.1562 Florida Statutes (F.S.) requires every commercial fertilizer applicator to have the Florida Department of Agriculture and Consumer Services (FDACS) Limited Commercial Fertilizer Applicator Certificate (LCFAC). The Protection of Urban and Residential Environments and Water Act (Chapter 403.9335-9338, F.S.) requires FDEP and UF/IFAS to provide GI-BMP training for all persons who need a FDACS LCFAC. This certificate is required for any person making a fertilizer application "for hire". In addition, the training is required for all Institutional applicators covered by a local ordinance per Chapter 403.9337F.S.)
The Florida Department of Environmental Protection and the University of Florida, Institute of Food and Agricultural Sciences (UF/IFAS) are required to provide the necessary GI-BMP training. FDACS is responsible for enforcement of Chapter 482. Accordingly, FDACS has initiated a compliance program that provides 76 trained inspectors statewide to conduct field checks among landscaping crews to confirm they have received the appropriate GI-BMP training and are carrying current LCFAC documentation. FDACS responsibilities are outside the scope of this agreement.

Deliverables
Minimum performance will be verified by submittal each quarter of:
A spreadsheet indicating the number of training classes conducted, the number of persons trained, and the number of persons passing the certification examination.
In addition to the overall project quarterly reporting, the Grantee will submit records for each project staff detailing the work accomplished each quarter.
Report training/certification numbers for trainers
Report training/certification numbers for trainees
Provide copies of new test questions
Provide copy of survey and analysis of results
Copies of curriculums developed (active links to online training programs and copy of DVDs)
Database statistics
Copies of any new educational materials that have been developed for the GI-BMP program.

Budget Table – Task 2 (GI-BMP)

Task No.	Category	Grant Funding	Match Funding	Total Funding	Match Source
2	**Salaries**	**$107,769.17**	**$0**	**$107,769.17**	
	Fringe Benefits	**$26,441.41**	**$0**	**$26,441.41**	
	Travel	**$0**	**$0**	**$0**	
	Equipment Purchases	**$0**	**$0**	**$0**	
	Supplies/Other Expenses	**$0**	**$0**	**$0**	
	Subtotal	**$134,210.58**	**$0**	**$134,210.58**	
	Indirect	**$13,421.06**	**$0**	**$13,421.06**	
	Unrecovered Indirect	**$0**	**$0**	**$0**	
	Total for Task	**$147,631.64**	**$0**	**$147,631.64**	

Task 3. Project Administration/Oversight/Leadership/Support

Description
The purpose of this task is to provide administration, oversight, leadership and support of this project. The FFL Program Director and members of the FFL team implement this task.

Director and FFL team will provide administration of the project through the following approved activities:
Preparation and submittal of quarterly progress reports and payment requests (invoices)
Preparation and submittal of a draft project report, and a comprehensive final report following review by DEP staff and addressing any feedback on the draft report. The report shall be in Word or Adobe format. Three (3) paper copies and an electronic version of the report are to be submitted to DEP by the Agreement expiration date. The report will include, but not be limited to:
Progress and problems encountered implementing the program;
An assessment of the usefulness of the project to accomplish the goals and objectives of UF, EPA and the DEP;
Results of each activity;
Project cost accounting (grant and match amounts by category at a minimum) related to the grant for the overall project; and

Any recommendations for enhancements or expansions to the project that the Grantee or any other government or health department might be able to use to upgrade the overall project for future implementation.

Director will provide oversight of the project through the following approved activities:
Direct supervision of the FYN Program Coordinator, GI-BMP Program Coordinator, GI-BMP Education Coordinator, Information Specialist, Web Coordinator, and two Program Assistants specifically related to this grant project.
Participating in bi-weekly project staff meetings; and
Participating in DEP or UF/IFAS initiated meetings.

Director and FFL team will provide leadership for the project through the following approved activities:
Finalizing Communication Plan.
Conducting an inventory of TMDL BMAP education outreach credits.
Developing new partnerships with other state agencies and organizations.
Collaborating with faculty advisors to produce science-based research for publications

Director and FFL team will provide support for the project through:
Launching FFL plants mobile web application
Maintaining and improving the FFL website: launch new site design, update content as necessary,
Continuing to use social media to interact with stakeholders on a consistent basis (Maintain Facebook/Twitter posts; monitor activity; increase number of social media fans)
Increasing program visibility by continued involvement with the Straughn FFL Demonstration Gardens
Developing and conducting surveys of people's perceptions of FFL demonstration gardens
Conducting in-service training (IST) of statewide Extension staff
Promoting FFL with the Master Gardener Program including:
Attend MG conference and give FFL presentation
Educate MGs and involve volunteers in environmental landscape management and water monitoring programs.

The FFL Program Director (Match Funded Position) will:
Continue to support previously implemented regional programs and communicate with county and regional FYN staff.
Continue to communicate with and collaborate with external partners (especially Florida's five water management districts) and internal partners (e.g., the Center for Landscape Conservation and Ecology, and the Program for Resource Efficient Communities).
Evaluate state educational materials for needs for technical updates.
Assist county/regional associated project personnel in implementing FFL programs.
Provide in-service training to Florida Yard Advisors and other Master Gardeners at the annual Master Gardener conference.
Continue to modify and update the state FFL website and develop additional computerized training materials.
Attend regional horticulture extension (Green Team) and relevant stakeholder meetings.
Evaluate effects of FYN programming by compiling pre-and post-test data from county offices.
Prepare and submit quarterly progress report and draft and final report..
Attend the Florida Nursery Growers and Landscape Association (FNGLA) Landscape Show and staff a booth to provide public education regarding FFL.
Prepare and submit annually the DEP Section 319 grant proposal for the FFL program.
Fine tune 319 proposal scopes and budgets as applicable based upon grant awards and format as necessary for initiating or amending a contract agreement.
Continue to seek out and facilitate funding of FFL programs at the state and county levels.
Provide support and coordination for maintaining the Straughn FFL demonstation gardens on the University of Florida campus.

The FFL Program Assistant will:
Assist the FFL Director to fulfill the activities outlined in this Agreement.
Prepare and document all fiscal transactions with regard to any and all grant monies.
Assist the county programs in hiring FFL staff, purchasing equipment, and keeping accounting records of operating expenses.
Assist the statewide coordinator to write, prepare and submit proposals for grant funding from other institutions and organizations and identify potential funding sources.

Act as a liaison between the fiscal entities of UF/IFAS (i.e., purchasing, payroll, personnel, travel, and accounting offices), the District Extension Directors' Office, and the individual county accounting staff.
Act as the fiscal liaison between the funding agency and the grantee (the FFL program).

The Information Specialist will:
Assist the FFL director to fulfill the activities outlined in this agreement.
Assist in the development, distribution, training, marketing and revision of educational materials (exisiting and new).
Assist the state coordinator in providing technical and programmatic support to county FFL staff.
Assist in updating and enhancing the state FFL website and updating materials for county FFL programs that cover all audiences targeted by county FFL programs.
Assist the statewide coordinator to write, prepare and submit proposals for grant funding from other institutions and organizations and identify potential funding sources.
Represent FFL at conferences and in meetings with stakeholders and county FFL staff/horticulture extension agents.
Continue providing prompt, effective, & extensive communication with the five water management districts, scientists & other specialists, commodity teams, local government & the DEP.
Continue participating in strategic planning efforts & focus groups to identify the need for additional outreach materials or revision of existing materials focusing on storm water runoff, water quality, water conservation, sustainable land management, low-impact development (LID), and other FFL principles.

The Web and Information Technology Coordinator will:
Assist the FFL program director, FYN program coordinator, GI-BMP program coordinator, and GI-BMP education coordinator to maintain FFL web site
Produce multimedia features for the web and assist in the implementation and training of FFL coordinators and staff in the use of web-based applications and prepare manuals and handouts
Improve web site architecture and design as needed and in response to internal and external feedback
Utilize development software (e.g. Dreamweaver and Flash) to devise courses and programs, prepare manuals and maintain data base systems
Create and maintain public access and government access web pages to allow verification of training and certification status of Green Industry trainers and trainees. List upcoming training opportunities by date, region, county, etc. and by public vs private such as corporate training access.
Create pages for trainers and project managers to receive or order materials and schedule classes, download approved training materials, participate in educational updates and revisions, etc.
Assist NERDC or other master university IT departments to incorporate GI-BMP trainee records into university record system and to maintain and adapt the system as needed.
Participate in educational updates and revisions.
Arrange for select DEP staff and select extension staff, including GI-BMP program coordinator and education coordinator, to have write-level access to allow direct entry of trainee records.
Create and update public pages with links to class registration, training progress reports providing local, regional and statewide effectivness, promoting the practices to both the industry and the public, FAQs, link to the online distance learning program.
Devise and implement digital design standards and production methods for electronic publishing on the web that are Section 508- and ADA-compliant.
Redesign or manipulate existing design or publication and graphic images for use on web page.
Help manage web visitor feedback.
Prepare manuals and handouts and train FFL staff in the use of the current online course management system.
Prepare information for inclusion in quarterly reports and draft and final report

<u>Deliverables</u>
Deliverables that are required every quarter and are directly tied to the approval of quarterly invoices:

Summary of activities for each grant funded position with details about their accomplishments. Text, photos and copies of educational materials they helped to develop locally, regionally, and statewide will be provided as evidence of the work performed. Evidence of work performed may also include brochures; booklets; television appearances; specialized educational items and/or displays; copies of press releases, newspaper and magazine articles, and newsletter notices associated with the program; and additional training modules completed and made available to county extension faculty. The activities must be consistent with the responsibilities described above for each funded position or an explanation should be provided explaining any new topics that are requiring attention.

Summary of activities for the UF/IFAS extension staff that are counted towards meeting the matching funds requirements of this Agreement.
Summary of science based initiatives that are underway which have implications regarding the nine principles and benefits of FFL programming
Summary of legal actions such as fertilizer rule making and challenges, HOA responses to SB 2080, local government model ordinance adoption, etc.
At least one success story per quarter for each of the program areas (FYN and GI BMP) plus one additional that addresses another aspect of the program such as Information Technology accomplishments, work done by the Center or other cooperating organizations that benefits the overall program, significant legislative actions affecting the program, etc.
Description of presentations given and meetings attended by state FFL office staff.
FFL state office websites are updated weekly with current information pertaining to the program. This includes posting and linking to new or updated publications, revised advice and images, newsletters, training classes, and responding to citizen inquiries via Facebook, and Twitter accounts and other interactive elements of the website.
Provide website-content summary report along with page view statistics update
Summary of Facebook/Twitter activity
Documentation of efforts to develop partnerships with agencies and organizations having common goals and to increase awareness and communication within the implementing agency.
Materials of all state and national conferences attended where the FFL program has been highlighted.
Announcements of any applicable grant awards to complement this DEP grant.
Announcements of any awards and/or recognition given to the statewide or regional programs.
Number of participants in FYN educational programs and activities where UF-developed evaluation methods were used to measure participants' knowledge and use of FYN practices before and after Extension programming (pre-test/post-test format).
Number of instructors who were certified to teach the GI-BMP training program
Number of participants who completed the GI-BMP training program.
Number of new MGs trained in FFL
Summary report on new partnerships, agreements, MOUs, cross-promotions
Copies of publications, fact sheets, educational publications, or other materials
Copies of surveys and analysis of results
Report class statistics/evaluation results

(SPECIFIC OUTPUTS/DELIVERABLES IDENTIFIED BY THE QUARTER THEY ARE EXPECTED TO BE PROVIDED IN ADDITION TO THE DELIVERABLES IDENTIFIED ABOVE. THESE are ALSO directly tied to the approval of Quarterly Invoices.)

FIRST QUARTER OF EACH CALENDAR YEAR

An Annual Report summarizing the activities and future plans for the FFL statewide office (grant funded staff) plus the county agents involved with the program plus our other partner organizations. This report will be more comprehensive than the quarterly progress reports and will provide the basis for DEP to report on the success of the program to the public, EPA and the legislature. This overall report will demonstrate the effectiveness of our outreach efforts with numbers and types of contacts. Success will be measured over time as more and more participants are educated through the FFL program and begin to utilize those practices in their own landscapes. It will include evidence of changes in behavior for targeted and general populations and show how these behavior changes are leading to the following measurable benefits that protect the environment:

Reduced pollutant loading of surface and ground water
Reduction in stormwater runoff
Less potable water use
Time savings
Lower operation and maintenance costs
Broader acceptance of FFL principles
Fewer challenges and disputes
Less yard waste requiring offsite disposal (report data from waste management entities and/or landfills on local, regional and statewide basis)
More diverse urban landscapes populated with the right plants in the right places (report total acreage that is properly landscaped and maintained)

Improvements in shoreline management

Conduct the annual FFL In-Service Training(s) for extension agents to deliver advice on working with homeowners, B&D audiences, the Green Industries and other relevant groups. The program materials and recorded tapes will be provided as deliverables.

FOURTH QUARTER OF EACH CALENDAR YEAR

Provide in-service training to Florida Yard Advisors and other Master Gardeners at the annual Master Gardener conference.

Work cooperatively with staff of the Master Gardener Program and assist, coordinate activities, attend and present new materials at the annual Master Gardener Conference – provide the conference materials as a deliverable and highlight the FFL programs' participation.

OTHER OUTPUTS/DELIVERABLES THAT ARE EXPECTED TO BE PROVIDED IN ADDITION TO THE DELIVERABLES IDENTIFIED ABOVE BUT ARE NOT EXPECTED EVERY QUARTER OR A SPECIFIC QUARTER. THESE are directly tied to the approval of THE FINAL Invoice.

Summary report of TMDL BMAP education outreach credits inventory (including nitrogen loading data
Report official launch date for FFL plants mobile web application; tally downloads; advertisements; survey
Copy of final communication plan

Budget Table – Task 3

Task No.	Category	Grant Funding	Match Funding	Total Funding	Match Source
3	Salaries	$103,033.01	$235,902.00	$338,935.01	
	Fringe Benefits	$30,434.48	$58,635.07	$89,069.54	
	Travel	$36,000.00	$0	$36,000.00	
	Equipment Purchases	$26,000.00	$0	$26,000.00	
	Supplies/Other Expenses	$121,441.36	$0	$121,441.36	
	Subtotal	$316,908.85	$294,537.06	$611,445.91	
	Indirect	$31,690.88	$57,734.45	$89,425.34	
	Unrecovered Indirect	$0	$24,000.00	$24,000.00	
	Total for Task	$348,599.73	$376,271.52	$724,871.25	

TOTAL PROJECT BUDGET TABLE (319 and Match Funding)
Please total all of the categories in each task above and provide the totals in the table below.

Category Totals	Grant Funding	Match Funding	Total Funding	Match Source
Salaries Total	$257,367.24	$235,902.00	$493,269.24	
Fringe Benefits Total	$72,288.92	$58,635.07	$130,923.99	
Travel Total	$36,000.00	$0	$36,000.00	
Equipment Purchases Total	$26,000.00	$0	$26,000.00	
Supplies/Other Expenses Total	$121,441.36	$0	$121,441.36	
Subtotal	$513,097.52	$294,537.06	$807,634.59	
Indirect Total	$51,309.75	$57,734.45	$109,044.21	
Unrecovered Indirect Total	$0	$24,000.00	$24,000.00	
Total:	$564,407.28	$376,271.52	$940,678.79	
Total Project Cost:	$940,678.79			
Percentage Match:	60%	40%		

PROJECT 6

PROJECT NAME: City of Fort Lauderdale River Oaks Preserve Project - Phase IC

PROJECT TYPE (Check One): ☑ Urban ☐ Agricultural ☐ Education Only ☐ OSTDS
☐ Other (describe): Within a City of 175,000 residents.

PROJECT FUNDING REQUEST: $629,695 **MATCH COMMITMENT:** $419,796.67

PROJECT COST: $1,706,620

LEAD ORGANIZATION: City of Fort Lauderdale - Public Works Department

CONTACT INFORMATION:

NAME:	ANNALISE MANNIX, SR. PROJECT MANAGER
Street Address:	100 North Andrews Avenue
City, State, Zip:	Fort Lauderdale, FL 33301
Tel:	954-828-4355
Fax:	954-828-5074
Email:	AMannix@fortlauderdale.gov

FINANCIAL COOPERATING PARTNERS: N/A

PROJECT LOCATION AND WATERSHED CHARACTERISTICS:
Geographic Location (city and county): City of Fort Lauderdale, Broward County
Section – Township-Range: 16-50-42
Project Boundaries:
North - SW 20 Street; South - SW 23 Street; East – SW 17 Ave; West – I-95 Expressway
Size of Project Impact: 11.1 Acres
Size of Area Being Treated: 30 Acres
Latitude (decimal degrees): 26.086619
Longitude (decimal degrees): -80.177901
Name of Impaired Water Body Affected: New River Canal (South)
Water Body ID of Impaired Water Body Affected (WBID): WBID 3277A
TMDL Status and Name: EPA Approved - 62-304.725, FAC and New River Canal (South) WBID 3277A
TMDL Impairment; indicate the parameters in the TMDL: Fecal (35.7**%** exceedance) **Impairments To Be Addressed by Project:** Fecal Coliform, TSS, TP, TN, Metals
Does this project fall within the boundaries of a developing or adopted BMAP or within a Nine Element

LAND USE and STATUS:

Land Uses of the <u>Area Being Treated</u>
The area being treated is the area that is contributing runoff to the treatment system.

- = Empty cell/information to be inserted

Land Use ***(Do not alter – All must be filled out; do not add categories; place a 0 for no acres)***	**Acres**	**%**
Residential Low Density (1100)	-	-
Residential Medium Density (1200)	10	33.33
Residential High Density (1300)	10	33.33
Commercial and Services (1400)	1	3.33
Industrial (1500)	-	-
Extractive (1600)	-	-
Institutional (1700)	-	-
Recreational (1800)	-	-
Open Land (1900)	-	-
Agriculture (2000)	-	-
Upland Non-Forested (3000)	-	-
Upland Forests (4000)	2	6.67
Water (5000)	-	-
Wetlands (6000)	7	23.33
Barren Land (7000)	-	-
Transportation, Communication, and Utilities (8000)	-	-
Land Use Totals (Acreage and %)	**30**	**100%**

Land Ownership Status: (check one)
Land necessary for the construction of treatment infrastructure has been acquired. Title is held by: **City of Fort Lauderdale, FL**

☐ Land necessary for the construction of treatment infrastructure is under a legal option to buy (please provide documentation of the option-to-buy and funding to execute the purchase).

☐ Land necessary for the construction of treatment infrastructure is under an easement which allows for the construction and access.

PROJECT OVERVIEW: Please provide information for each of the 5 items below; item 6 is optional. Please be very thorough when completing the information.

The proposed River Oaks Preserve area consists of 9.1 acres (ac.) of vacant land area that the City acquired in order to provide a a recreation preserve park for the residents. The City intended to develop a stormwater passive park featuring wetlands, elevated boardwalk, and a historic bascule bridge converted into a pedestrian boardwalk. The park will contain the outfall to the South Fork of the New River, and will attenuate and pre-treat the stormwater runoff from the adjacent River Oaks neighborhood, prior to discharging (see Exhibit 2C - River Oaks Preserve Neighborhood Map).

The City of Fort Lauderdale has allocated $1,246,486as indicated in its FY 2015- FY 2019 Community Investment Plan.

The proposed activities (see Exhibit 4 - Phase 1C Site Plan) are expected to reduce the TMDL for fecal which spikes during the rainy months. The project is designed to substantially provide treatment to the discharged stormwater within the River Oaks neighborhood area while also decreasing flood issues. (see Exhibit 5 - Conceptual Site Plan).

Approximately, 90% of the pollutants originate from street runoff of the asphalted residential River Oaks neighborhood roadways as depicted by Figure 1.1. The existing conditions of the street swales are not appropriate for treatment of stormwater runoff and pollutant reduction. Therefore, the proposed pollutant load reduction strategy employs a ***treatment train*** in the following order: swales, exfiltration trenches, bio-swales, dry retention, and wet detention in a wetland filter marsh.

Street conveyance grassed swales – Provide filtration for the pre-treatment and act as a conveyance component to the other storm treatment systems (Approx. 11,000 linear feet (LF) of 8’ wide x 6” deep grassed swales).

Exfiltration trenches – Consist of perforated pipes and porous rock that will re-direct the pretreatment runoff into the subsoil and subsequently into the groundwater (Approx. 1,800 LF, 6’x5’ trench).

Street inlet structures with pollution retardant baffles (PRBs) – (Approx. 20 acres).

Bio-swale – Provide additional filtration and removal of suspended soils using native vegetation – (Approx. 200 LF long x 50 LF wide).

Upland forest - Provide treatment through absorption in the urban forest - (Approx. 2 acres).

Wetlands / Filter marsh / upland forest – Treat the runoff through absorption, plant uptake, filtration, precipitation and microbial decomposition – (Approx. 7 acres).

Although not a quantitative BMP, educational signage will be provided on plaques and at a kiosk next to the relocated CSX pedestrian bridge boardwalk to inform the general public about the treatment qualities of the wetlands, the historical reference for the relocated CSX pedestrian bridge, and the importance of preventing non-point source pollution and best management practices for storm treatment. In addition approximately 5,000 pamphlets will be distributed through the neighborhood and 3-minute public service announcements (PSAs) will be developed for the City TV channel.

Objective: Explain how the Best Management Practices (BMPs) in the grant and match funded project will reduce nonpoint source pollution. Include how they will benefit the impaired watershed and/or BMAP or how they will protect the unimpaired watershed.

Utilizing this combination of multiple BMP and a polishing wetland in a treatment train scenario will be very effective. The following Best Management Practices in the grant and match funded project will help reduce nonpoint source pollution by treating this part of the neighborhood in the following ways.

Currently the drainage from the neighborhood is directly discharged into the South Fork of the New River without any prior pre-treatment or flood attenuation.
The proposed passive park will employ a treatment train that will substantially reduce nonpoint source pollution while providing additional floodplain storage for the stormwater runoff.

As detailed above, the BMPs utilized in the treatment train as follows:

Swales and bio-swales: retention, detention, conveyance - will further slow the flow and increase retention so settling can occur. Swales will create additional flood plain storage and settle out contaminants prior to discharge to water body.
Exfiltration trenches and basins - will effectively remove most first flush solids and helps attenuate flooding.
Street inlet structures with pollution retardant baffles will assist in removing and settle out solids and floatables.
Wetlands / Filter marsh - will absorb nutrients and allow further settling of any storm water that enters while providing a sediment sink and wetland habitat.

For specific pollutant removal percentages of each BPM, please refer to the "Pollutant Load Reduction" tables.

Education
The immediate Neighborhood, local schools, and overall City will be able to take advantage of the wetlands as an educational demonstration tool. Public outreach will tie the educational kiosk and markers to the City's website creating an on-line interactive tool. The City will develop (3) three-minute videos to run on the City TV channel along with other media. The City's "Green Your Routine" web portal will host the tool and provide linkage to other environmental education.

Effectiveness: Describe how the success of the project will be evaluated, such as monitoring, surveys etc. Provide sufficient detail to indicate which BMPs, will be monitored and how. Note: Monitoring is required for all construction projects.

Upon completion of this project, a detailed monitoring plan will be developed and submitted for review after the grant award. The runoff generated after each relevant storm event of 0.5 inches or more, will be monitored at a minimum of three locations between the BMP mechanisms to demonstrate the effectiveness of these practices at removing the pollutant loads and the protecting the receiving water bodies.

BMP Effectiveness Evaluation Procedure:
All sampling will be performed following the FDEP SOPs for Field Activities as specified in the FAC 62-160 Quality Assurance Rule.

All analysis will be performed by a NELAP State accredited laboratory and all reports will be provided as appendices within the 319 grant report.

Monitoring Parameters: Total Nitrogen (TN), Total Phosphorous (TP), Total Suspended Solids (TSS), Fecal Coliform (FC), Total Copper (Cu), and Total Mercury (HG). Additional parameters may be requested at time of sampling.

Sampling Locations (to be determined after construction): First catch basins before entering the treatment train, catch basins after exfiltration trenches, bio-swale retention area, wetland inflow area or inflow culvert, and wetland outflow culvert/weir.

Frequency of Monitoring: Ten storm events.

Storm Events: Discrete rainfall events of generally greater than 0.5 inches and less than 2.5 inches. Daily rainfall (to nearest 0.1 inch) measured at the sampling location with verification from the local weather station. Rainfall data will be provided for at least the week proceeding monitoring and day(s) of monitoring.

Data will be presented in tables and graphic format within the final 319 report. A narrative and numeric interpretation of results interpreting the effectiveness of the individual BMPs and overall treatment train will be drafted.

Survey and Public Outreach:
A public information sub-report detailing the various outreach events and website visits will be included in the final 319 grant report. The sub-report will highlight the informational signage, kiosk, and interactive web-site with a narrative interpretation of effectiveness. General information in the sub report may include the following;

Field days, training workshops, demonstrations: walk ways will have educational signage speaking to the species of trees and their importance for this environment. A kiosk will also have interactive information to educating visitors on the wetlands.

Training programs, Manuals: Manuals will be completed by the stormwater team to outline standard operating procedures. Percent/number of target audience educated: the City intends on reaching residents through public programming featuring educational pieces on this area. Also, the City will extend this park as a learning center for schools and environmental programs. Lastly, the park can be featured on the City's webpage. The City of Fort Lauderdale hosts Neighborhood Support Night events that have historically had several hundred residents attend. The 2015 event had 500 residents attend. Appropriateness of and type of educational materials: The City's advertising agency will put together informational material for the Kiosk for different ages. Currently, the Utilities-Stormwater Operations Division has several leaflets that they use to educate the community on water conservation and pollution reduction practices. They also have several coloring and activity pages and booklets for children and young adults. Similar materials will be made for this project.

The match funded project is part of a larger project. A description of the overall project and cost are as follows:
The initial phase, **Phase IA**, of the River Oaks Neighborhood Stormwater Project was to purchase the River Oaks Preserve area which consists of 9.1 acres of vacant land that the City acquired from a developer. The $6 million purchase was made to limit further high density development and provide a solution to existing flooding issues. Additional $180,000 was used complete a conceptual plans for the site, submit it for environmental permitting and create a temporary holding area, install swales, and remove exotic plantings using a $30,000 Broward County grant. The City's project partner, the Florida Department of Transportation (FDOT), placed a weir on the site to limit flow to the New River.

Phase IB of the project, ongoing March 2015 through February, 2016, completes the environmental permitting of the project and the final design of Phase I of the park. More specifically, this phase includes full park permitting, and plans and specifications for Segment 1 of the boardwalk, wetland planting, and adjacent parking area on land leased to the City by the FDOT. In addition, the initial park attraction, a historic bascule bridge converted to a pedestrian boardwalk, will be installed in 2015 by the FDOT. The cost of the design component is $230,000.

The phase identified for this grant, **Phase IC**, provides treatment and outfall design for 20-acres of the neighborhood as well as construction development of half of the park upland forest, bio-swales, wetlands, swales in the neighborhood, segment 1 of the boardwalk, and the parking area. It is intended to partially develop the stormwater passive park. In addition, the project includes educational components. The park will attenuate and pre-treat the stormwater runoff prior to discharging into the New River. The City share will fund the design fees while the federal share will fund construction.

Phase II of the project is scheduled post FY2019 when the design of the stormwater solution for the full neighborhood is complete. The adjacent neighborhood has 210 acres which will have a treatment train with some flow ultimately directed the park prior to outfall to the New River. Other areas of the neighborhood will have exfiltration trenches, injection wells, vortex systems and Pollution Retardant Baffles. This larger phase of the project will be designed from to 2015-2019 while the construction of the remainder of the park and neighborhood infrastructure will follow. The City of Fort Lauderdale has allocated $707,366 as indicated in the FY 2015- FY 2019 Community Investment Plan (CIP) for the park and neighborhood stormwater design.

Project Funding and Timeline for Only the Grant and Committed Match Funded Portions
In the table below, provide the estimated funding amounts and timeline (in months) for each grant and committed match funded step in the project. Examples of typical descriptions have been provided but can be edited as needed.

Task #	Description	Grant Funding	Match Funding	No. of months to complete task
	Grant Award			Month 1
1	Neighborhood Survey	N/A (not eligible for grant funds)	$60,000	Month 1 to Month 3
2	Design, Permitting	N/A (not eligible for grant funds)	$139,796.67	Month 3 to Month 17
3	Bidding, Construction Project Management/ Inspection	$100,000	$0	Month 17 to Month 36

Task #	Description	Grant Funding	Match Funding	No. of months to complete task
4	Wetland Planting, Road Construction, Kiosk	20,000	$220,000	Month 17 to Month 30
5	BMP Construction	$422,075	$0	Month 20 to Month 32
6	Education	$32,000	$0	Month 20 to Month 34
7	Monitoring	$31,620	$0	Month 26 to Month 34
8	Reporting	$15,000	$0	Month 26 to Month 36
9	Grant Administration /Close-out	$9,000	$0	Month 1-36
	Total	**$629,695**	**$419,796.67**	

Total Number of Months for the Project: Project completion is expected 36 months after grant award.

Partnering Agencies
There are several granting agencies that have contributed to the funding of the purchase of the land and development of this preserve, including:
FDEP Legislative Appropriation
Broward County Land Preservation (Exotic Species removal)
FDOT – JPA in coordination with the United States Coast Guard and State Historic Preservation Office
City of Fort Lauderdale through direct match and in-kind services

The City of Fort Lauderdale is embarking on a large-scale stormwater management program which began with a master plan developed by CDM in 2013 which recommended an initial $18 million of construction in design during the initial 6-years and construction of $150 million for seven neighborhoods with consistent flooding issues. To initiate the program a City-wide stormwater model and basin management stormwater plan is programed for 2015-2017.

Environmental Studies
The City has conducted environmental studies for this property and found no endangered species or potential environmental impacts. Attached are E-Sciences Environmental Natural Resources report (see Exhibit 7A), Miller Legg Phase II Environmental Assessment (see Exhibit 7B), and FDOT Environmental Resources Report (see Exhibit 7C) for the adjacent property.

The stormwater utility fee is segregated into three types of charges, single family/3 units or less ($4.10/month), more than 3 units $41.33 units per acre, and unimproved land $13.10/acre. All of these fees are approved for a 5% annual utility rate increase every October 1st. The utility rate is expected to jump to $6.00 per Equivalent Storm Unit (ESU) in 2016.

Pollutant Load Reductions

BMP #1 Name: Grassed swales

BMPs Installed	TSS lbs/yr	TP lbs/yr	TN lbs/yr	Sediment lbs/yr	BOD lbs/yr	Other lbs/yr	Other lbs/yr
Pre-Project	**10414**	**42**	**230**	**-**	**-**	**-**	**-**
Post-Project	**7289.8**	**29.4**	**161**	**-**	**-**	**-**	**-**
Load Reduction	**3124.2**	**12.6**	**69**	**-**	**-**	**-**	**-**
% Reduction	**30**	**30**	**30**	**-**	**-**	**-**	**-**

BMP #2 Name: Exfiltration Trench

BMPs Installed	TSS lbs/yr	TP lbs/yr	TN lbs/yr	Sediment lbs/yr	BOD lbs/yr	Other lbs/yr	Other lbs/yr
Pre-Project	**10414**	**42**	**230**	**-**	**-**	**-**	**-**
Post-Project	**1041.4**	**21**	**115**	**-**	**-**	**-**	**-**
Load Reduction	**9372**	**21**	**115**	**-**	**-**	**-**	**-**
% Reduction	**90**	**50**	**50**	**-**	**-**	**-**	**-**

BMP #3 Name: Bioswales/Dry Detention

BMPs Installed	TSS lbs/yr	TP lbs/yr	TN lbs/yr	Sediment lbs/yr	BOD lbs/yr	Other lbs/yr	Other lbs/yr
Pre-Project	**10414**	**42**	**230**	**-**	**-**	**-**	**-**
Post-Project	**1289.8**	**21**	**115**	**-**	**-**	**-**	**-**
Load Reduction	**7289.2**	**21**	**115**	**-**	**-**	**-**	**-**
% Reduction	**70**	**50**	**50**	**-**	**-**	**-**	**-**

BMP #4 Name: Wetland/Filter Marsh

BMPs Installed	TSS lbs/yr	TP lbs/yr	TN lbs/yr	Sediment lbs/yr	BOD lbs/yr	Other lbs/yr	Other lbs/yr
Pre-Project	**10414**	**42**	**230**	**-**	**-**	**-**	**-**
Post-Project	**1041.4**	**12.6**	**115**	**-**	**-**	**-**	**-**
Load Reduction	**9372**	**29.4**	**115**	**-**	**-**	**-**	**-**
% Reduction	**90**	**70**	**50**	**-**	**-**	**-**	**-**

TOTALS

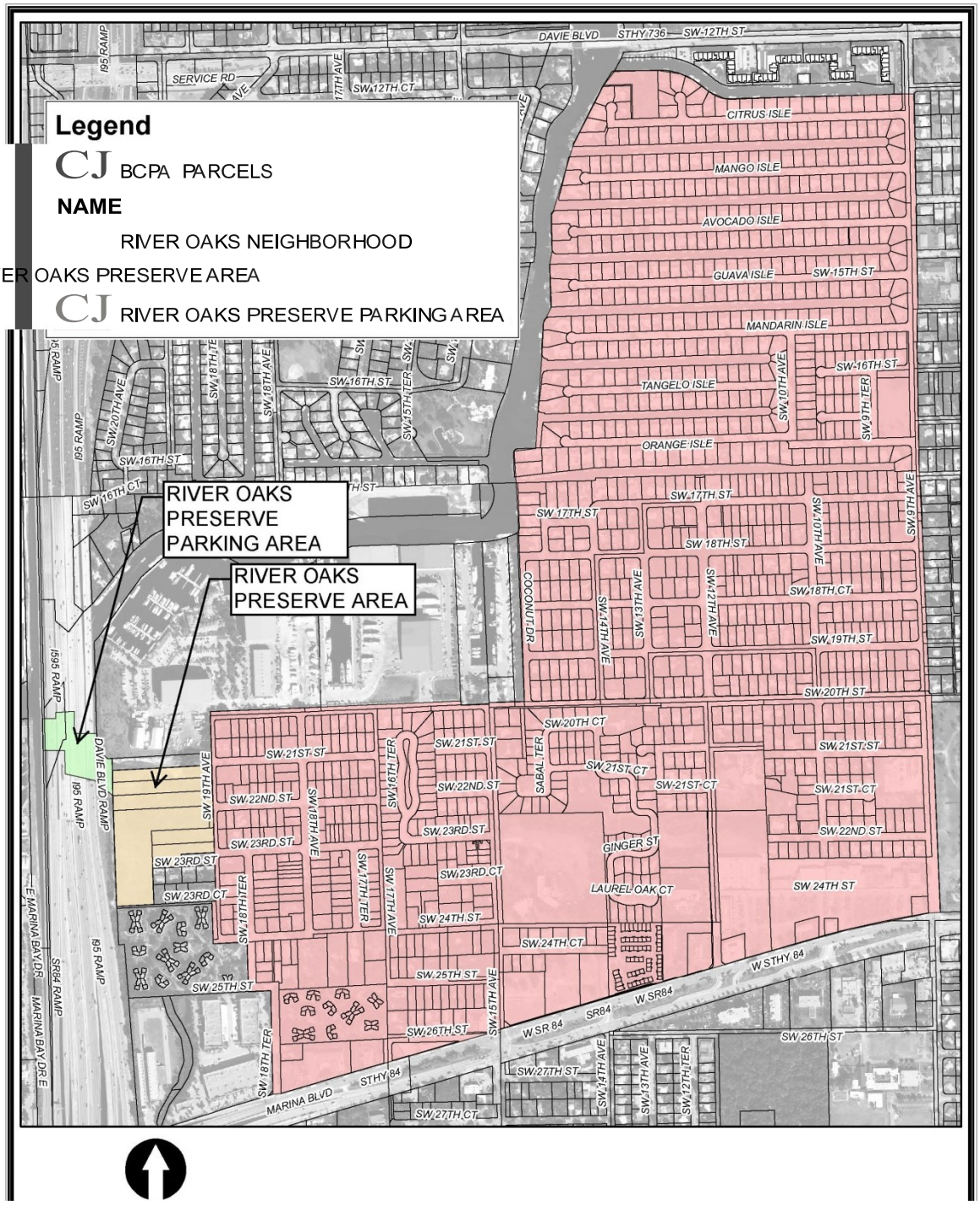
BMPs Installed	TSS lbs/yr	TP lbs/yr	TN lbs/yr	Sediment lbs/yr	BOD lbs/yr	Other lbs/yr	Other lbs/yr
Pre-Project	**41,656**	**168**	**920**	**-**	**-**	**-**	**-**
Post-Project	**12,496.8**	**84**	**506**	**-**	**-**	**-**	**-**
Load Reduction	**29,159.2**	**84**	**414**	**-**	**-**	**-**	**-**
% Reduction	**70**	**50**	**45**	**-**	**-**	**-**	**-**

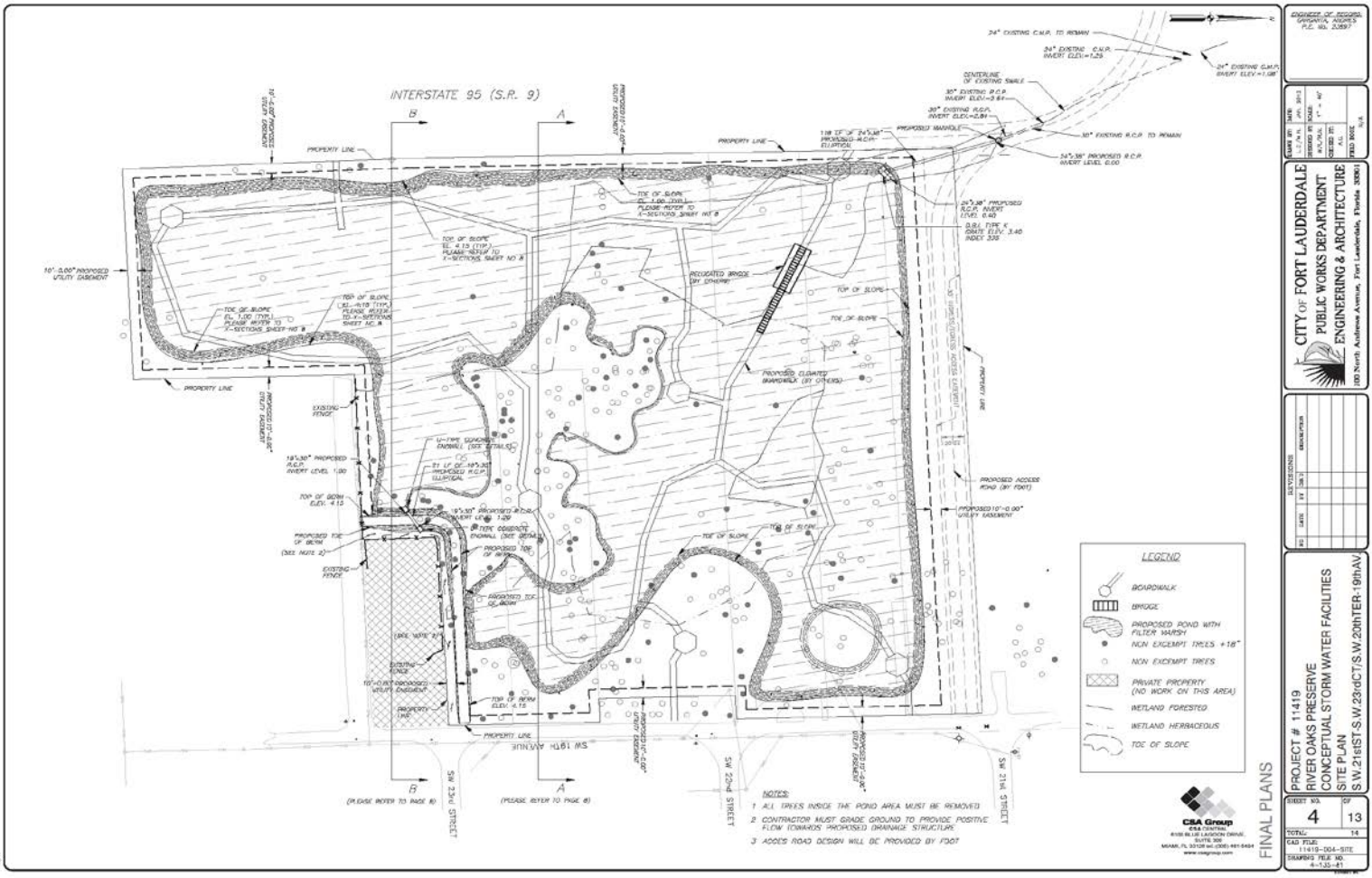
The stormwater utility fee is segregated into three types of charges, 3 units or less ($4.10/month), more than 3 units $41.33 units per acre/month, and unimproved land $13.10/acre/month. The utility rate is expected to jump to $6.00/month for 3 units or less in 2016, with similar increase for the other rate schedules. All of these fees are approved for a 5% annual utility rate increase every October 1st.

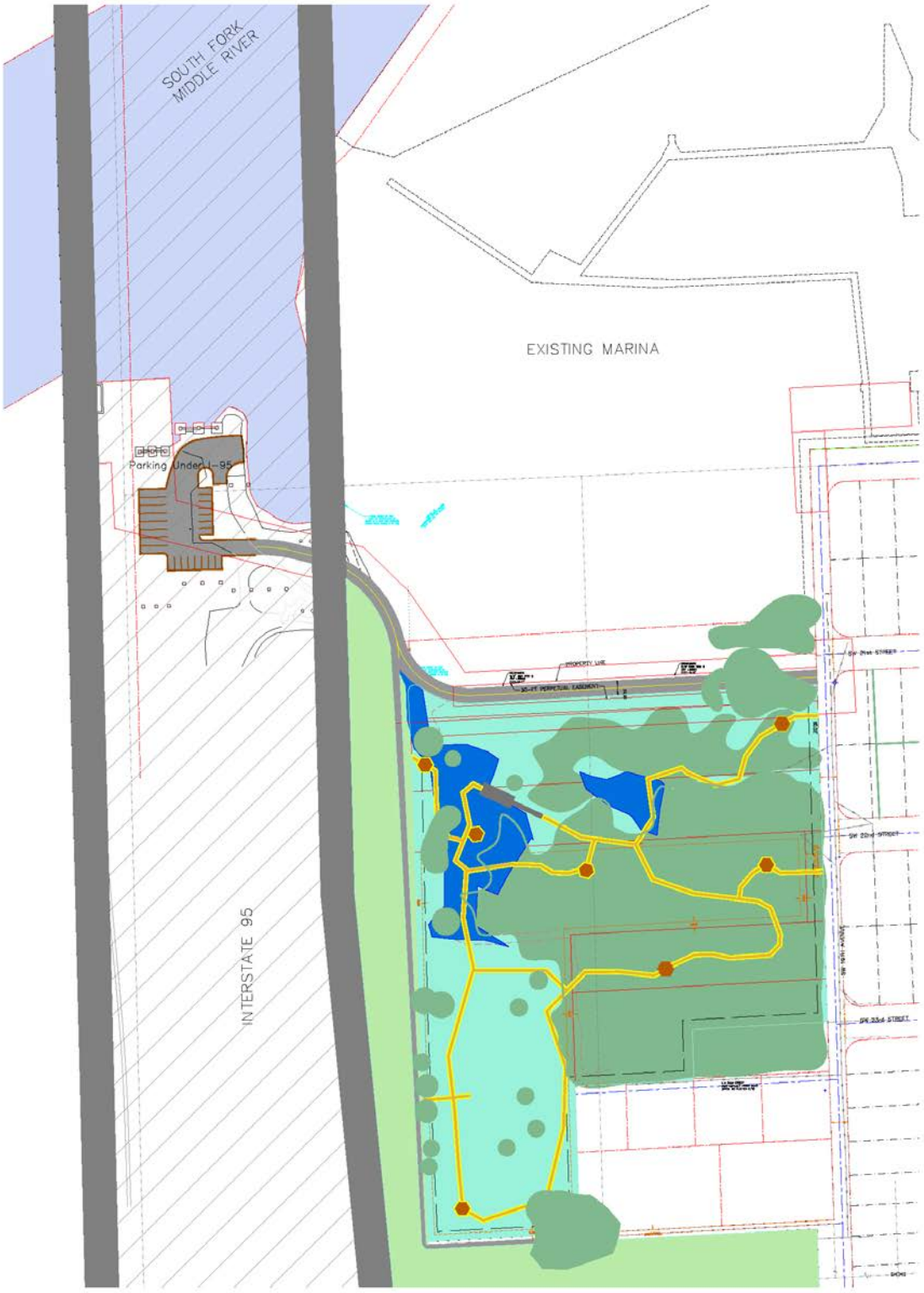
- = Empty cell/information to be inserted

Associated Task #	Type of Structure (pond, swale, etc.)	Estimated Residence Time (in days)
1	Swale	2 days
2	Exfiltration Trench	4 days
4	Wetlands	30 – 90 days

The BMPs employed in this project are proposed to be connected in a way to maximize the pretreatment of the water runoff at the upland areas of the River Oaks neighborhood in swales first, and then enter exfiltration trenches and bio-swales before entering the wetlands, where final treatment will include select soil additives to remove nutrients.


Legend
BCPA PARCELS
NAME
RIVER OAKS NEIGHBORHOOD
RIVER OAKS PRESERVE AREA
RIVER OAKS PRESERVE PARKING AREA
RIVER OAKS PRESERVE PARKING AREA
RIVER OAKS PRESERVE AREA
DAVIE BLVD
STHY 736
SW 12TH ST
SERVICE RD
SW 12TH CT
CITRUS ISLE
MANGO ISLE
AVOCADO ISLE
GUAVA ISLE
SW 15TH ST
MANDARIN ISLE
SW 16TH ST
TANGELO ISLE
SW 10TH AVE
SW 9TH TER
ORANGE ISLE
SW 17TH ST
SW 9TH AVE
SW 18TH ST
SW 18TH CT
SW 19TH ST
SW 20TH ST
SW 20TH CT
SW 21ST ST
SW 21ST CT
SW 22ND ST
SW 23RD ST
SW 23RD CT
SW 24TH ST
SW 24TH CT
SW 25TH ST
SW 26TH ST
SW 27TH ST
SW 27TH CT
COCONUT DR
SABAL TER
GINGER ST
LAUREL OAK CT
MARINA BLVD
W SR 84
SR84
W STHY 84
STHY 84
I95 RAMP
DAVIE BLVD RAMP
SR84 RAMP
E MARINA BAY DR
MARINA BAY DR E
375
750
1500
Feet


INTERSTATE 95 (S.R. 9)
PROPERTY LINE
SW 19TH AVENUE
SW 22nd STREET
SW 20nd STREET
SW 21st STREET
LEGEND
BOARDWALK
BRIDGE
PROPOSED POND WITH FILTER MARSH
NON EXEMPT TREES +18"
NON EXEMPT TREES
PRIVATE PROPERTY (NO WORK ON THIS AREA)
WETLAND FORESTED
WETLAND HERBACEOUS
TOE OF SLOPE
NOTES:
1 ALL TREES INSIDE THE POND AREA MUST BE REMOVED
2 CONTRACTOR MUST GRADE GROUND TO PROVIDE POSITIVE FLOW TOWARDS PROPOSED DRAINAGE STRUCTURE
3 ACCESS ROAD DESIGN WILL BE PROVIDED BY FDOT
FINAL PLANS
CITY OF FORT LAUDERDALE
PUBLIC WORKS DEPARTMENT
ENGINEERING & ARCHITECTURE
100 North Andrews Avenue, Fort Lauderdale, Florida 33301
PROJECT # 11419
RIVER OAKS PRESERVE
CONCEPTUAL STORM WATER FACILITIES
SITE PLAN
S.W.21stST-S.W.23rdCT/S.W.20thTER-19thAV
SHEET NO. 4
OF 13
TOTAL 14
CAD FILE: 11419-004-SITE
DRAWING FILE NO. 4-135-41



Site Plan
Riveroaks Stormwater Park
SW 19th Avenue & SW 21st Street
Fort Lauderdale, Florida

NTS

Exhibit 4

PROJECT 7

PROJECT NAME: Sod Based Crop Rotation for Jackson Blue Spring

PROJECT TYPE (Check One): ☐ Urban ☑ Agricultural ☐ Education Only ☐ OSTDS
☐ Other (describe)

PROJECT FUNDING REQUEST: $ 480,032 **MATCH COMMITMENT:** $ 326,000

PROJECT COST: $806,032

LEAD ORGANIZATION: Northwest Florida Water Management District

CONTACT INFORMATION:

Name: Angela Chelette
Street Address: 81 Water Management Drive
City, State, Zip: Havana, FL 32333
Tel: (850) 539-5999
Fax: (850) 539-2777
Email: angela.chelette@nwfwater.com

FINANCIAL COOPERATING PARTNERS: None

PROJECT LOCATION AND WATERSHED CHARACTERISTICS:
Geographic Location (city and county): Jackson Blue Spring watershed and adjacent groundwater contribution areas, Jackson County.
Size of Project Impact: ~140.58 square miles in Florida
Size of Area Being Treated: ~640 Acres (estimated four farms averaging 160 acres each)
Latitude (decimal degrees): to be determined
Longitude (decimal degrees): to be determined
Name of Impaired Water Body Affected: Jackson Blue Spring and Merritts Mill Pond
Water Body ID of Impaired Water Body Affected (WBID): 180A & 180Z
TMDL Status and Name: FDEP TMDL established January 2013, Apalachicola–Chipola Basin, Jackson Blue Spring and Merritts Mill Pond (WBIDs 180Z and 180A), Nutrients, January 2013
TMDL Impairment; indicate the parameters in the TMDL: nitrate nitrogen (NO3N)
Impairments To Be Addressed by Project: nitrate nitrogen (NO3N)

Does this project fall within the boundaries of a developing or adopted BMAP or within a Nine Element Watershed Plan approved by EPA. Check one of the following:

☐ Adopted BMAP ☑ Developing BMAP ☐ EPA Approved Watershed Plan

If any of the above are checked please complete the following:

BMAP or Watershed Plan Name: None. BMAP being developed

This project contributes to pollutant reductions specified in the BMAP or Watershed Plan.
☐ Yes ☑ No

LAND USE and STATUS:

Land Uses of the <u>Area Being Treated</u>
The area being treated is the area that is contributing runoff to the treatment system.

- = Empty cell/information to be inserted

Land Use ***(Do not alter – All must be filled out; do not add categories; place a 0 for no acres)***	**Acres**	**%**
Residential Low Density (1100)	-	-
Residential Medium Density (1200)	-	-
Residential High Density (1300)	-	-
Commercial and Services (1400)	-	-
Industrial (1500)	-	-
Extractive (1600)	-	-
Institutional (1700)	-	-
Recreational (1800)	-	-
Open Land (1900)	-	-
Agriculture (2000)	640	100
Upland Non-Forested (3000)	-	-
Upland Forests (4000)	-	-
Water (5000)	-	-
Wetlands (6000)	-	-
Barren Land (7000)	-	-
Transportation, Communication, and Utilities (8000)	-	-
Land Use Totals (Acreage and %)	**640**	**100%**

Land Ownership Status: (check one)

☐ Land necessary for the construction of treatment infrastructure has been acquired. Title is held by:

☐ Land necessary for the construction of treatment infrastructure is under a legal option to buy (please provide documentation of the option-to-buy and funding to execute the purchase).

☐ Land necessary for the construction of treatment infrastructure is under an easement which allows for the construction and access.

PROJECT OVERVIEW: Please provide information for each of the 5 items below; item 6 is optional. Please be very thorough when completing the information.

The Northwest Florida Water Management District (District) is proposing to provide cost-share reimbursement funding to promote adoption of Sod-Based Crop Rotation (SBR) by existing row-crop producers within the TMDL and BMAP areas of Jackson Blue Spring and Merritts Mill Pond. The District proposal would provide funding for up to four producers to convert up to 160 irrigated acres and implement the SBR through a complete four-year rotation cycle. Concurrently, to provide match funding, the District will increase funding for the University of Florida Institute of Food and Agricultural Sciences (IFAS) SBR grant to continue data collection to support SBR as a best management practice (BMP); to provide a more comprehensive and active outreach program; and to provide producer adoption assistance.

Scope of SBR Incentive Program: Each producer will be required to prepare, with the assistance of the IFAS outreach coordinator, a "Farm Plan" which will present the initial infrastructure needed (e.g. fencing, water troughs, handling pens, etc.) and their associated costs. The Plan will also present information on: the proposed layout; rotation of crops; cattle or no cattle; historic irrigation and nutrient use; potential irrigation and nutrient offset; and other relevant factors associated with a SBR farm. The "Farm Plan" will be reviewed and approved by IFAS program experts and the District prior to any approval of funding. Producers in the program will be required to allow demonstration tours of their enrolled property during the four year rotation cycle. Tours will be conducted by the District and IFAS SBR researchers for the benefit and education of other producers within the TMDL/BMAP area as well as other interested parties.

<u>The Proposed District funding will provide:</u>

Per acre cost-share of $340/acre for up to 160 acres for grass/cover crop seed, conversion to pasture, pasture establishment and other maintenance activities at a rate comparable to NRCS EQIP to take the property through the four years of the rotation cycle; and

Per foot cost-share of $1.10-$1.97/ft for needed perimeter & cross fencing, including gates if cattle are included in the Farm Plan; and

75 percent cost-share reimbursement on equipment specific to facilitation of cattle inclusion if cattle are included in the Farm Plan, including but not limited to: working pens (~$20,000 each), piping, troughs, chain harrows and weed wipers;

75 percent cost-share reimbursement on other necessary equipment such as strip till equipment (for planting winter graze if cattle are included), rollers, and no till drills (so producers can plant crops through the grass/cover crop when putting the property back into row-crop production).

The SBR is a four-year crop rotation program where a perennial grass is grown for the first 2-years (with or without cattle grazing) followed by a cotton crop the third year and a peanut crop the fourth year. Data collected as part of the UF/IFAS SBR development program indicates that the sod-based rotation farming system has the potential for reducing both irrigation water usage (by 60%) and nitrogen usage (by 50%) in agricultural lands while increasing crop yields (by 15 to 40%). Widespread adoption of SBR as a best management practice (BMP) could have significant benefits in reducing nutrient loading and, eventually, achieving the adopted TMDL standard.
Historic agricultural practices in the Jackson Blue Spring basin that included heavy use of nitrogen based fertilizers has created a subsurface source of nitrogen in the soil immediately above the Florida Aquifer System (FAS). Percolation of water from both rainfall and supplemental irrigation transports the nitrogen, in the form of nitrates, down into the groundwater. It will take many years to deplete this nitrogen source in the soil. It is likely that SBR will be one of the most effective tools to achieve water quality improvement within the groundwater contribution area while enhancing soil health and improving crop yields. Having the demonstration farm in Jackson County, coupled with a more active outreach program and cost-share funding, is expected to significantly contribute to local adoption of this BMP.

Effectiveness will be evaluated through reduction in water needs and nutrient application rates on the subject property during during the four years of the crop rotation cycle. Documentation of water use will be substantiated using rainfall records and water use pumping reports. Documentation of nitrogen application rates will be provided via receipts.

Project Funding and Timeline for Only the Grant and Committed Match Funded Portions
In the table below, provide the estimated funding amounts and timeline (in months) for each grant and committed match funded step in the project. Examples of typical descriptions have been provided but can be edited as needed.

Description	**Grant Funding**	**Match Funding**	**No. of months to complete task**
Design, Permitting	N/A (not eligible for grant funds)	N/A	Month 1 to Month 18
BMP Construction	$480,032	$70,000	Month 1 to Month 48
Education	$	$256,000	Month 1 to Month 48
Monitoring	$	$	Month 6 to Month 48
Reporting	$	$	Month 6 to Month 48

Total Number of Months for the Project: 48
The sum of the grant and match funded steps should equal the amounts provided on page 1.
$806,032

PROJECT 8

PROJECT NAME: DeSoto Stormwater Treatment Retrofit Project

PROJECT TYPE (Check One): **X** Urban ☐ Agricultural ☐ Education Only ☐ OSTDS ☐ Other (describe)

PROJECT FUNDING REQUEST: $560,500 **MATCH COMMITMENT:** $389,500

PROJECT COST: $950,000

LEAD ORGANIZATION: City of Satellite Beach

CONTACT INFORMATION:

NAME: Allen Potter
Street Address: 430 Cinnamon Drive
City, State, Zip: Satellite Beach, FL 32937
Tel: 321-777-2309
Fax: 321-777-2241
Email: apotter@satellitebeach.org

FINANCIAL COOPERATING PARTNERS: None

PROJECT LOCATION AND WATERSHED CHARACTERISTICS:
Geographic Location (city and county): Satellite Beach, Brevard County
Size of Project Impact: 6+ acres
Size of Area Being Treated: 293+ acres (*See map at Attachment 1*)
Latitude (decimal degrees): 28.1646°
Longitude (decimal degrees): -80.6023°
Name of Impaired Water Body Affected: Banana River Lagoon
Water Body ID of Impaired Water Body Affected (WBID): 3057A
TMDL Status and Name: Active, Banana River Lagoon
TMDL Impairment; indicate the parameters in the TMDL: Nitrogen, Phosphorus
Impairments To Be Addressed by Project: Nitrogen, Phosphorus

LAND USE and STATUS:

Land Use ***(Do not alter – All must be filled out; do not add categories; place a 0 for no acres)***	**Acres**	**%**
Residential Low Density (1100)	273.57	93.37
Residential Medium Density (1200)	1.69	0.58
Residential High Density (1300)	0	0
Commercial and Services (1400)	1.84	0.63
Industrial (1500)	0	0
Extractive (1600)	0	0
Institutional (1700)	0	0
Recreational (1800)	15.90	5.43
Open Land (1900)	0	0
Agriculture (2000)	0	0
Upland Non-Forested (3000)	0	0
Upland Forests (4000)	0	0
Water (5000)	0	0
Wetlands (6000)	0	0
Barren Land (7000)	0	0
Transportation, Communication, and Utilities (8000)	0	0
Land Use Totals (Acreage and %)	**293**	**100%**

Land Ownership Status: (check one)

X Land necessary for the construction of treatment infrastructure has been acquired. Title is held by: City of Satellite Beach

☐ Land necessary for the construction of treatment infrastructure is under a legal option to buy (please provide documentation of the option-to-buy and funding to execute the purchase).

☐ Land necessary for the construction of treatment infrastructure is under an easement which allows for the construction and access.

PROJECT OVERVIEW: Please provide information for each of the 5 items below; item 6 is optional. Please be very thorough when completing the information.

This retrofit project will construct a three-stage treatment train immediately upstream from discharge into receiving waters of an existing multi-stage treatment train treating surface runoff from a 293-acre urban watershed comprised almost exclusively of low-density, single-family, detached homes built in the 1960s and 1970s. The three BMPs to be added are: 1) a 1.54+ acre retention pond with a 10-day detention capacity, 2) a connection to and expansion of the irrigation system serving an adjacent recreation complex now drawing water from an artesian well to create a stormwater harvesting system drawing water from the pond, and 3) a 400-foot long biosorption activated media (BAM) wall between the pond and the receiving water body to intercept and treat groundwater baseflow from the pond to the water body.

The project includes installation of at least four permanent educational displays around the pond explaining the treatment train's purpose and effectiveness. A similar education component, on a smaller scale in a previous stormwater management project, has been successful. As in that instance, the new signage will be adjacent to a paved recreational trail (not paid for by this grant) integrated into the project design. The existing trail is used daily by a large number of residents taking a daily constitutional walk or bike ride.

The BMPs in this retrofit project will act in tandem to remove nitrogen and phosphorus from urban residential surface runoff immediately prior to that water entering the receiving water body. After having already been treated using exfiltration and baffle boxes, the 10-day detention period in the pond will reduce nitrogen by 461 pounds per year and phosphorus by 95.7 pounds per year. Water will simultaneously be withdrawn from the pond on a regular basis and spread over approximately 10 acres of turf and landscaping for irrigation. This will remove an additional 961 pounds of nitrogen and 59.6 pounds of phosphorus annually. Any runoff remaining in the pond will infiltrate into the surficial aquifer and flow towards the nearby receiving water body. During that passage, the water will pass through a biosorption activated media (BAM) wall, which will remove additional nitrogen and phosphorus.

The Banana River Lagoon has established Total Maximum Daily Loads (TMDLs) and is in the first five-year increment of implementing a Basin Management Action Plan to reduce loadings of nitrogen and phosphorus with the goal of restoring seagrass beds damaged by urban development in the river's watershed. The retention pond and stormwater harvesting will reduce nitrogen loading by approximately 13% of the City's portion of the nitrogen TMDL and approximately 7% of the phosphorus TMDL..

The BAM wall is a technology for which removal efficiencies are not established. Limited available technical literature, based on simulations of vertical flow of highway stormwater runoff into a swale underlain by Bold&Gold (developed at the University of Central Florida), cites TN removal efficiencies greater than 40% and TP removal efficiencies greater than 70% after passage through less than three feet of BAM. Literature reporting work using a mixture of sawdust or wood chips and sand claim nitrate removal efficiencies of 60% to 97%, with one study documenting 92% efficiency after a 5-foot thick wall had been in use 14 years. As such, this project can be expected to exceed the estimated treatment train efficiency by an undetermined amount. Pre- and post-monitoring associated with this project will contribute field data that will be useful in quantifying the efficiency of this technology in a wall configuration useful for treating groundwater base flow. Since BAM technology is evolving, the composition of the medium used, how much is used, and how it is configured will best be determined using the latest knowledge available during engineering design if, and after, a contract is awarded by FDEP.

The success of this project will be evaluated using pre- and post-monitoring of discharge volume and associated nitrogen and phosphorus loads.

Pre-construction, discharge volume will be monitored at or near the point where the DeSoto stormwater system discharges into the receiving water body adjacent to the project site. Stormwater systems in the City all have a significant, persistent base flow. Therefore, both events and extended periods between events will need to be monitored to obtain a reasonably accurate estimate of total discharge from the system.

Post-construction discharge volume will be measured at the structure where excess water flows from the pond to the receiving water body. Experience with nearby ponds constructed 12 years ago indicates the amount of water measured at this point will be minimal. A large majority of the water flows from the ponds by way of infiltration into the surficial aquifer through the highly porous sandy soils on the barrier island.

Post-construction, the volume entering the pond will be measured. The difference between this value and the post-construction discharge from the pond will provide an estimate of the amount of water leaving the system through stormwater harvesting, infiltration into the surficial aquifer, and evapotranspiration. The volume of water used in irrigation can be monitored, and evapotranspiration estimated using literature values.

During pre- and post-construction monitoring periods grab samples will be taken on a periodic basis and during a series of suitable rain events. These will be analyzed for total nitrogen and total phosphorus concentrations, as well as for their sodium concentration. Sodium has served locally as a reasonable means to estimate the significant volume contribution of nitrogen-bearing water from the artesian Upper Floridan Aquifer to the surficial aquifer.

Pre-construction grab samples will be taken at or near the point where discharge volume is measured. Post-construction, they will be taken at the input to the pond and in the pond. They will also be taken from a series of shallow wells on the upstream and the downstream sides of the BAM wall.

Mass balance analysis of the volume and concentration values will be used to estimate the loads of nitrogen and phosphorus entering the treatment train and leaving it by way of natural processes in the pond, stormwater harvesting, and passage as groundwater through the BAM wall.

This retrofit project is part of a larger, long-term project that has spanned 12 years and cost $2,092,012 so far. Prior projects include:
Project Timeline and Task Funding:

Task #	Description	Grant Funding	Match Funding	No. of months to complete task
1	Design, Permitting	N/A (not eligible for grant funds)	$120,000	Month 1 to Month 14
2	BMP Construction	$560,500	$234,500	Month 15 to Month 27
3	Education	$0	$5,000	Month 28 to Month 33
4	Monitoring	$0	$20,000	Month 28 to Month 33
5	Reporting	$0	$10,000	Month 34 to Month 36
	TOTAL FOR TASKS	$560,500	$389,500	

Total Number of Months for the Project: 36

POLLUTANT LOAD REDUCTIONS

Pollutant Load Screening Model (PLSM). Given the complexity of existing BMPs installed in the watershed (*See BMP flow diagram at **Attachment 2***), the model was run to determine total TN and TP discharge as though no stormwater treatment BMPs had been installed (2,470 pounds TN and 355.8 pounds TP annually). Reduction credits that have been awarded by FDEP for existing BMPs (935 pounds TN and 197.6 pounds TP annually) were subtracted from the no-treatment values to obtain current output values (1,535 pounds TN and 158.2 pounds TP annually). These values were used as input values from which to estimate load reductions and efficiencies for the current tailwater retrofit project using protocols and values in FDEP's *ENVIRONMENTAL RESOURCE PERMIT STORMWATER QUALITY APPLICANT'S HANDBOOK DESIGN REQUIREMENTS FOR STORMWATER TREATMENT SYSTEMS IN FLORIDA (March 2010 DRAFT).*

Pollutant Load Reductions

BMP #1 Name: Wet Detention (t_d=10)

BMPs Installed	TSS lbs/yr	TP lbs/yr	TN lbs/yr	Sediment lbs/yr	BOD lbs/yr	Other lbs/yr	Other lbs/yr
Watershed	-	**356.8**	**2,470.4**	-	-	-	-
Existing BMPs		**197.6**	**935.0**				
Pre-Project	-	**159.2**	**1,535.4**	-	-	-	-
Post-Project	-	**63.5**	**1,074**	-	-	-	-
Load Reduction	-	**95.7**	**461**	-	-	-	-
% Reduction	-	**60**	**30**	-	-	-	-

BMP #2 Name: Stormwater Harvesting

BMPs Installed	TSS lbs/yr	TP lbs/yr	TN lbs/yr	Sediment lbs/yr	BOD lbs/yr	Other lbs/yr	Other lbs/yr
Pre-Project	-	**63.5**	**1,074**	-	-	-	-
Post-Project	-	**3.9**	**113**	-	-	-	-
Load Reduction	-	**59.6**	**961**	-	-	-	-
% Reduction	-	**93.9**	**89.5**	-	-	-	-

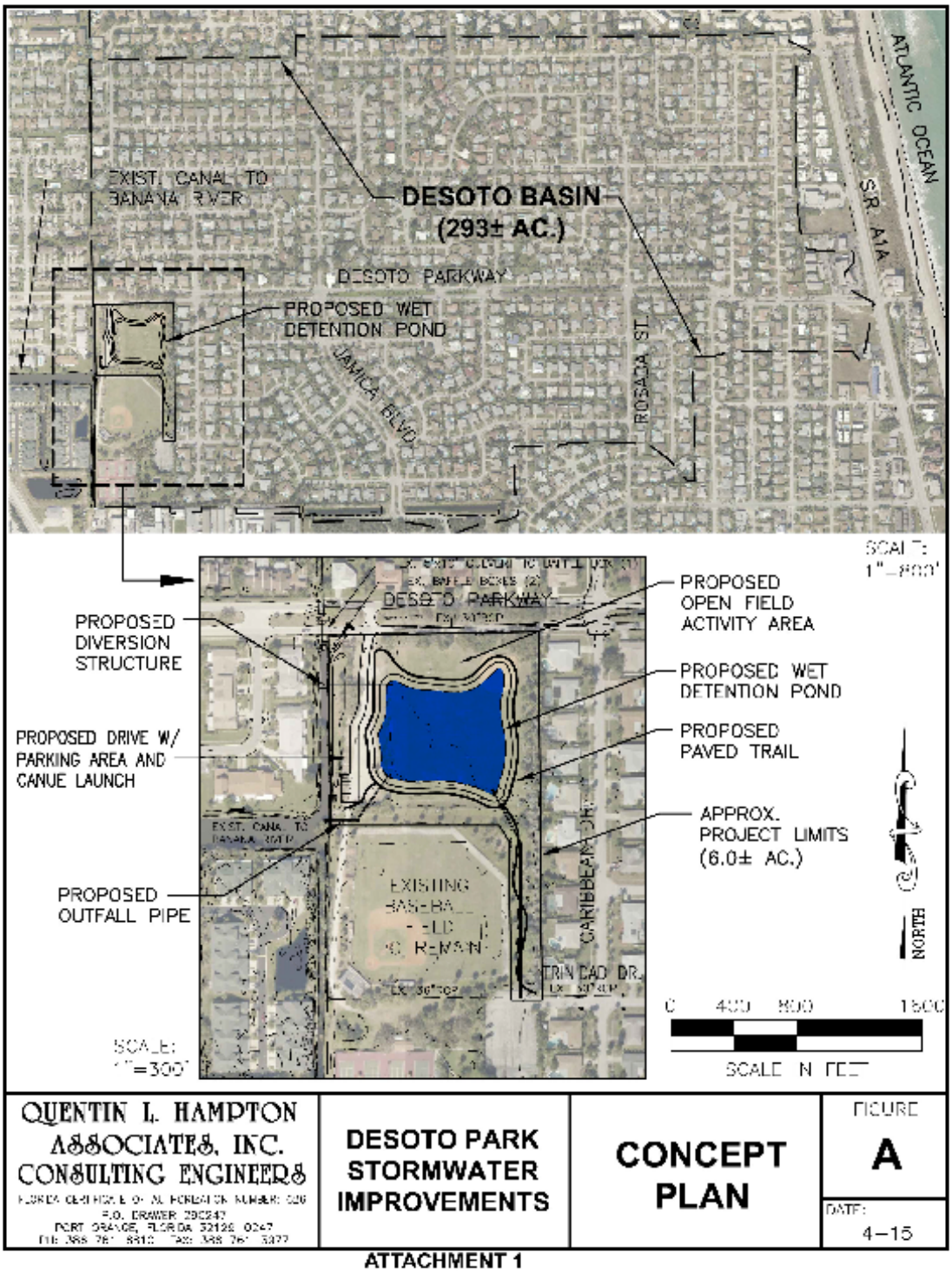
TOTALS

BMPs Installed	TSS lbs/yr	TP lbs/yr	TN lbs/yr	Sediment lbs/yr	BOD lbs/yr	Other lbs/yr	Other lbs/yr
Pre-Project	-	**159.2**	**1,535.4**	-	-	-	-
Post-Project	-	**3.9**	**113**	-	-	-	-
Load Reduction	-	**155.3**	**1,422.4**	-	-	-	-
% Reduction	-	**97.5**	**92.6**	-	-	-	-

Additional Comments:
The project is innovative on two fronts. It involves a treatment train retrofit at the downstream end of an existing treatment train, and it involves a new and promising treatment technology.

First, the project will construct a **three-stage treatment train** (retention pond, stormwater harvesting, and BAM wall). These elements are being retrofit **at the downstream end of an existing treatment train already including five components** (swales, second generation baffle boxes, exfiltration, off-line retention ponds, and stormwater harvesting). The result will be discharge from a 293-acre watershed passing through an eight-element treatment train prior to discharge into the receiving water body.

Second, the project includes a biosorption activated media (BAM) wall as a final, polishing BMP to treat groundwater that otherwise would flow directly from the pond to the adjacent receiving water body. BAM walls are sufficiently new that there are no accepted protocols for assigning efficiencies to them. The only literature found on use of Bold&Gold (developed at the University of Central Florida) cites experiments simulating downward flow of stormwater runoff through BAM underlying a simulated roadside swale. There are multiple literature reports on use of sawdust or wood chips and sand in a wall configuration to intercept groundwater from agricultural operations. This project proposes to use BAM in a wall configuration where it intercepts groundwater seepage from a retention pond prior to discharge into open water. Whereas BAM configured to treat stormwater infiltrating vertically into the soil and groundwater must underlie the entire surface through which that water percolates, requiring large amounts of active material and much excavation, a vertical BAM wall will treat groundwater from a large area as that water passes through a wall of BAM with a modest footprint.



QUENTIN L. HAMPTON ASSOCIATES, INC. CONSULTING ENGINEERS FLORIDA CERTIFICATE OF AUTHORIZATION NUMBER: 028 P.O. DRAWER 280247 PORT ORANGE, FLORIDA 32128-0247 PH: 386 761 8810 FAX: 386 761 8877	**DESOTO PARK STORMWATER IMPROVEMENTS**	**CONCEPT PLAN**	FIGURE **A** DATE: 4-15

ATTACHMENT 1

PROJECT 9

PROJECT NAME: Istokpoga Marsh Watershed Improvement District Phase 2 Water Quality Improvement Project

PROJECT TYPE (Check One): ☐ Urban ☑ Agricultural ☐ Education Only ☐ OSTDS
☐ Other (describe)

PROJECT FUNDING REQUEST: $450,000 Match COMMITMENT: $300,000

PROJECT COST: $750,000

LEAD ORGANIZATION: Istokpoga Marsh Watershed Improvement District

CONTACT information:
Name: Clell Ford
Street Address: 4344 George Blvd.
City, State, Zip: Sebring, FL, 33875
Tel: 863-402-6545
Fax: 863-402-6899
Email: cford@southflorida.edu

FINANCIAL COOPERATING PARTNERS: South Florida Water Management District (SFWMD), Florida Department of Agriculture and Consumer Services (FDACS), Istokpoga Marsh Watershed Improvement District (IMWID)

PROJECT LOCATION AND WATERSHED CHARACTERISTICS:
Geographic Location (city and county): Lake Placid, Highlands County
Size of Project Impact: 401 acres
Size of Area Being Treated: +/- 4000 acres of 19,420 acres of IMWID
Latitude (decimal degrees): 27.284339
Longitude (decimal degrees): -81.266037
Name of Impaired Water Body Affected: Lake Okeechobee
Water Body ID of Impaired Water Body Affected (WBID): 3212A, 3212B, 3212C, 3212D, 3212E, 3212F, 3212G
TMDL Status and Name: Adopted Total Phosphorus
TMDL Impairment; indicate the parameters in the TMDL: Total phosphorus
Impairments To Be Addressed by Project: total phosphorus

LAND USE and STATUS:

Land Uses of the Area Being Treated
The area being treated is the area that is contributing runoff to the treatment system.

- = Empty cell/information to be inserted

Land Use *(Do not alter – All must be filled out; do not add categories; place a 0 for no acres)*	Acres	%
Residential Low Density (1100)	392	2
Residential Medium Density (1200)	81	0
Residential High Density (1300)	0	0
Commercial and Services (1400)	0	0
Industrial (1500)	0	0
Extractive (1600)	0	0
Institutional (1700)	0	0
Recreational (1800)	0	0
Open Land (1900)	1	0
Agriculture (2000)	15,677	81
Upland Non-Forested (3000)	130	1
Upland Forests (4000)	634	3
Water (5000)	182	1
Wetlands (6000)	2,109	11
Barren Land (7000)	206	1
Transportation, Communication, and Utilities (8000)	0	0
Land Use Totals (Acreage and %)	19,420	100%

Land Ownership Status: (check one)

☑ Land necessary for the construction of treatment infrastructure has been acquired. Title is held by: Istokpoga Marsh Watershed Improvement District

☐ Land necessary for the construction of treatment infrastructure is under a legal option to buy (please provide documentation of the option-to-buy and funding to execute the purchase).

☐ Land necessary for the construction of treatment infrastructure is under an easement which allows for the construction and access.

PROJECT OVERVIEW:
The project will capture excess stormwater that in turn, when available and needed, will be used before other surface water sources for farm irrigation. This will be acomplished through containment of stormwater runoff and gravity discharge back into the IMWID canal system as part of a Dispersed Water Management (DWM) stormwater recycling system. This phase of the project includes the design and construction of an Above-Ground Impoundment (AGI) and the installation of a pump station to lift water into the Phase 2 AGI as well as the design and installation of gravity control structures to allow the release of stormwater back into the IMWID canal system.

Grant and match funding will be used to construct an agricultural, fit for service, AGI on 401 acres owned by IMWID. The stored water will be released to project canals to provide irrigation water for farmers in IMWID. An easement has been placed on all properties in the IMWID which compels the agricultural producer to preferentially use water from the IMWID AGIs over water from other sources if it is available.

Objective:

Specific objectives and environmental benefits of this project are:

Reduce the volume of stormwater discharged from the IMWID through AGIs

Reduce the load of TP discharged from the IMWID to the Harney Pond Canal, and ultimately to Lake Okeechobee.

Recycle stormwater for irrigation by capturing excess surface water runoff and storing it within the AGIs for later use. The stored stormwater will be used before other surface water sources when available and where needed. This further reduces the load of TP discharged from the IMWID by reducing irrigation inflows from Lake Istokpoga which bring with it a quantity of TP.

Effectiveness:

Current monthly monitoring at multiple stations in IMWID will continue to document total phosphorus concentrations entering IMWID from Lake Istokpoga, within project canals and at the discharge points to the Harney Pond Canal. The stations used for this monitoring have been established for several years. This current evaluation of total phosphorus levels in surface water was deemed sufficient to document the effectiveness of this project.

The original analysis of the IMWID identified that 1200 acres of AGIs may provide a reduction in average annual discharge volume of approximately 60% from implementing the Dispersed Water Management and stormwater recycle system. It may also remove approximately 70% of the TP currently discharged from the IMWID to the Harney Pond Canal and subsequently to Lake Okeechobee. Further analysis, or pilot studies, may be necessary to determine if 1200 acres of AGIs or a combination of AGIs and water quality features (e.g., chemical treatment) will provide the most effective means of meeting the water quality and quantity goals of this project .
Overall, since 2009, approximately $6.4 million has been spent by SFWMD and FDEP on acquisition of 708 acres of land in the IMWID for the purpose of constructing two Agricultural AGIs. The Phase 1 AGI has received grants totaling $4 million from FDEP and $2 million from SFWMD, as well as $180,000 in expenditures by IMWID. The Phase 2 AGI has received a grant from FDACS of $300,000, with additional funding expected from SFWMD. The total committed or expended to date is $12.88 million.
Project Funding and Timeline for Only the Grant and Committed Match Funded Portions
In the table below, provide the estimated funding amounts and timeline (in months) for each grant and committed match funded step in the project. Examples of typical descriptions have been provided but can be edited as needed.

Description	Grant Funding	Match Funding	No. of months to complete task
Design, Permitting	N/A (not eligible for grant funds)	$	Month 1 to Month 6
BMP Construction	$450,000	$300,000	Month 7 to Month 19
Education	$0	$0	Month # to Month #

Description	Grant Funding	Match Funding	No. of months to complete task
Monitoring	$0	$0	Month 1 to Month #33
Reporting	$0	$0	Month 1 to Month 24

Total Number of Months for the Project:24

POLLUTANT LOAD REDUCTIONS:

Name of the model used for determining the load reductions: WAM

BMP #1 Name: Agricultural Above Ground Impoundment

BMPs Installed	TSS lbs/yr	TP lbs/yr	TN lbs/yr	Sediment lbs/yr	BOD lbs/yr	Other lbs/yr	Other lbs/yr
EMC*	-	-	-	-	-	-	-
Pre-Project	-	12,080	-	-	-	-	-
Post-Project	-	7,671-	-	-	-	-	-
Load Reduction	-	4,409-	-	-	-	-	-
% Reduction	-	36	-	-	-	-	-

PROJECT 10

PROJECT NAME: BAM Water Quality Pilot Project

PROJECT TYPE (Check One): ☑ Urban ☐ Agricultural ☐ Education Only ☐ OSTDS ☐ Other (describe)

PROJECT FUNDING REQUEST: $438,000.00 **MATCH COMMITMENT:** $312,000.00

PROJECT COST: $750,000.00

LEAD ORGANIZATION: Florida Department of Transportation (FDOT)

CONTACT INFORMATION:

NAME: RICK RENNA, P.E.
Street Address: 605 Suwannee Street, MS32
City, State, Zip: Tallahassee, FL 32399
Tel: 850-414-4351
Fax: 850-414-5261
Email: Rick.Renna@dot.state.fl.us

FINANCIAL COOPERATING PARTNERS: Florida Department of Transportation (FDOT), Suwannee River Water Management District (SRWMD)

PROJECT LOCATION AND WATERSHED CHARACTERISTICS:
Geographic Location (city and county): Columbia County
Size of Project Impact: ~3 acres
Size of Area Being Treated: ~40 acres of surface water and a portion of groundwater contribution to the Ichetucknee River springshed
Latitude (decimal degrees): 30.1129 N
Longitude (decimal degrees): -82.6573 W
Name of Impaired Water Body Affected: Ichetucknee River and associated springs, Cannon Creek
Water Body ID of Impaired Water Body Affected (WBID): 3519 (Ichetucknee river and associated springs) and 3520 (Cannon Creek)
TMDL Status and Name: Adopted; Suwannee River, Santa Fe River, and associated springs
TMDL Impairment; indicate the parameters in the TMDL: nutrients (nitrate)
Impairments to Be Addressed by Project: nutrients (nitrate)

LAND USE and STATUS:

Land Use ***(Do not alter – All must be filled out; do not add categories; place a 0 for no acres)***	**Acres**	**%**
Residential Low Density (1100)	-	-

Land Use ***(Do not alter – All must be filled out; do not add categories; place a 0 for no acres)***	**Acres**	**%**
Residential Medium Density (1200)	-	-
Residential High Density (1300)	-	-
Commercial and Services (1400)	-	-
Industrial (1500)	-	-
Extractive (1600)	-	-
Institutional (1700)	-	-
Recreational (1800)	-	-
Open Land (1900)	-	-
Agriculture (2000)	-	-
Upland Non-Forested (3000)	-	-
Upland Forests (4000)	-	-
Water (5000)	-	-
Wetlands (6000)	-	-
Barren Land (7000)	-	-
Transportation, Communication, and Utilities (8000)	40	100
Land Use Totals (Acreage and %)	**-**	**100%**

Land Ownership Status: (check one)

☑ Land necessary for the construction of treatment infrastructure has been acquired. Title is held by: **State of Florida D.O.T.**

☐ Land necessary for the construction of treatment infrastructure is under a legal option to buy (please provide documentation of the option-to-buy and funding to execute the purchase).

☐ Land necessary for the construction of treatment infrastructure is under an easement which allows for the construction and access.

PROJECT OVERVIEW:

The goal of this study is to demonstrate ability to expand the utility of existing stormwater treatment infrastructure while still meeting the originally permitted functionality through the use of additional treatment technologies, such as Biosorption Activated Media (BAM), to reduce nitrate concentrations. The University of Central Florida (UCF) team will:
1. Demonstrate the performance of BAM in treating groundwater enriched with nitrate through field-scale measurements in a stormwater retention basin,
2. Develop a design approach to predict the pollutant removal rates of BAM when receiving groundwater inflows,
3. Recommend construction, operating, and maintenance strategies of multi-functional (surface water and groundwater treating) BAM at the field scale, and
4. Provide tools to more generally estimate the cost of retrofitting existing ponds with advanced treatment functionality and provide educational resources for wide-scale adoption of this strategy.

Soil samples will be obtained from the study site to determine permeability, clay fraction, and associated characteristics. A six-inch diameter production well will be drilled up gradient of the pond and two, four-inch diameter pipes will be used to pump water through the BAM using a drain field methodology. The BAM layer will consist of a mixture (by volume) of tire crumb (to increase sorption capacity), silt and clay (to increase soil moisture retention), sand (to promote sufficient infiltration), coconut coir, and other materials, which will be applied to develop an innovative best management practice (BMP) through the biofilm effect of nitrification and denitrification process (Hossain et al., 2010).

The 2.7-acre bottom of the pond will be excavated, the host soil will be amended with a sandy clay mixture and BAM will be installed. The BAM will be covered with local top soil and turf to return the pond to its permitted elevation. To ensure this design will be effective, a recharge well may be incorporated to expedite return of the treated water to the aquifer. A monitoring well will be drilled down gradient of the pond to sample the water as it exits the BAM.

The nitrate-removal effects of BAM have been proven in stormwater applications, but it has not yet been proven in treatment of groundwater with elevated nitrate levels. This is a new, innovative application of an existing BMP that will allow for treatment and replenishment of groundwater.

FDOT will do the following outreach focusing on research results and implementing our design approach:
Field day with FDOT and regulatory agencies, highlighting the project design and results;
A statewide webinar on the project results;
Presentation at the annual statewide design expo in Orlando;
Inclusion in the FDOT training course on stormwater facility design; and
Inclusion of this treatment strategy in the BMPTRAINS model.

Hossain et al. (2009) describes the application of functionalized soil amendments for mitigating groundwater quality impacts of stormwater infiltration basins, with emphasis on reducing NO_3^- leaching. The BAM material will treat surface water runoff, a proven nonpoint source pollution reduction. Groundwater with elevated nitrate levels will also be piped through the BAM material, an innovative method of combating nonpoint source pollution within the Upper Floridan aquifer. The candidate site for this project is located in Columbia County within the Ichetucknee springshed near the junction of Cannon Creek and Clayhole Creek. This junction is upstream of Dyal and Black Sinks, which have been shown through dye trace studies to be connected to Mission Spring, Blue Hole (Jug) Spring, and Devil's Eye Spring (Butt and Murphy, 2003). All three of these springs are listed as impaired for nutrient enrichment (algal mats) in the TMDL report for nutrient and dissolved oxygen for the Suwannee River and Sante Fe River (Hallas and Magley, 2008). The Ichetucknee River and associated springs are also included in the BMAP for the Santa Fe River Basin (FDEP 2012). Treating groundwater in this location will intercept high levels of nutrients and return treated water to the aquifer, benefitting the surrounding impaired watershed.

Water quality data will be collected every other week by a suite of lysimeters (suction probes) and soil moisture sensors with depth to capture the vertical flow and moisture patterns during the infiltration stage through the percolation layers of BAM (O'Reilly et al., 2012a,b,c). Four aspects of the project will be monitored: surface water entering the basin, surface water exiting the BAM, groundwater entering the BAM, and groundwater exiting the BAM (post-treatment). Grab samples of unfiltered water and time integrated samples of BAM-filtered water will be collected to analyze the nitrogen species. Within the nitrogen species, nitrate-nitrogen (NO3-N), nitrite-nitrogen (NO2-N), ammonia-nitrogen (NH3-N), *Total Kjehldahl nitrogen* (*TKN*), and organically bonded nitrogen will be analyzed by a certified laboratory.

This project is an evaluation of an existing nitrate removal medium proven effective in removing nitrates from surfacewater. Once proven successful at removing nitrate from groundwater, the next phase will be to implement larger-scale versions of this project in other areas where groundwater has been found to have elevated nitrate levels. Costs will be comparable to the budget of this project, with the potential increase in construction costs balanced by the decrease in contractual costs.

PROJECT TIMELINE AND TASK FUNDING

Description	Grant Funding	Match Funding	No. of months to complete task
Task 1: Site Investigation and Soil Sampling	$48,000	$32,000	Month 1 to Month 3
Task 2: Design and Permitting	N/A (not eligible for grant funds)	$20,000	Month 2 to Month 4
Task 3: Construction	$300,000	$200,000	Month 3 to Month 6
Task 4: Water Quality Monitoring	$45,000	$30,000	Month 6 to Month 9
Task 5: Assessment of Data, Final Reporting, and Education	$45,000	$30,000	Month 8 to Month 12
Total Cost	$438,000	$312,000	-

Total Number of Months for the Project: 12

POLLUTANT LOAD REDUCTIONS

BMP #1 Name: BAM Filtration – Groundwater Load Reduction

BMPs Installed	TSS lbs/yr	TP lbs/yr	TN lbs/yr	Sediment lbs/yr	BOD lbs/yr	Other lbs/yr	Other lbs/yr
EMC*	-	-	**1.5**	-	-	-	-
Pre-Project	-	-	**103**	-	-	-	-
Post-Project	-	-	**41**	-	-	-	-
Load Reduction	-	-	**62**	-	-	-	-
% Reduction	-	-	**60**	-	-	-	-

BMP #2 Name: BAM Filtration – Surface Water Load Reduction

BMPs Installed	TSS lbs/yr	TP lbs/yr	TN lbs/yr	Sediment lbs/yr	BOD lbs/yr	Other lbs/yr	Other lbs/yr
EMC*	-	-	**0.62**	-	-	-	-
Pre-Project	-	-	**81.2**	-	-	-	-
Post-Project	-	-	**26.5**	-	-	-	-
Load Reduction	-	-	**54.7**	-	-	-	-
% Reduction	-	-	**67**	-	-	-	-

TOTALS

BMPs Installed	TSS lbs/yr	TP lbs/yr	TN lbs/yr	Sediment lbs/yr	BOD lbs/yr	Other lbs/yr	Other lbs/yr
Pre-Project	-	-	**184.2**	-	-	-	-
Post-Project	-	-	**67.5**	-	-	-	-
Load Reduction	-	-	**116.7**	-	-	-	-
% Reduction	-	-	**63.4**	-	-	-	-

PROJECT 11

PROJECT NAME: Brevard County Baffle Box Upgrades – Phase II

PROJECT TYPE (Check One): ☑ Urban ☐ Agricultural ☐ Education Only ☐ OSTDS ☐ Other (describe)

PROJECT FUNDING REQUEST: $ 139,000 **MATCH COMMITMENT:** $ 94,180

PROJECT COST: $233,180

LEAD ORGANIZATION: Brevard County Natural Resources Management Department

CONTACT INFORMATION:

NAME: CAROLINA ALVAREZ
Street Address: 2725 Judge Fran Jamieson Way, Suite A-219
City, State, Zip: Viera, Florida 32940
Tel: 633-2014 ext. 56472
Fax: (321) 633-2168
Email: carolina.alvarez@brevardcounty.us

FINANCIAL COOPERATING PARTNERS: Brevard County

PROJECT LOCATION AND WATERSHED CHARACTERISTICS:
Geographic Location (city and county): Brevard County, Florida
Size of Project Impact: Zero acres – Internally retrofitting/upgrading existing baffle boxes through existing manhole cover.
Size of Area Being Treated: 233.31 acres
Latitude and Longitude (decimal degrees):

Baffle Box	***DISTRICT***	***Y_LAT***	***X_LONG***
West Avenue (Port St. John)	1	28.474851	-80.767916
Shoreview Lane	5	28.108509	-80.584919
Franklin 621	5	28.098962	-80.581132
Granada West	2	28.338618	-80.699749
Micco Park	3	27.850106	-80.497688
Oak Street 2003	3	28.057924	-80.558261
Puesta del Sol	1	28.122026	-80.589527
Sunrise Village	1	28.481541	-80.769836
Shoreview Circle	5	28.095706	-80.578573
Sunset Park North	5	28.107806	-80.584743

Name of Impaired Water Body Affected: North Indian River Lagoon BMAP Project Zone B; Central Indian River Lagoon BMAP
Water Body ID of Impaired Water Body Affected (WBID): North Indian River Lagoon 2963D, 2963B, 2963C; Central Indian River Lagoon 3129A, 2963A;
TMDL Status and Name: TMDL Adopted; *Nutrient and Dissolved Oxygen TMDL's in the Indian River Lagoon and Banana River Lagoon*
TMDL Impairment; indicate the parameters in the TMDL: Seagrass losses, attributed to high concentrations of Total Nitrogen (TN) and Total Phosphorus (TP).
Impairments To Be Addressed by Project: Total Nitrogen (TN) and Total Phosphorus (TP).

LAND USE and STATUS:

Land Use ***(Do not alter – All must be filled out; do not add categories; place a 0 for no acres)***	**Acres**	**%**
Residential Low Density (1100)	6.39	2.74%
Residential Medium Density (1200)	138.98	59.57%
Residential High Density (1300)	16.74	7.17%
Commercial and Services (1400)	10.63	4.56%
Industrial (1500)	0.00	0.00%
Extractive (1600)	0.00	0.00%
Institutional (1700)	18.21	7.80%
Recreational (1800)	3.82	1.64%
Open Land (1900)	0.00	0.00%
Agriculture (2000)	0.01	0.00%
Upland Non-Forested (3000)	3.32	1.42%
Upland Forests (4000)	23.75	10.18%
Water (5000)	0.22	0.09%
Wetlands (6000)	0.00	0.00%
Barren Land (7000)	4.80	2.06%
Transportation, Communication, and Utilities (8000)	6.43	2.76%
Land Use Totals (Acreage and %)	**233.31**	**100%**

Land Ownership Status: (check one)

☑ Land necessary for the construction of treatment infrastructure has been acquired. Title is held by: **All baffle boxes are within a Brevard County Right-of-Way or easement.**

☐ Land necessary for the construction of treatment infrastructure is under a legal option to buy (please provide documentation of the option-to-buy and funding to execute the purchase).

☐ Land necessary for the construction of treatment infrastructure is under an easement which allows for the construction and access.

PROJECT OVERVIEW:

Background

Brevard County has aggressively undertaken a series of stormwater projects to reduce pollution to the Indian River Lagoon (IRL) and meet the requirements of the adopted Total Maximum Daily Load (TMDL) and the Basin Management Action Plans (BMAP) for the IRL and Banana River Lagoon. In the 1990's, Brevard County installed many first generation baffle boxes as retrofit projects to reduce pollutant loads from drainage pipes discharging directly into the IRL. Research by the Florida Department of Environmental Protection (FDEP) (Smith and England, 2010) showed that first general baffle boxes, while effective in reducing nutrients from stormwater runoff, can be significantly improved by installing screens into the existing baffle boxes that collect debris, trash and organic material. These improvements were demonstrated to provide a 19.1% reduction in total nitrogen (TN) and 15.5% reduction in total phosphorus (TP) by removing organic debris from the water column.

In 2012, Brevard County identified seventeen (17) first generation baffle boxes that would benefit water quality by retrofitting the baffle boxes with installation of the new trash screens. In 2014, the FDEP awarded the County a grant in the amount of $117,000 to upgrade the identified boxes. That project is ongoing with completion expected in 2015.

Proposed Project

The County has identified an additional ten (10) first generation baffle boxes that will improve water quality with the same upgrades (installation of trash screens within the baffle boxes to collect debris, trash and organic material). These ten (10) boxes were chosen because they are located in areas that will improve water quality, the screens can be readily installed above normal water levels inside the boxes, and site access to the boxes is easily available (i.e. baffle boxes are owned and maintained by Brevard County and are located within County Rights of Way or easements). Retrofitting the baffle boxes is a multistep process consisting of: a) removing sediments, water and trash from the existing baffle box chambers with a vacuum truck and, if necessary, installing temporary inflatable pipe plugs; b) removal of concrete tops, if needed, to access the interior of the box; c) removal of existing vertical screens; d) measurement of interior dimensions; e) custom fabrication of Type 2 screens; f) installation of the new screens, and; g) re-installation of any removed concrete tops.

Another objective of this project is to educate the public about stormwater pollution and will be by hosting three (3) project information/rain barrel workshops. One (1) workshop will be held in each region of the County for local residents in the neighborhoods where the baffle box are upgraded. Brevard County has been offering rain barrel workshops for several years now and they are very well attended. In order to increase attendance, participation, and impact at a public information workshop about the project, the Grantee will offer materials and instructions for assembling rain barrels. The Grantee will give a PowerPoint presentation on the project and on source control before attendees assemble their rain barrels. The public will leave the workshop informed about the project, about how they can personally reduce water pollution, and armed with a rain barrel to install at their home or business to reduce stormwater runoff and capture this freshwater supply to decrease their irrigation demand and cost. ***"LIVE BLUE"*** branding materials may also be distributed at the workshop to increase awareness and serve as a personal ***"BLUE"*** behavior reminder.

In addition, a public service announcement video featuring the benefits of rain barrels will be produced, linked to the ***"LIVE BLUE"*** website, and shown at Movies-in-the Park events sponsored by the Brevard County Parks and Recreation Department. The project will also be posted on the County's website.

In 2010, the Final Report on Baffle Box Effectiveness Monitoring Project published by Smith and England under FDEP Contract S0236 clearly demonstrated that Type 2 baffle boxes are more effective than Type 1 baffle boxes for removing TN and TP from stormwater runoff. The improved effectiveness is attributed to the horizontal screens used in the Type 2 boxes. The study demonstrated that the addition of the screens provide a 19.1% reduction in total nitrogen (TN) and 15.5% reduction in total phosphorus (TP) by removing debris, trash and organic debris from the water column. The County is currently upgrading seventeen (17) baffle boxes from Type 1 to Type 2 with grant funding from the FDEP in the amount of $117,000.

This grant proposal will upgrade an additional ten (10) baffle boxes from Type 1 to Type 2, which will provide a 19.1% reduction in total nitrogen (TN) and 15.5% reduction in total phosphorus (TP) in ten (10) more outfalls by removing debris, trash and organic debris from the water column.

The County contracted quarterly clean out operations of baffle boxes, sediments and other stormwater infrastructure to vendors. Removed volumes will be measured and reported. It is anticipated that debris, TSS, TN, TP, trash and other solids

entering the Lagoon and other water bodies will be substantially reduced by the installation of the screens and the routine professional cleaning.

Monitoring will consist of documentation of sediments collected from each chamber of each baffle box, as well as organic debris collected from trash screens, at two (2) six (6)-month intervals after construction. Sediments will be analyzed for nutrients as required for Florida Stormwater Association's street sweeping database development.

A Final Report will be submitted. The Final Report is intended to capture the outcome and results of the selected project, including all tasks included in this project.

PROJECT TIMELINE AND TASK FUNDING

Description	Grant Funding	Match Funding	No. of months to complete task
Construction Bid Preparation and Award	N/A (not eligible for grant funds)	$3,134	Month#1 to Month #12
BMP Construction	$139,000	$12,472	Month #1 to Month #12
Education	$0	$64,750	Month #1 to Month #24
Monitoring	$0	$8,824	Month #10 to Month #22
Reporting	$0	$5,000	Month #24 to Month #28
Task Total	$139,000 (59.6%)	$94,180 (40.4%)	
Project Total	$233,180		

Total Number of Months for the Project: 28

POLLUTANT LOAD REDUCTIONS

The Spreadsheet Tool for the Estimation of Pollutant Loads (STEPL) model was used for pollutant load calculations.

BMPs Installed	TSS lbs/yr	TP lbs/yr	TN lbs/yr	Sediment lbs/yr	BOD lbs/yr	Other lbs/yr	Other lbs/yr
EMC*	-	-	-	-	-	-	-
Pre-Project	-	364.93	2,358.69	-	-	-	-
Post-Project	-	308.37	1,908.18	-	-	-	-
Load Reduction	-	56.56	450.51	-	-	-	-
% Reduction	-	15%	19%	-	-	-	-

TOTALS

BMPs Installed	TSS lbs/yr	TP lbs/yr	TN lbs/yr	Sediment lbs/yr	BOD lbs/yr	Other lbs/yr	Other lbs/yr
Pre-Project	-	364.93	2,358.69	-	-	-	-
Post-Project	-	308.37	1,908.18	-	-	-	-
Load Reduction	-	56.56	450.51	-	-	-	-
% Reduction	-	15%	19%	-	-	-	-

Additional EMCs
Use this table if there is more than one EMC used per parameter. Add rows as needed.
- = Empty cell/information to be completed

BMP #1

Land Use	**TSS**	**TP**	**TN**	**Sediment**	**BOD**	**Other**	**Other**
Low-Density Residential[1]	23.0	0.191	1.61	N/A	4.7	N/A	N/A
Single-Family	37.5	0.327	2.07	N/A	7.9	N/A	N/A
Multi-Family	77.8	0.520	2.32	N/A	11.3	N/A	N/A
Low-Intensity Commercial	57.5	0.179	1.18	N/A	7.7	N/A	N/A
High-Intensity Commercial	69.7	0.345	2.40	N/A	11.3	N/A	N/A
Light Industrial	60.0	0.260	1.20	N/A	7.6	N/A	N/A
Highway	37.3	0.220	1.64	N/A	5.2	N/A	N/A
<u>Agricultural</u> Pasture Citrus Row Crops General Agriculture[2]	 94.3 15.5 19.8 43.2	 0.616 0.183 0.593 0.431	 3.47 2.24 2.65 2.79	N/A	 5.1 2.55 -- 3.8	N/A	N/A
Undeveloped / Rangeland / Forest	8.4	0.055	1.15	N/A	1.4	N/A	N/A
Mining / Extractive	60.0[3]	0.15	1.18	N/A	7.6[3]	N/A	N/A

Brevard County Natural Resources
Watershed Management Program
2725 Judge Fran Jamieson Way
Viera, Florida 32940
(321)633-2014
Fax: (321)633-2029

Baffle Box Upgrades
Phase 2
Franklyn 621

MAP IS NOT TO SCALE
Date: 7-13-2015

Figure 1

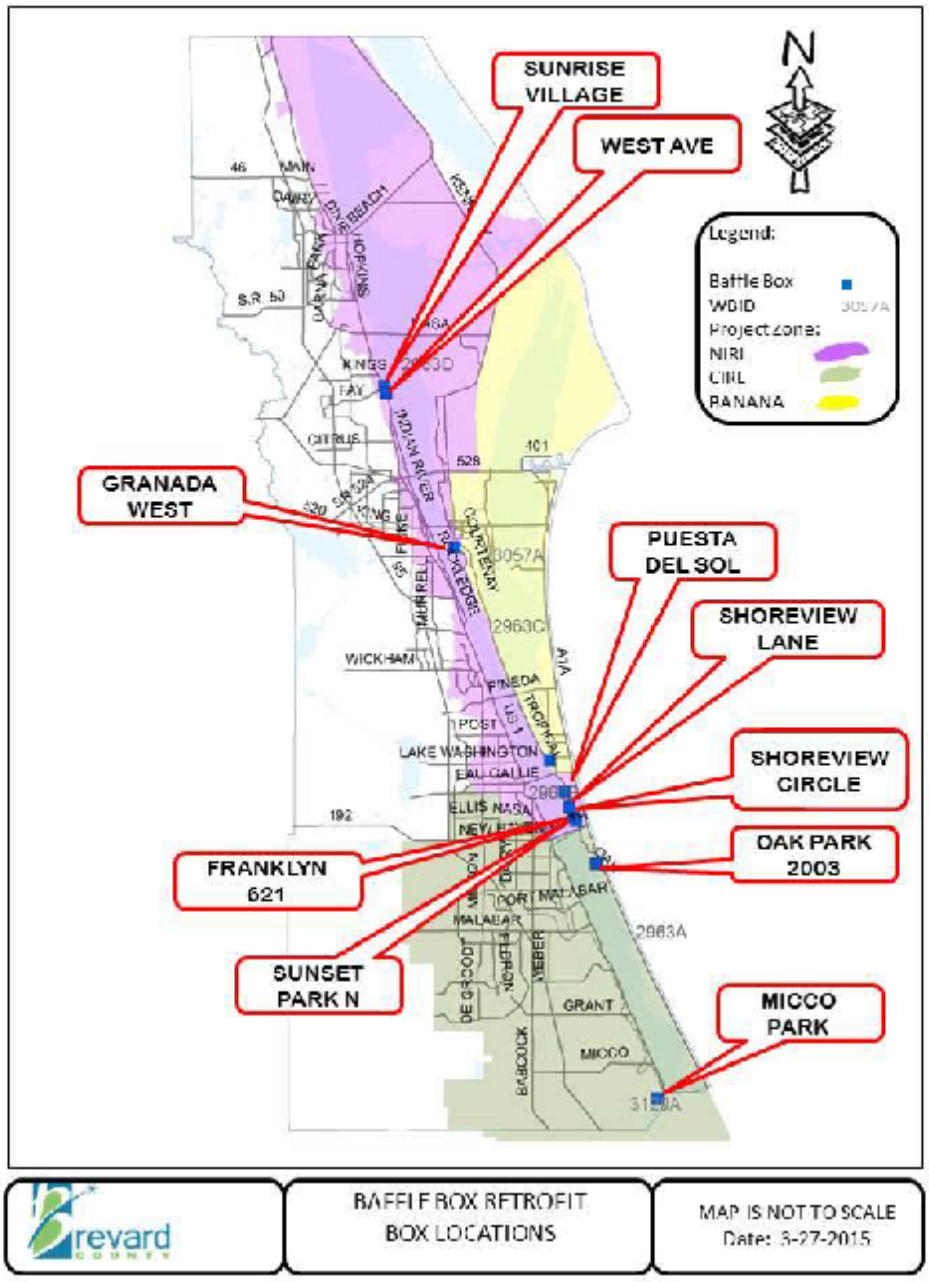
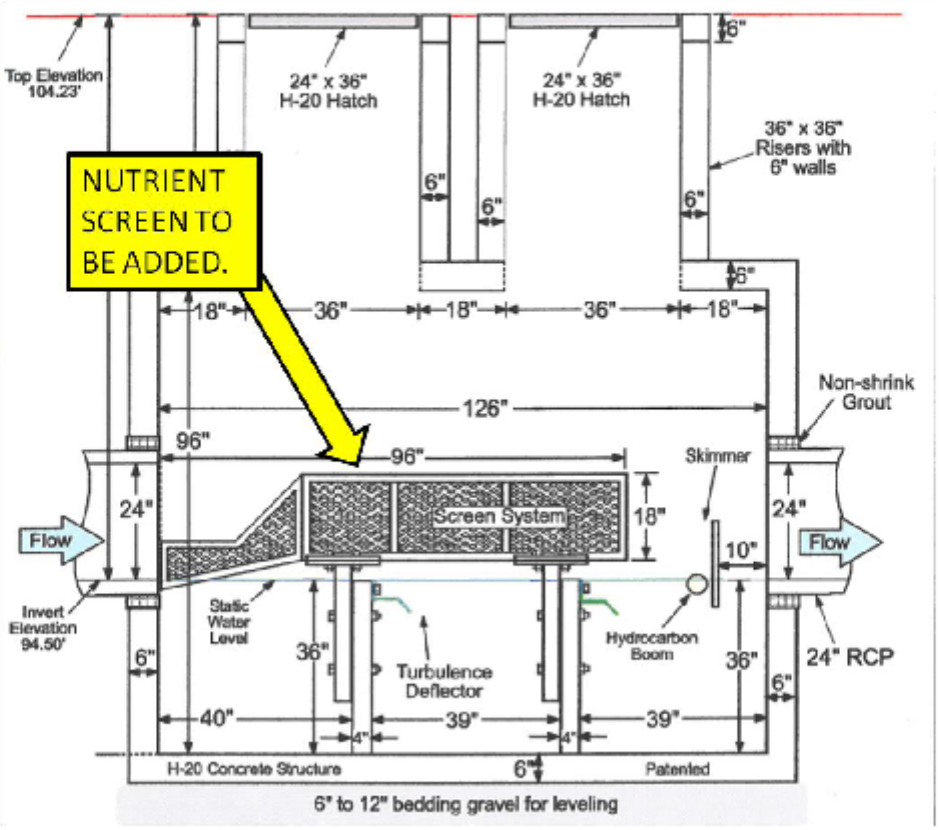

SUNRISE VILLAGE
WEST AVE
GRANADA WEST
PUESTA DEL SOL
SHOREVIEW LANE
SHOREVIEW CIRCLE
OAK PARK 2003
FRANKLYN 621
SUNSET PARK N
MICCO PARK
N
Legend:
Battle Box
WBID
Project Zone:
NIRL
CIRL
BANANA
revard COUNTY
BAFFLE BOX RETROFIT BOX LOCATIONS
MAP IS NOT TO SCALE
Date: 3-27-2015

Figure 2
Addition of Screen to Convert Baffle Box from Type 1 to Type 2



PROJECT 12a

PROJECT NAME: Lake Ruth Area Septic Tank Removal

PROJECT TYPE (Check One): ☑ Urban ☐ Agricultural ☐ Education Only ☑ OSTDS ☐ Other (describe)

PROJECT FUNDING REQUEST: $ 210,240 **MATCH COMMITMENT:** $ 210,240

PROJECT COST: $ 420,480

LEAD ORGANIZATION: City of Longwood

CONTACT INFORMATION:

NAME: JON C. WILLIAMS
Street Address: 175 West Warren Avenue
City, State, Zip: Longwood FL 32750
Tel: 407-260-3445
Fax: 407-260-3419
Email: jwilliams@longwoodfl.org

FINANCIAL COOPERATING PARTNERS: City of Longwood

PROJECT LOCATION AND WATERSHED CHARACTERISTICS:
Geographic Location (city and county): City of Longwood; Seminole County Florida
Size of Project Impact: 21 Acres
Size of Area Being Treated: 21 Acres
Latitude (decimal degrees): 28.6900793
Longitude (decimal degrees): -81.1319797
Name of Impaired Water Body Affected: Soldiers Creek
Water Body ID of Impaired Water Body Affected (WBID): 2986
TMDL Status and Name: Soldier Creek Reach - State Adopted TMDL and EPA Approved
TMDL Impairment; indicate the parameters in the TMDL: Fecal Coliform
Impairments To Be Addressed by Project: Fecal Coliform

LAND USE and STATUS:

Land Use ***(Do not alter – All must be filled out; do not add categories; place a 0 for no acres)***	**Acres**	**%**
Residential Low Density (1100)	-	-
Residential Medium Density (1200)	20.75	100
Residential High Density (1300)	-	-
Commercial and Services (1400)	-	-
Industrial (1500)	-	-
Extractive (1600)	-	-
Institutional (1700)	-	-
Recreational (1800)	-	-
Open Land (1900)	-	-
Agriculture (2000)	-	-
Upland Non-Forested (3000)	-	-
Upland Forests (4000)	-	-
Water (5000)		
Wetlands (6000)	-	-
Barren Land (7000)	-	-
Transportation, Communication, and Utilities (8000)	-	-
Land Use Totals (Acreage and %)	**20.75**	**100%**

Land Ownership Status: (check one)

☑ Land necessary for the construction of treatment infrastructure has been acquired. Title is held by: **City of Longwood**

☐ Land necessary for the construction of treatment infrastructure is under a legal option to buy (please provide documentation of the option-to-buy and funding to execute the purchase).

☐ Land necessary for the construction of treatment infrastructure is under an easement which allows for the construction and access.

PROJECT OVERVIEW: Please provide information for each of the 5 items below; item 6 is optional. Please be very thorough when completing the information.

This project proposes to eliminate 73 septic tanks and activate a central sewer system to connect 73 existing single family residences in the Lake Ruth Area, located within close proximity to Lake Ruth. In this area there are approximately 3.4 residences per acre, with an estimated three people living in each home. Most were built in the early to mid 1970's. When these subdivisions were built, the developer was required to install sanitary sewer lines until such time as the City of Longwood had treatment capacity. The homes were built with septic tanks since at the time there was no capacity available. The average size lots in these subdivisions are .29 acre. There also was no centralized retention installed at the time of building these subdivisions. The project includes abandonment of the septic tanks and connection to the City of Longwood sewer system. The project will also include installing two lift stations to activate the existing dry sewer lines installed with the subdivision. The wastewater will be pumped to Seminole County for treatment.

Project Description:
The total project will involve the preparation of all design and specification drawing for the installation of Lift Stations and force main in the area outlined on the attached maps of the Lake Ruth Area, the abandonment of all septic tanks (in some cases more than one); the connection of all residential lots to the existing sewer main;; As-built drawings reviewed and submitted to FDEP and St. Johns River Water Management District.

Task 1: Installation of Lift Stations and force mains to activate the existing gravity sewer system.
Description: The selected General Contractor will install the Lift Stations and Force Mains in accordance with the approved construction documents; repair all conflict areas with existing utilities;
Task 1 is not funded with 319 grant or match.

Task 2: Abandonment of septic tanks and connection to sewer main.
Description: The selected Septic Tank Contractor will abandon septic tanks on site, pump-out septic tanks; break lids and bottoms; fill tanks with clean sand; install cleanouts; and run new sewer line to the sewer stub outs.

The project is located in the City of Longwood, Seminole County in the boundary limits Ronald Reagan Boulevard to the West, SR 434 to the South, and the Railroad to the East. The project will prevent existing septic tank discharges from going into the adjacent Lake Ruth. Lake Ruth is within the Soldiers Creek Basin which has a TMDL established for Fecal Coliform. The eventual destination of this water is Lake Jesup WBID 2981. Lake Jesup has an adopted BMAP which calls for reductions in Fecal Coliform, TN and P as referenced in the excerpts below from the following publications:

Final Basin Management Action Plan for the Implementation of Total Maximum Daily Loads Adopted by the Florida Department of Environmental Protection in the Lake Jesup Basin - April 2010
Nutrient and Unionized Ammonia TMDLs for Lake Jesup, WBIDs 2981 and 2981A - April 2006
Fecal Coliform TMDL for Soldier Creek Reach (WBID 2986)

The removal of the existing septic tanks is expected to reduce significantly the amount of nutrients and fecal coliform being contributed to the water bodies. Based on the formulas presented in the above referenced documents the expected removal of TN will be 2,263 pounds per year, TP will be 365 pounds per year and Fecal Coliform will be 5.8E+10. This will benefit the watershed and achieve reductions of the total TMDL of 2.5% TP and 10% TN in this BMAP area.

Effectiveness Monitoring
This area is currently being monitored for all the parameters at the Lake Ruth impaired water station ID #21FLGW39833. Monitoring will continue and focus on the validation of the expected results.

PROJECT TIMELINE AND TASK FUNDING

Description	Grant Funding	Match Funding	No. of months to complete task
Design, Permitting	N/A (not eligible for grant funds)	Paid Separately	Month 1 to Month #6
Task 2 BMP Construction	$210,240	$210,240	Month #8 to Month #18
Education	$	$	Month # to Month #
Monitoring	$	$	Month # to Month #
Reporting	$	$	Month # to Month #

Total Number of Months for the Project: 18

POLLUTANT LOAD REDUCTIONS

Name of the model used for determining the load reductions: This model uses runoff coefficients, soil types, and land uses to estimate TN and TP loading. These loading estimates were then input into the Bathtub Eutrophication Model. The loadings that achieved the target TSI were used to calculate the required reductions in TP and TN in the TMDL.

BMP #1 Name: Septic Tank Removal

BMPs Installed	TSS lbs/yr	TP lbs/yr	TN lbs/yr	Sediment lbs/yr	BOD lbs/yr	Other lbs/yr	Other lbs/yr
EMC*	-	**4.18**	**30.8**	-	-	-	-
Pre-Project	-	**305**	**2248**	-	-	-	-
Post-Project	-	**0**	**0**	-	-	-	-
Load Reduction	-	**305**	**2248**	-	-	-	-
% Reduction	-	**100**	**100**	-	-	-	-

TOTALS

BMPs Installed	TSS lbs/yr	TP lbs/yr	TN lbs/yr	Sediment lbs/yr	BOD lbs/yr	Other lbs/yr	Other lbs/yr
Pre-Project	-	**305**	**2248**	-	-	-	-
Post-Project	-	**0**	**0**	-	-	-	-
Load Reduction	-	**305**	**2248**	-	-	-	-
% Reduction	-	**100**	**100**	-	-	-	-

Additional EMCs

BMP #1

Land Use	TSS	TP	TN	Sediment	BOD	Other	Other
MDR	-	**4.18**	**30.8**	-	-	-	-
-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-

The following publications were used to prepare this application and the supporting documentation.

Final Basin Management Action Plan for the Implementation of Total Maximum Daily Loads Adopted by the Florida Department of Environmental Protection in the Lake Jesup Basin - April 2010
Nutrient and Unionized Ammonia TMDLs for Lake Jesup, WBIDs 2981 and 2981A - April 2006
Fecal Coliform TMDL for Gee Creek (WBID 2994A), Soldier Creek Reach (WBID 2986), and Smith Canal (WBID 2962) – September 2009

PROJECT 12b

PROJECT NAME: South Longwood Septic Tank Removal

PROJECT TYPE (Check One): ☑ Urban ☐ Agricultural ☐ Education Only ☑ OSTDS ☐ Other (describe)

PROJECT FUNDING REQUEST: $ 958,053.72 **MATCH COMMITMENT:** $ 867,380
PROJECT COST: $ 1,825,433.72

LEAD ORGANIZATION: City of Longwood

CONTACT INFORMATION:

NAME: JON C. WILLIAMS
Street Address: 175 West Warren Avenue
City, State, Zip: Longwood FL 32750
Tel: 407-260-3445
Fax: 407-260-3419
Email: jwilliams@longwoodfl.org

FINANCIAL COOPERATING PARTNERS: City of Longwood

PROJECT LOCATION AND WATERSHED CHARACTERISTICS:
Geographic Location (city and county): City of Longwood; Seminole County Florida
Size of Project Impact: 161 Acres
Size of Area Being Treated: 161 Acres
Latitude (decimal degrees): 28.694341
Longitude (decimal degrees): -81.337688
Name of Impaired Water Body Affected: Lake Fairy, Fairy Lake Outlet, Wildmere Lake, Soldiers Creek
Water Body ID of Impaired Water Body Affected (WBID): 2994C, 2994W, 2994G, 2986
TMDL Status and Name: Soldier Creek Reach and Lake Fairy - State Adopted TMDL and EPA Approved
TMDL Impairment; indicate the parameters in the TMDL: Fecal Coliform and TSI
Impairments To Be Addressed by Project: Fecal Coliform and TSI

LAND USE and STATUS:

Land Uses of the <u>Area Being Treated</u>
The area being treated is the area that is contributing runoff to the treatment system.

- = Empty cell/information to be inserted

Land Use ***(Do not alter – All must be filled out; do not add categories; place a 0 for no acres)***	**Acres**	**%**
Residential Low Density (1100)	-	-
Residential Medium Density (1200)	121	75
Residential High Density (1300)	-	-
Commercial and Services (1400)	-	-
Industrial (1500)	-	-
Extractive (1600)	-	-
Institutional (1700)	-	-
Recreational (1800)	-	-
Open Land (1900)	-	-
Agriculture (2000)	-	-
Upland Non-Forested (3000)	-	-
Upland Forests (4000)	-	-
Water (5000)	40	25
Wetlands (6000)	-	-
Barren Land (7000)	-	-
Transportation, Communication, and Utilities (8000)	-	-
Land Use Totals (Acreage and %)	**161**	**100%**

Land Ownership Status: (check one)
☑ Land necessary for the construction of treatment infrastructure has been acquired. Title is held by: **City of Longwood**
☐ Land necessary for the construction of treatment infrastructure is under a legal option to buy (please provide documentation of the option-to-buy and funding to execute the purchase).
☐ Land necessary for the construction of treatment infrastructure is under an easement which allows for the construction and access.

PROJECT OVERVIEW: Please provide information for each of the 5 items below; item 6 is optional. Please be very thorough when completing the information.

This project proposes to eliminate **290 septic tanks** and construct a central sewer system to connect 290 existing single family residences in the South Longwood area, located within close proximity to three lakes with three residences per acre, with an estimated three people living in each home. Most were built in the early to mid1960's. The average size lots in these subdivisions are .34 acre. There also was no centralized retention installed at the time of building these subdivisions. The project includes abandonment of the septic tanks and connection to the City of Longwood sewer system. The project will also include upgrading an existing lift station and force main. The wastewater will be pumped to Seminole County for treatment.

Project Description:
The total project will involve the preparation of all design and specification drawing for the installation of sewer lines in the area outlined on the attached maps of South Longwood, the abandonment of all septic tanks (in some cases more than one); the upgrading of an existing lift station and the installation of an additional sewer force main. The connection of all residential lots to the new sewer main; and all roadway repaired; As-built drawings reviewed and submitted to FDEP and St. Johns River Water Management District.

Task 1: Installation of sewer lines to the existing gravity sewer system.
Description: The selected General Contractor will install the sewer system in accordance with the approved construction documents; repair all conflict areas with existing utilities; and stub out sewer lines to all buildable lots; and repair all roadways to the specifications of the City of Longwood.
Deliverables: Copy of bid tab, copy of contract, contractor's schedule of values (AIA form) and representative photos of completed work.
Timeline for Completion: August 2017

Task 2: Installation of Lift Station Upgrades and Force Main (Approx. 1600 LF) to existing Force Main
Description: The selected General Contractor will install the sewer lift station upgrades in accordance with the approved construction documents; install the sewer force main from the lift station to the point of connection on an existing larger force main to the North.
Deliverables: Copy of bid tab, copy of contract, contractor's schedule of values (AIA form) and representative photos of completed work. Signed and sealed copies of the As-builts drawing of Lift Station, force main; a letter from the engineer of record accepting the improvements; the FDEP signoff of the project.
Timeline for Completion: August 2017

***Tasks 1 and 2 are not funded with 319 grant or match.**

Task 3: Abandonment of septic tanks and connection to sewer main.
Description: The selected Septic Tank Contractor will abandon septic tanks on site, pump-out septic tanks; break lids and bottoms; fill tanks with clean sand; install cleanouts; and run new sewer line to the sewer stub outs.

The project is located in the City of Longwood, Seminole County in the boundary limits Ronald Reagan Boulevard to the West, SR 434 to the North, Wildmere Avenue to the South and East Street to the East. The project will prevent existing septic tank discharges from going into the three adjacent lakes in the area, Lake Wildmere, Lake Jane and Little Lake Wildmere. Lake Wildmere and Lake Jane drain to Lake Fairy which has a WBID of 2994C. Lake Fairy and the two contributing lakes exist within the Gees Creek watershed but a portion of the project area adjacent to Little Lake Wildmere is within the Soldiers Creek Basin which has a TMDL established for Fecal Coliform. In any event the eventual destination of this water is Lake Jesup WBID 2981. Lake Jesup has an adopted BMAP which calls for reductions in Fecal Coliform, TN and P as referenced in the excerpts below from the following publications:

Final Basin Management Action Plan for the Implementation of Total Maximum Daily Loads Adopted by the Florida Department of Environmental Protection in the Lake Jesup Basin - April 2010
Nutrient and Unionized Ammonia TMDLs for Lake Jesup, WBIDs 2981 and 2981A - April 2006
Fecal Coliform TMDL for Gee Creek (WBID 2994A), Soldier Creek Reach (WBID 2986), and Smith Canal (WBID 2962) – September 2009

The removal of the existing septic tanks is expected to reduce significantly the amount of nutrients and fecal coliform being contributed to the water bodies. Based on the formulas presented in the above referenced documents the expected removal of TN will be 7,403 pounds per year, TP will be 1003 pounds per year and Fecal Coliform will be 8.2E+9. This will benefit the watershed and achieve reductions of the total TMDL of 2.4% TP and 1.35% TN in this BMAP area.

Effectiveness Monitoring:

This area is currently being monitored for all the parameters at the Fairy Lake Outfall Canal. Monitoring will continue and focus on the validation of the expected results.

PROJECT TIMELINE AND TASK FUNDING

Description	Grant Funding	Match Funding	No. of months to complete task
Design, Permitting	N/A (not eligible for grant funds)	Paid Separately	Month 1 to Month #6
Task 3 BMP Construction	$958,053.72	$867,380	Month #8 to Month #24
Education	$	$	Month # to Month #
Monitoring	$	$	Month # to Month #
Reporting	$	$	Month # to Month #

Total Number of Months for the Project: 16

PART II – ESTIMATED POLLUTANT LOAD REDUCTIONS

Name of the model used for determining the load reductions: **This model uses runoff coefficients, soil types, and land uses to estimate TN and TP loading. These loading estimates were then input into the Bathtub Eutrophication Model. The loadings that achieved the target TSI were used to calculate the required reductions in TP and TN in the TMDL.**

Pollutant Load Reductions

BMP #1 Name: Septic Tank Removal

BMPs Installed	TSS lbs/yr	TP lbs/yr	TN lbs/yr	Sediment lbs/yr	BOD lbs/yr	Other lbs/yr	Other lbs/yr
EMC*	-	**4.18**	**30.8**	-	-	-	-
Pre-Project	-	**1003**	**7403**	-	-	-	-
Post-Project	-	**0**	**0**	-	-	-	-
Load Reduction	-	**1003**	**7403**	-	-	-	-
% Reduction	-	**100**	**100**	-	-	-	-

TOTALS

BMPs Installed	TSS lbs/yr	TP lbs/yr	TN lbs/yr	Sediment lbs/yr	BOD lbs/yr	Other lbs/yr	Other lbs/yr
Pre-Project	-	**1003**	**7403**	-	-	-	-
Post-Project	-	**0**	**0**	-	-	-	-
Load Reduction	-	**1003**	**7403**	-	-	-	-
% Reduction	-	**100**	**100**	-	-	-	-

PROJECT 13

PROJECT NAME: C-43 Water Quality Treatment & Testing Project (C-43 WQTTP)– Phase I

PROJECT TYPE (Check One): ☐Urban ☐Agricultural ☐Education Only ☐OSTDS
☑ Other (describe) Water Quality Demonstration Project

PROJECT FUNDING REQUEST: $208,000

MATCH COMMITMENT: $228,000

PROJECT COST: $436,000

LEAD ORGANIZATION: South Florida Water Management District (SFWMD)

CONTACT INFORMATION:

NAME: KEVIN CARTER
Street Address: 3301 Gun Club Road
City, State, Zip: West Palm Beach, FL 33406
Tel: 561-682-6949
Email: kecarter@sfwmd.gov

FINANCIAL COOPERATING PARTNERS: Not applicable

PROJECT LOCATION AND WATERSHED CHARACTERISTICS:
Geographic Location (city and county): The C-43 WQTTP - Phase I is located in the East Caloosahatchee Sub-watershed, Unincorporated Glades County, along the south side of the C-43 Canal just upstream of the S-78 structure (see Attachments I and II).
Size of Project Impact: The C-43 WQTTP will be constructed in multiple phases. Phase I, the subject of this application, will be approximately one (1) acre or less in size. All phases of the project, when completed, will take at least 1,335 acres.
Size of Area Being Treated: The C-43 WQTTP - Phase I will pull a modest amount of water [approximately ±1 gallon per minute (gpm), or 0.00223 cubic feet per second (cfs)] from the Caloosahatchee River (C-43 Canal) for the demonstrations. The C-43 Canal is one of Lake Okeechobee's main discharge canals which, in addition to carrying direct discharges from the lake, it also carries runoff originating from approximately 246,240 acres of the East Caloosahatchee Sub-Watershed and the S-4 Basin.
Latitude (decimal degrees): 26°46'37" N
Longitude (decimal degrees): 81°17'15" W
Name of Impaired Water Body Affected: The subject of this work plan will yield information necessary for future phases including the optimal design and operation of a full treatment facility. Future phases of the project could affect multiple impaired water bodies. The project is located within the Long Hammock Creek Basin, which is an impaired tributary to the Caloosahatchee River. The Caloosahatchee River forms the north border of project site's property and is also impaired. Further west of the property and downstream of the Caloosahatchee River is the Caloosahatchee River Estuary, which is impaired. As water may flow east in the Caloosahatchee River depending on hydrologic conditions, the project also is in the impaired Lake Okeechobee watershed.
Water Body ID of Impaired Water Body Affected (WBID): Long Hammock Creek (3237B), Caloosahatchee River (3235B 3237A), Caloosahatchee Estuary (WBID 3240 A through C), and Lake Okeechobee (3212A, 3212B, 3212C, 3212D, 3212E, 3212F, 3212G,
3212H, and 3212I). Please refer to the water body identification maps along the Caloosahatchee River (Attachments III and IV).
TMDL Status and Name: The Florida Department of Environmental Protection (FDEP) adopted the Caloosahatchee Estuary Total Maximum Daily Load (TMDL) in 2009, and its watershed modeled for the TMDL includes the upstream Caloosahatchee River and Long Hammock, which also have their own waterbody-specific TMDLs being developed by the FDEP. The U.S. Environmental Protection Agency (EPA) has finalized the TMDLs for Lake Hicpochee (WBID 3237C) and the East Caloosahatchee sub-watershed (WBID 3237A). The Lake Okeechobee TMDL covers the 9 WBIDs listed above and was adopted in 2001.

TMDL Impairment; indicate the parameters in the TMDL: Primarily nutrients [total nitrogen (TN) and/or total phosphorus (TP)] and dissolved oxygen (DO).
Impairments To Be Addressed by Project: The project primarily addresses TN load reduction through optimizing the removal of TN through wetland-based features. These features will also reduce TP and total suspended solids (TSS) loads. Overall, DO should also be addressed from a nutrient loading perspective.
LAND USE and STATUS:

Land Uses within the <u>Area Being Treated</u>: The C-43 WQTTPP - Phase I will be located at the eastern edge of the East Caloosahatchee Sub-watershed and will be withdrawing approximately ±1 gpm (0.00223 cfs) from the C-43 Canal (also known as the Caloosahatchee River). Approximately 1,700 gpm (3.79 cfs) will be withdrawn when all phases of the project are constructed. These are relatively small flow rates when compared to the C-43 flows which, for the period of record between 1981 and 2011, had a maximum flow of 8,724 cfs at the S-78 structure (Knight, 2012). The C-43 Canal at the project site conveys water from the East Caloosahatchee and S-4 sub-watersheds, for which the land use breakdown is provided below.

Land Use (SFMWD 2009 Dataset) ***(Do not alter – All must be filled out; do not add categories; place a 0 for no acres)***	**Acres**	**%**
Residential Low Density (1100)	4,299	1.7%
Residential Medium Density (1200)	1,978	0.8%
Residential High Density (1300)	109	0.0%
Commercial and Services (1400)	684	0.3%
Industrial (1500)	788	0.3%
Extractive (1600)	765	0.3%
Institutional (1700)	490	0.2%
Recreational (1800)	339	0.1%
Open Land (1900)	2,124	0.9%
Agriculture (2000)	168,831	68.6%
Upland Non-Forested (3000)	6,328	2.6%
Upland Forests (4000)	20,812	8.5%
Water (5000)	3,546	1.4%
Wetlands (6000)	30,752	12.5%
Barren Land (7000)	2,498	1.0%
Transportation, Communication, and Utilities (8000)	1,895	0.8%
Land Use Totals (Acreage and %)	**246,238**	**100%**

The C-43 Canal also conveys flows from Lake Okeechobee, which receives runoff from a 3.45 million acre watershed comprised of nine (9) sub-watersheds, which also includes the East Caloosahatchee Sub-watershed. The Lake Okeechobee Watershed, based on SFWMD's 2009 Land Use Map, is comprised of the following land uses, acreages, and percent of total area: Urban 392,617 (11.4%); Agriculture 1,4745,559 (50.6%), Rangeland 206,061 (6.0%), Upland Forests 251,352 (7.3%), Water Bodies 224,863 (6.5%), Wetlands 608,353 (17.6%), and Barren Lands 21,670 (0.6%).

Land Ownership Status: (check one)

☑ Land necessary for the construction of treatment infrastructure has been acquired. Title is held by: South Florida Water Management District

☐ Land necessary for the construction of treatment infrastructure is under a legal option to buy (please provide documentation of the option-to-buy and funding to execute the purchase).

☐ Land necessary for the construction of treatment infrastructure is under an easement which allows for the construction and access.

PROJECT OVERVIEW:

This is a continuation of the C-43 319 14 project. The subject of this application is the latter portion of Phase 1 of the larger C-43 WQTTP, which will demonstrate and implement cost-effective, wetland-based strategies for reducing loadings of TN and other constituents, including TP and TSS from the Caloosahatchee River and its downstream estuarine ecosystems. Special attention will be given to reducing dissolved organic nitrogen (DON) as it constitutes the most abundant and possibly most recalcitrant form of TN in the Caloosahatchee River. The C-43 WQTTP goals are to design, build, and operate a test facility that (1) will effectively remove and/or reduce TN load to the Caloosahatchee River and Estuary (2) is based on a review of available information and sound science, and (3) is implementable and cost-effective on larger scales and/or applicable to other South Florida estuarine systems. Once strategies for removing TN using wetland systems are identified, it is expected that these systems could be applied at various scales throughout the watershed. The SFWMD also anticipates that the project will generate strategies that can be applied to estuaries impaired by TN throughout South Florida. Ultimately, it is envisioned that a full-scale treatment facility would be constructed at the site (approximately 1,335 acres). The conceptual design for the demonstration component of the project (Knight, 2012) comprises mesocosms, test cells, and field-scale cells designed to test, optimize, and demonstrate these wetland-based strategies.

Phase 1 of the demonstration portion of the project, consists of the final design, installation, and operation of mesocosms, which are a component of the conceptual design. It also involves determining the fraction of biologically available dissolved organic nitrogen (DON) in the Caloosahatchee River to inform the treatment design as further described below. DON which has unknown bioavailability represents part of the overall fraction of total nitrogen along with the dissolved inorganic species nitrate and ammonia which are bioavailable and used by microbes and plants. A better understanding of how bioavailable DON is as compared to the inorganic species will allow optimization of future larger scale treatment options for improving water quality in the receiving waters. The investigation of DON bioavailability will be accomplished through bioassays.

Bioassays: The first step of the project is the performance of bioassays, which will evaluate the bioavailability of DON in the Caloosahatchee River. The C-43 WQTTP conceptual design report (Knight 2012) for the demonstration portion stated that there is no recognized analytical test to fractionate total organic nitrogen (N) from biologically available N (BAN). It suggested the development of a new analytical or biological test [e.g., modified total Kjeldahl nitrogen (TKN) or FDEP's Algal Growth Potential) for rapid estimation of BAN, which would determine the bioavailable fraction of TN in raw water samples. This information would inform the design of wetland-based treatment trains; however, developing this test would be expensive and time-consuming. Alternatively, the SFWMD wishes to conduct bioassays to determine the bioavailability of DON for microbial utilization in the Caloosahatchee River, as bioassays are a commonly used and accepted technique (e.g., Bronk et al., 2007). This will provide essential information such as identifying the DON dominant users (bacteria or phytoplankton), determining the percentage of DON that can be physically degraded by sunlight and salinity effects, and establishing the quantity and timescale of dissolved N transfer into particulate form that may then enter the benthic cycle as it settles out of the water column. The results of the bioassays will help indicate whether removing bioavailable DON would make a significant contribution toward meeting the TMDL and whether mesocosms need to focus on removing DON, DIN (dissolved inorganic nitrogen), or both.

The bioavailable DON (BDON) bioassay determines if the DON in the Caloosahatchee River is bioavailable and, if so, to what extent (i.e., what percentage of the DON is bioavailable). These findings are directly relevant to the mesocosms which test the nitrogen removal capacity of different plant communities and the native soil of the property. Knowing if and how much of the DON is bioavailable will help guide potential mesocosm treatment designs. The information gained from the bioassays will aid in determining if the mesocosms need to focus on removing DON or DIN (dissolved inorganic nitrogen), the mechanisms for removal—and therefore the wetland plant density to be selected at startup. For example, if the DON becomes more available with prolonged exposure to sunlight, then open shallow tanks with minimal vegetation shading may be effective at removing nitrogen more than a tank with dense shading vegetation. On the other hand, if DON is not available to the aquatic microbial community, then the addition of soil microbiota and longer residence times may instead

prove to be effective for nitrogen removal. The mesocosm test will help determine the effect of different plant community types and the importance of soil microbiota on nitrogen removal, while the bioassays will determine the potential for water column processes. Thus, the results from the BDON bioassay will guide the treatment design of the mesocosms and help understand the results of the mesocosm study. The results will be reviewed to optimize the project design prior to the mesocosm startup.

The bioassays started in December 2014 and sampling is occurring every two months at three locations along the C-43 Canal downstream of Lake Okeechobee (S-77, S-78, and S-79 structures). The sources of microbial inoculum will consist of in situ bacteria and phytoplankton as well as a treatment with inoculum from the more estuarine water column community downstream of S-79. Several water quality parameters will be measured during the incubation periods, with the results included in a final report.

Mesocosms: Mesocosms are an appropriate scale to evaluate the effects of varying parameters on the wetland plants' ability to remove TN and DON. Mesocosm units are also appropriate for looking at multiple design elements more cost-effectively than building larger test and field-scale cells. The mesocosms will demonstrate wetland technologies that are potentially highly effective at removing and/or reducing surface water nitrogen concentration and will inform the next phase of the demonstration project. The mesocosms will be designed, constructed, and then operated for a period of 3.5 years. The design will include Construction Plans and Specifications; an Operations, Maintenance, and Monitoring Plan; a Treatment Sampling and Data Plan; and a Planting Plan.

Construction and Operation: There has been a conceptual-level design (Knight, 2012) and value engineering of that design performed to date. The following information is based on these efforts, but the information is subject to change pending final design and adaptive management during operations. It is anticipated that there will be twelve (12) mesocosms tanks comprised of 12 m^2 (±129 ft^2) pre-fabricated fiberglass tanks, a pump station, the necessary piping and control valves, and a head tank. Electrical service will also be extended to the pump (approximately 2,300 linear feet). It is anticipated that the mesocosms will be operated for a period of 42 months in accordance with the final Operations and Maintenance Plan and the Final Treatment and Testing Plan developed as part of the mesocosm final design.

The demonstrations will be designed to help assess the type of vegetation, the length of time the water is exposed to each type of vegetation, and the presence of sediment all may affect the rate of nitrogen removal, and to what extent nitrogen is removed from the surface water in the mesocosms), while keeping in mind budgetary constraints. It will consider seasonal effects (dry season versus wet season), replication, and control for robustness. They will evaluate the nutrient removal of various vegetation types (Emergent Vegetation, Submerged Vegetation and Open Water/Algae), hydrologic loading rates, and soil (Native Sand versus Control). It is anticipated that the varying parameters to be tested at the mesocosms include surface water nitrogen and phosphorus, bioassays of mesocosm effluent, soil nitrogen, and plant tissue analysis.

The SFWMD is seeking reimbursement or cost match for the final activities of Phase I discussed above as well as other costs associated with completing the project such as sampling, labor, data management, data analysis, status and final project reporting, facility decommissioning, and permit acquisition. All in-kind costs will be considered cost share and not considered reimbursable. Contingent upon future funding, future phases of the testing facility (test and field-scale cells) will be constructed, operated, and sampled in subsequent phases, which are not included in this grant application. Each phase of implementation will build upon the information and lessons learned of the previous phase, with the goal of having the field-scale cells incorporated into a full-sized facility operating on site. It is anticipated that the knowledge gained from the demonstrations will be used to construct a full treatment facility at the site.

The objective of the larger C-43 Water Quality Treatment and Testing Facility Project (C-43 WQTA Project) is to demonstrate and implement cost-effective, wetland-based strategies for reducing load discharges of TN and other constituents including TP and TSS to the Caloosahatchee River and its downstream estuarine ecosystems. It is anticipated that these strategies also will be applicable nutrient reduction strategies in other South Florida estuarine systems. Special attention will be given to reducing DON, as it constitutes the most abundant and possibly most recalcitrant form of TN in the Caloosahatchee River. The overall project is discussed further below in item 4.

The mesocosms will demonstrate wetland technologies that are potentially highly effective at removing and/or reducing surface water nitrogen concentration and will inform the next phase of the overall project. An objective of the mesocosms is to assess potential surface water nitrogen removal rates using different plant communities, residence times, and soil. In addition to total nitrogen removal, other areas of interest include the various nitrogen fractions; the dissolved inorganic species nitrate and ammonia, which are bioavailable to microbes and plants for uptake; and DON, which has unknown bioavailability. Another objective of the mesocosms is to determine if the proportion of bioavailable DON is affected by the

different treatments. Using the results of this study, a mass balance model of nitrogen processes will be developed to inform how nitrogen is stored (both temporarily and permanently) and removed from the treatment systems. The mass balance information and knowledge on which treatments have the most potential for removing and/or reducing nitrogen concentrations will be used to guide the design of the next phase of the overall project test cells.

DON can be important to aquatic microbes and phytoplankton and should be considered when developing nutrient reduction strategies for coastal ecosystems (Bronk et al., 2007). Despite its significance and predominance in TN pools, the overall reactivity and bioavailability of DON in freshwater and estuarine ecosystems remains largely unknown (Boyer et al., 2004; Eyre et al., 2011). The cycling of TN among the sediments, water, and atmosphere is complicated by the comparatively large fraction of DON, the roles of nitrogen fixation and denitrification, and the rapid exchanges among inorganic and organic pools through algal uptake and microbial re-mineralization (Bronk et al., 2007; WSI, 2012; Eyre et al., 2011). Therefore, it is important to evaluate and quantify the bioavailability of DON to the water column microbial community in the Caloosahatchee River and optimize strategies for removing DON in order to achieve the Caloosahatchee Estuary TN TMDL.

Once strategies for removing TN using wetland systems are identified, it is expected that these systems could be applied at various scales throughout the watershed. The SFWMD also anticipates that the project will generate strategies that also can be applied to estuaries impaired by TN throughout South Florida. Ultimately, it is envisioned that a full-scale treatment facility would be constructed at the site (approximately 1,335 acres).

The project will identify the most effective combination of hydraulic loading rates, substrate, wetland plant communities and densities, and treatment sequences for the removal of TN. The bioassays will be conducted over a period of one (1) year and are expected to yield information for optimizing the mesocosms' startup, operation, and testing activities. The design, permitting, and construction of the mesocosms are expected to take approximately 12 months. The mesocosm operation and testing will be conducted over approximately 3.5 years and an estimated 50,000 samples will be collected and analyzed.

Data analysis will proceed concurrently with monitoring of the mesocosms. This will allow an adaptive management approach to determine performance and adjust system management for maximizing information gained and TN removal rates. Status reports and a final project report and presentation will be required to communicate the progress of the project to the team. Examples of potential data analysis include: data trend plots and analyses, water balances by treatment, pollutant mass balances, calculation of kinetic rate constants, and non-parametric statistical analyses to detect significant treatment differences and temporal trends. All analyses will be compared to data expectations from similar systems in the literature and in the review of existing systems. The data gathered during the testing of the mesocosms will be used for the final design of the larger test and field cells, which are less affected by high surface-to-volume ratios and provide more realistic plant growth conditions in native soils.

The objective of the overall C-43 WQTTP is to demonstrate and implement cost-effective, wetland-based strategies for reducing load discharges of TN and other constituents including TP and TSS to the Caloosahatchee River and its downstream estuarine ecosystems. Special attention will be given to reducing DON, as it constitutes the most abundant and possibly most recalcitrant form of TN in the Caloosahatchee River. The C-43 WQTTP goals are to design, build, and operate a test facility that (1) will effectively remove and/or reduce total nitrogen (TN) load to the Caloosahatchee River and Estuary, (2) is based on a review of available information and sound science, and (3) is implementable and cost-effective on larger scales and/or applicable to other South Florida estuarine systems.

Elevated concentrations of TN and TP in the Caloosahatchee River and Estuary are contributing to water quality impairments in this system as evidenced by excessive algae blooms and decreased water clarity and dissolved oxygen content (Knight and Steele, 2005). In its statewide comprehensive list of impaired waters, the FDEP has identified TN as a limiting, co-limiting, or causative pollutant for the Caloosahatchee River Watershed and Estuary. The reduction of nonpoint nutrient concentrations and loads to these water bodies was required by the Northern Everglades and Estuaries Protection Program (NEEPP), which was passed by the Florida legislature and signed into law in 2007, and by the Caloosahatchee River Estuary TMDL published by the FDEP. The FDEP is currently implementing the Caloosahatchee Estuary Basin Management Action Plan (BMAP) and developing several tributary and freshwater Caloosahatchee River TMDLs.

Through a decade of successful operation of Stormwater Treatment Areas (STAs), the SFWMD has attained extensive expertise in TP removal from non-point runoff using wetland treatment systems. However, the mechanisms for TN removal via wetland treatment systems have not been demonstrated or optimized to the same extent. The Caloosahatchee River Estuary TMDL requires a 23% reduction in current loads, which may result in the need to achieve TN target concentrations

in the Caloosahatchee River that are less than one-half of those attained at the most advanced wastewater treatment facilities in Florida (Knight, 2012). To date, there have been limited efforts to design treatment wetlands to optimize nitrogen removal especially DON, which accounts for at least 80% of the TN present in the Caloosahatchee River and Estuary system (Knight, 2012).

DON can be important to aquatic microbes and phytoplankton and should be considered when developing nutrient reduction strategies for coastal ecosystems (Bronk et al., 2007). Despite its significance and pre-dominance in TN pools, the overall reactivity and bioavailability of DON in freshwater and estuarine ecosystems remain largely unknown (Boyer et al., 2004; Eyre et al., 2011). The cycling of TN among the sediments, water, and atmosphere is complicated by the comparatively large fraction of DON, the roles of nitrogen fixation and denitrification, and the rapid exchanges among inorganic and organic pools through algal uptake and microbial remineralization (Bronk et al., 2007; Knight, 2012; Eyre et al., 2011). Therefore, it is important to evaluate and quantify the bioavailability of DON for planktonic biota in the Caloosahatchee River and optimize strategies for removing DON in order to achieve the Caloosahatchee Estuary TN TMDL.

Earlier planning and conceptual design phases for the larger C-43 WQTTP resulted in a conceptual plan (Knight 2012). The conceptual design included a recommended suite of testing scales including: laboratory bioassays, mesocosms, and field-scale wetland plots. Each platform scale included testing plans, scientific rationales, and estimated costs for construction, operation and maintenance (O&M), and testing in the proposed conceptual testing facility plan. Once strategies for removing TN using wetland systems are identified, it is expected that these systems could be applied at various scales throughout the watershed. The SFWMD also anticipates that the project will generate strategies that also can be applied to estuaries impaired by TN throughout South Florida. Ultimately, it is envisioned that a full-scale treatment facility would be constructed at the site (approximately 1,335 acres).

The State of Florida has long been a leader in the engineering, operation, and optimization of treatment wetlands. Florida's broad range of wetland-based alternatives include the Cypress Dome Natural Treatment Wetland project in the mid-1970s, a dozen other natural treatment wetlands, the first two large constructed treatment wetlands in 1987 (Lakeland and Orlando), at least a half dozen other municipal constructed treatment wetland systems, the Everglades Stormwater Treatment Areas (STAs), and dozens of large and small-scale urban and agricultural stormwater treatment wetlands. However, none of these facilities are optimized for the removal of TN especially DON.

Final Three Tasks of Phase 1 Project:
Completion of Operations/Maintenance/Sampling/Interim Reporting (months 46-57)*

Category	Grant Funding	Match Funding	Match Source
Salaries	$	$48,160	-
Fringe Benefits	$	$28,000	-
Travel	$	$	-
Contractual	$138,000	$30,000	-
Equipment Purchases	$	$	-
Supplies/Other Expenses	$	$	-
Indirect/Overhead	$	$35,840	-
TOTAL FOR TASK	$138,000	$142,000	-

*assumes Months 46-57 will be covered under the 2016 319 work plan and that prior months of demonstration operations/maintenance/sampling and Interim reporting will be covered under the 2014 319 grant work plan.

Mesocosm Decommissioning

Category	Grant Funding	Match Funding	Match Source
Salaries	$	$	-
Fringe Benefits	$	$	-
Travel	$	$	-
Contractual	$	$30,000	-
Equipment Purchases	$	$	-
Supplies/Other Expenses	$	$	-
Indirect/Overhead	$	$	-
TOTAL FOR TASK	$	$30,000	-

Final Project Reporting

Category	Grant Funding	Match Funding	Match Source
Salaries	$	$17,030	-
Fringe Benefits	$	$6,500	-
Travel	$	$	-
Contractual	$70,000	$24,150	-
Equipment Purchases	$	$	-
Supplies/Other Expenses	$	$	-
Indirect/Overhead	$	$8,320	-
TOTAL FOR TASK	$70,000	$56,000	-

Total Number of Months for the Project: 63 months

POLLUTANT LOAD REDUCTIONS:

The Caloosahatchee River and Estuary TMDL requires a 23% reduction of current TN loads, which includes both DIN and DON forms. The SFWMD has successfully constructed and operated Stormwater Treatment Areas that focus on TP removal but also effectively remove DIN. DON, which accounts for at least 80% of the TN in the Caloosahatchee River, is comprised of hundreds of compounds, some of which are bioavailable and others that are not. Algal species responsible for harmful estuarine and coastal blooms can use bioavailable DON, while
the remaining portion of DON endures in a recalcitrant form on time-scales of years to thousands of years.

Drinking water treatment systems use conventional technologies for the removal of DON but in relatively small scales when compared to the volume discharges from the Caloosahatchee River. As an example, the largest drinking water facility in the State of Florida (Miami-Dade's Alexander Orr) has a capacity of approximately 218 million gallons per day (mgd), whereas the Caloosahatchee River flows at S-79, for the 1981–2011 period, averaged ±1,700 cfs (app. 915 MGD), with a maximum of ±11,000 cfs (app. 5,900 MGD) (Knight 2012a). Wastewater treatment systems in Florida using the most advanced known technologies do not achieve the TN concentrations necessary to meet the Caloosahatchee River Estuary TMDL (Knight, 2012). With 85% of the total current TN loading coming from sources upstream of S-79 (FDEP, 2012) and TN concentrations required to meet the TMDL as low as 1.24 milligrams per liter, or mg/L (Knight, 2012), it is crucial that a cost-effective and feasible natural treatment system focusing on TN and applicable at various scales be developed.

Treatment wetlands operating in the State of Florida with inflow chemistry similar to the Caloosahatchee River already achieve concentration reduction rates of ±14% for TN, ±37% for TP, and ±26% for TSS. All these treatment facilities were designed to primarily remove TP and therefore have not been optimized for the removal of TN. The SFWMD will seek to exceed the already observed TN removal rates and identify the maximum TN reduction rate using wetland-based technologies while maintaining and/or exceeding TP and TSS removal rates already achieved.

After completing the bioassays during the dry season of December 2014 through April 2015 and estimating the bioavailability of DON in the Caloosahatchee River, the SFWMD will install and start to operate mesocosms with different arrangements of wetland plant communities, substrates, water depths, and flow rates in accordance with the final Treatment and Sampling Plan, once developed. The season bioassay results will allow for further optimization of the mesocosms in the early stages of operation and testing. Each arrangement will remove nitrogen through a transformation and reduction process, including the mineralization of DON, at various rates. After the operation of the mesocosms for a period of approximately 42 months (including approximately six months of start-up), an effectiveness evaluation will be conducted and reported. This effectiveness evaluation will be used for the design of the larger test and field-scale cells under future phases.

Periodic reporting will be done and presented to various audiences during the project. There will also be opportunities for outreach and field tours during the bioassay investigation and the operational phase of the mesocosms. Additional outreach will be done through routine annual reporting updates (e.g., South Florida Environmental Report) and high-level publications issued by the SFWMD's Office of Public Affairs (e.g., Splash Sheets). The intent of providing field access and reporting is twofold—to educate individuals and organizations of the latest findings related to the treatment of TN and to welcome independent reviews of the work in progress. It is also anticipated that the SFWMD will also be communicating the progress and results of the demonstration project to the Northern Everglades Stakeholder Group, which is in excess of 200 individuals, agencies, and organizations with interest in the Northern Everglades and Estuaries and that have the opportunity participate in NEEPP coordination meetings.

The SFWMD, FDEP and Florida Department of Agriculture and Consumer Services (FDACS) are the Coordinating Agencies for the NEEPP. The Coordinating Agencies and Lee County will be cooperating with the SFWMD in the implementation of this project.
Pollutant Load Reductions
Enter the loads, reductions and percentages and the event mean concentrations (EMCs) used to determine the pre- and post-loads.

The State of Florida has long been a leader in the engineering, operation, and optimization of treatment wetlands. Florida's broad range of wetland-based alternatives include the Cypress Dome Natural Treatment Wetland project in the mid-1970s, a dozen other natural treatment wetlands, the first two large constructed treatment wetlands in 1987 (Lakeland and

Orlando), at least a half dozen other municipal constructed treatment wetland systems, the Everglades Stormwater Treatment Areas (STAs), and dozens of large and small-scale urban and agricultural stormwater treatment wetlands. However, none of these facilities are optimized for the removal of TN especially DON.

In this demonstration the use of constructed wetlands to effectively remove TN, including DON, as well as TP and TSS from waters of the Caloosahatchee River (C-43). The SFWMD anticipates that the project will generate nutrient reduction strategies that could be adapted as sub-regional and regional facilities, and potentially Best Management Practices (BMPs) on a single farm-based scale. This demonstration project will investigate innovative approaches to wetland treatment of TN and identify the most promising wetland-based TN treatment train that will also treat TP and TSS. When scaled up, these facilities can not only benefit the Caloosahatchee River and Estuary by helping achieve the TMDL and associated BMAP goals but can be applied to other estuaries as well.

Cite References (if applicable):

Part I
Knight, R.L. and J. Steele 2005. Caloosahatchee River/Estuary Nutrient Issues. White Paper. Prepared for the South Florida Water Management District, West Palm Beach, FL. Prepared by Wetland Solutions, Inc., Gainesville, FL.
Knight, R.L. 2012. Conceptual Design of C-43 Water Quality Treatment Area Nutrient Removal/Reduction Test Facility. Pages 1 and 9. Prepared for the South Florida Water Management District, West Palm Beach, FL. Prepared by Wetland Solutions, Inc., Gainesville, FL.
Bronk, D.A., See, J.H., Bradley, P. and Killberg, L. 2007. DON as a source of bioavailable nitrogen for phytoplankton. *Biogeosciences*, 4:283-296.
Boyer, J.N., Jaffé, R., Dailey, S.K., Maie, N., (2004) Biological Availability of Organic Nitrogen in Florida Bay. South Florida Water Management District, West Palm Beach, p. 43.
Eyre, B., Ferguson, A.J.P., Webb, A., Maher, D. and Oakes, J.M. 2011. Denitrification, N-fixation, and nitrogen and phosphorus fluxes in different benthic habitats and their contribution to the nitrogen and phosphorus budgets of a shallow oligotrophic subtropical coastal system (southern Moreton Bay, Australia). *Biogeochemistry*, 102:111-133.

Part II
Miami-Dade Water and Sewer Department's website (http://www.miamidade.gov/water/home.asp)
Knight, R.L. 2012a. Conceptual Design of C-43 Water Quality Treatment Area Nutrient Removal/Reduction Test Facility. Attachment B Page 13; Exhibit 3. Prepared for the South Florida Water Management District, West Palm Beach, FL. Prepared by Wetland Solutions, Inc., Gainesville, FL.
Knight, R.L. 2012b. Conceptual Design of C-43 Water Quality Treatment Area Nutrient Removal/Reduction Test Facility. Attachment B Page 9. Prepared for the South Florida Water Management District, West Palm Beach, FL. Prepared by Wetland Solutions, Inc., Gainesville, FL.
FDEP. 2012. Final Basin Management Action Plan for the Implementation of Total Maximum Daily Loads for Nutrients Adopted by the Florida Department of Environmental Protection in the Caloosahatchee Estuary Basin. Developed by the Caloosahatchee Estuary Basin Technical Stakeholders in cooperation with the Florida Department of Environmental Protection, Division of Environmental Assessment and Restoration, Bureau of Watershed Restoration, Tallahassee, FL.

PROJECT 14

PROJECT NAME: FLORIDA DEPARTMENT OF HEALTH IN DUVAL COUNTY NONPOINT SOURCE SEPTIC TANK ENFORCEMENT PROJECT

PROJECT TYPE (Check One): ☐ Urban ☐ Agricultural ☐ Education Only ☑ OSTDS ☐ Other (describe)

PROJECT FUNDING REQUEST: $ 183,000.00 **MATCH COMMITMENT:** $ 125,947.21

PROJECT COST: $308,947.21

LEAD ORGANIZATION:
FLORIDA DEPARTMENT OF HEALTH IN DUVAL COUNTY (DOH-DUVAL)

CONTACT INFORMATION:

NAME:	SCOTT TURNER, MPA, RS
Street Address:	900 University Blvd., N., Ste. 300
City, State, Zip:	Jacksonville, FL 32211
Tel:	(904) 253-2422
Fax:	(904) 253-2390
Email:	Scott.Turner@flhealth.gov

FINANCIAL COOPERATING PARTNERS: NA

PROJECT LOCATION AND WATERSHED CHARACTERISTICS:

Geographic Location (city and county): Jacksonville, FL (Duval County)

Size of Project Impact: 493,076.20 acres

Size of Area Being Treated: 78 square miles

Latitude (decimal degrees): 30.401389

Longitude (decimal degrees): -81.400833

Name of Impaired Water Body Affected: Miller Creek, Miramar Creek, Red Bay Branch, Craig Creek, Williamson Creek, Deer Creek, Wills Branch, and *New Rose Creek

Water Body ID of Impaired Water Body Affected (WBID):

2287, 2304, 2254, 2297, 2316, 2256, 2282, and *2306

***Due to the large number of parcels in each WBID potentially on septic systems (approximately 7,203 total), New Rose Creek will be inspected if time remains in the project.**

TMDL Status and Name: The Lower St. Johns River does have TMDLs adopted and approved by EPA for TN, TP, and fecal coliform. The following TMDL Reports are available:

Miller Creek – http://www.dep.state.fl.us/water/tmdl/docs/tmdls/final/gp2/millercreekfecalfinal.pdf

Mirimar Creek - http://www.dep.state.fl.us/water/tmdl/docs/tmdls/final/gp2/tmdl_document2304.pdf

Craig Creek - http://www.dep.state.fl.us/water/tmdl/docs/tmdls/final/gp2/craig-creekfecal-tmdl.pdf

Williamson Creek - http://www.dep.state.fl.us/water/tmdl/docs/tmdls/final/gp2/tmdl_document2316.pdf

Deer Creek - http://www.dep.state.fl.us/water/tmdl/docs/tmdls/final/gp2/deercreekfecalfinal.pdf

Wills Branch - http://www.dep.state.fl.us/water/tmdl/docs/tmdls/final/gp2/tmdl_document2282.pdf

TMDL Impairment; indicate the parameters in the TMDL: Fecal Coliform

Impairments To Be Addressed by Project: Fecal Coliform

This project lies within the Lower St. Johns River Basin for which two Basin Management Action Plans (BMAP I and II) have been adopted, October 2008 and August 2010 respectively. DOH-Duval is recognized as a signatory and a Basin Working Group Member for both BMAPs. Furthermore, DOH-Duval is a member of the Tributary Assessment Team (TAT).

Final Adopted Lower St. Johns River BMAP I:
http://www.dep.state.fl.us/water/watersheds/docs/bmap/lsjr-tribs-fecal-bmap.pdf

Final Adopted Lower St. Johns River BMAP II:
http://www.dep.state.fl.us/water/watersheds/docs/bmap/bmap-lsjt2.pdf

The Florida Legislature enacted the Surface Water Improvement and Management (SWIM) Act (Chapter 373.451-373.4595, *Florida Statutes* [F.S.]) in 1987 and revised it in 1991. This Act declared that many natural surface water systems in Florida, including the lower St. Johns River (LSJR), have been or are becoming degraded. Factors contributing to this degradation include point and nonpoint sources of pollution and the destruction of natural habitats. The SWIM Act directed the St. Johns River Water Management District (SJRWMD), with the cooperation of state agencies and local governments, to design and implement a plan for the improvement of Lower St. Johns River Basin (LSJRB) surface waters and habitats. SJRWMD complied with this mandate in the development of the 1989 LSJRB SWIM Plan and subsequent 1993 update. The St. Johns River Water Management District SWIM Plan Update for 2008 includes the U.S. Environmental Protection Agency's (EPA's) nine elements of a comprehensive watershed plan and can be found here:
http://floridaswater.com/SWIMplans/2008_LSJRB_SWIM_Plan_Update.pdf

The basis for this project can be found within both BMAPs and the SWIM Plan as failing or malfunctioning OSTDS are considered a contributing factor to nonpoint source pollution. The goals of this project, as a BMAP Partner and active participant of the Watershed Plan, are:

- Improved water quality trends in the tributaries of the LSJRB that will also help improve water quality in the main stem of the river;
- Decreased loading (levels) of the target pollutant (fecal coliform);
- Enhanced public awareness of fecal coliform sources and impacts on water quality;
- Enhanced effectiveness of corresponding corrective actions by stakeholders;
- Enhanced understanding of basin hydrology, water quality, and pollutant sources; and
- The ability to evaluate management actions, estimate their benefits, and identify additional pollutant sources.

LAND USE and STATUS: WBID 2287 – Miller Creek

Land Use	Acres	%
Residential Low Density (1100)	288.7396933	45.85
Residential Medium Density (1200)	106.4223232	16.90
Residential High Density (1300)	0	0
Commercial and Services (1400)	120.3366126	19.11
Industrial (1500)	0	0
Extractive (1600)	N/A	0
Institutional (1700)	108.1201473	17.17
Recreational (1800)	0	0
Open Land (1900)	0	0
Agriculture (2000)	N/A	0
Upland Non-Forested (3000)	N/A	0
Upland Forests (4000)	N/A	0
Water (5000)	6.093851803	0.97
Wetlands (6000)	0	0
Barren Land (7000)	N/A	0
Transportation, Communication, and Utilities (8000)	N/A	0
Land Use Totals (Acreage and %)	**629.7126282**	**100%**

LAND USE and STATUS: WBID 2304 – Mirimar Creek

Land Use ***(Do not alter – All must be filled out; do not add categories; place a 0 for no acres)***	**Acres**	**%**
Residential Low Density (1100)	303.5768307	58.08
Residential Medium Density (1200)	102.5907632	19.63
Residential High Density (1300)	0	0
Commercial and Services (1400)	66.68101665	12.76
Industrial (1500)	15.96115103	3.05
Extractive (1600)	N/A	0
Institutional (1700)	32.52120997	6.22
Recreational (1800)	0	0
Open Land (1900)	0	0
Agriculture (2000)	N/A	0
Upland Non-Forested (3000)	N/A	0
Upland Forests (4000)	N/A	0
Water (5000)	0.819957526	0.16
Wetlands (6000)	0	0
Barren Land (7000)	N/A	0
Transportation, Communication, and Utilities (8000)	N/A	0
Land Use Totals (Acreage and %)	**522.6905222**	**100%**

LAND USE and STATUS: WBID 2254 – Red Bay Branch

Land Use *(Do not alter – All must be filled out; do not add categories; place a 0 for no acres)*	**Acres**	**%**
Residential Low Density (1100)	917.9193148	73.30
Residential Medium Density (1200)	69.08390105	5.52
Residential High Density (1300)	0	0
Commercial and Services (1400)	130.3730311	10.41
Industrial (1500)	0	0
Extractive (1600)	N/A	0
Institutional (1700)	75.55031189	6.03
Recreational (1800)	7.420395001	0.59
Open Land (1900)	51.98313379	4.15
Agriculture (2000)	N/A	0
Upland Non-Forested (3000)	N/A	0
Upland Forests (4000)	N/A	0
Water (5000)	N/A	0
Wetlands (6000)	N/A	0
Barren Land (7000)	N/A	0
Transportation, Communication, and Utilities (8000)	N/A	0
Land Use Totals (Acreage and %)	**1252.330088**	**100%**

LAND USE and STATUS: WBID 2297 – Craig Creek

Land Use *(Do not alter – All must be filled out; do not add categories; place a 0 for no acres)*	**Acres**	**%**
Residential Low Density (1100)	352.5859299	55.03
Residential Medium Density (1200)	40.24797611	6.28
Residential High Density (1300)	2.336522502	0.36
Commercial and Services (1400)	207.7336107	32.42
Industrial (1500)	12.5607273	1.96
Extractive (1600)	N/A	0
Institutional (1700)	25.10662898	3.92
Recreational (1800)	0	0
Open Land (1900)	0	0
Agriculture (2000)	N/A	0
Upland Non-Forested (3000)	N/A	0
Upland Forests (4000)	N/A	0
Water (5000)	0.1700736	0.03
Wetlands (6000)	0	0
Barren Land (7000)	N/A	0
Transportation, Communication, and Utilities (8000)	N/A	0
Land Use Totals (Acreage and %)	**640.7414691**	**100%**

LAND USE and STATUS: WBID 2316 – Williamson Creek

Land Use *(Do not alter – All must be filled out; do not add categories; place a 0 for no acres)*	**Acres**	**%**
Residential Low Density (1100)	673.080792	72.43
Residential Medium Density (1200)	138.8312954	14.94
Residential High Density (1300)	0	0
Commercial and Services (1400)	93.24023941	10.03
Industrial (1500)	0	0
Extractive (1600)	N/A	0
Institutional (1700)	19.92681762	2.14
Recreational (1800)	0	0
Open Land (1900)	0	0
Agriculture (2000)	N/A	0
Upland Non-Forested (3000)	N/A	0
Upland Forests (4000)	N/A	0
Water (5000)	4.257991332	0.46
Wetlands (6000)	0	0
Barren Land (7000)	N/A	0
Transportation, Communication, and Utilities (8000)	N/A	0
Land Use Totals (Acreage and %)	**929.3371358**	**100%**

LAND USE and STATUS: WBID 2256 – Deer Creek

Land Use *(Do not alter – All must be filled out; do not add categories; place a 0 for no acres)*	**Acres**	**%**
Residential Low Density (1100)	30.06793692	4.44
Residential Medium Density (1200)	180.7373725	26.68
Residential High Density (1300)	0	0
Commercial and Services (1400)	88.45006959	13.06
Industrial (1500)	299.4493047	44.20
Extractive (1600)	N/A	0
Institutional (1700)	12.24407303	1.81
Recreational (1800)	15.67941156	2.31
Open Land (1900)	0	0
Agriculture (2000)	N/A	0
Upland Non-Forested (3000)	N/A	0
Upland Forests (4000)	N/A	0
Water (5000)	0.021928848	0.00
Wetlands (6000)	50.76633171	7.49
Barren Land (7000)	N/A	0
Transportation, Communication, and Utilities (8000)	N/A	0
Land Use Totals (Acreage and %)	**677.4164289**	**100%**

LAND USE and STATUS: WBID 2282 – Wills Branch

Land Use *(Do not alter – All must be filled out; do not add categories; place a 0 for no acres)*	**Acres**	**%**
Residential Low Density (1100)	1181.423483	57.45
Residential Medium Density (1200)	135.174404	6.57
Residential High Density (1300)	0	0
Commercial and Services (1400)	506.8508049	24.65
Industrial (1500)	204.9962924	9.97
Extractive (1600)	N/A	0
Institutional (1700)	28.1065992	1.37
Recreational (1800)	0	0
Open Land (1900)	0	0
Agriculture (2000)	N/A	0
Upland Non-Forested (3000)	N/A	0
Upland Forests (4000)	N/A	0
Water (5000)	0	0
Wetlands (6000)	0	0
Barren Land (7000)	N/A	0
Transportation, Communication, and Utilities (8000)	N/A	0
Land Use Totals (Acreage and %)	**2056.551584**	**100%**

LAND USE and STATUS: WBID 2306 – New Rose Creek

Land Use *(Do not alter – All must be filled out; do not add categories; place a 0 for no acres)*	**Acres**	**%**
Residential Low Density (1100)	279.5849667	24.30
Residential Medium Density (1200)	276.416281	24.03
Residential High Density (1300)	4.167347303	0.36
Commercial and Services (1400)	261.1053065	22.70
Industrial (1500)	239.4082235	20.81
Extractive (1600)	N/A	0
Institutional (1700)	22.87137738	1.99
Recreational (1800)	64.68945481	5.62
Open Land (1900)	0	0
Agriculture (2000)	N/A	0
Upland Non-Forested (3000)	N/A	0
Upland Forests (4000)	N/A	0
Water (5000)	2.077759052	0.18
Wetlands (6000)	0	0
Barren Land (7000)	N/A	0
Transportation, Communication, and Utilities (8000)	N/A	0
Land Use Totals (Acreage and %)	**1150.320716**	**100%**

Land Ownership Status: (check one)

☐ Land necessary for the construction of treatment infrastructure has been acquired. Title is held by:

☐ Land necessary for the construction of treatment infrastructure is under a legal option to buy (please provide documentation of the option-to-buy and funding to execute the purchase).

☐ Land necessary for the construction of treatment infrastructure is under an easement which allows for the construction and access.

PROJECT OVERVIEW:

Under Section 303(d) of the federal Clean Water Act, every two (2) years each state must identify its "impaired" waters, including estuaries, lakes, rivers, and streams that do not meet their designated uses and are not expected to improve within the subsequent two (2) years. The Florida Department of Environmental Protection (DEP) is responsible for developing this "303(d) list" of impaired waters.

Florida's 303(d) list identifies hundreds of water segments that fall short of water quality standards. The three (3) most common water quality concerns are fecal coliform, nutrients, and oxygen-demanding substances. These listed water segments are candidates for more detailed assessments of water quality to determine whether they are impaired according to state statutory and rule criteria. The DEP develops and adopts Total Maximum Daily Loads (TMDLs) for the waterbody segments it identifies as impaired. A TMDL is the maximum amount of a specific pollutant that a waterbody can assimilate while maintaining its designated uses.

The purpose of this project is to implement load reduction strategies, specific to Onsite Sewage Treatment and Disposal Systems (OSTDS), to achieve the fecal coliform TMDLs for the LSJR Basin tributaries. OSTDS were deemed, by the environmental engineering firm Post, Buckley, Schuh & Jernigan (PBS&J), to be one of the most probable sources of fecal coliform; therefore, this project will focus on up to eight (8) WBIDs out of the 75 tributaries considered impaired for fecal coliform (see Attachment A). The impaired waterbodies to be focused on in this project are Miller Creek, Miramar Creek, Red Bay Branch, Craig Creek, Williamson Creek, Deer Creek, Wills Branch, and New Rose Creek.

Potential contaminants that degrade the quality of surface and groundwater resources as a result of septic system failure include disease causing bacteria, infectious viruses, household chemicals, and nutrients (nitrates and phosphates). These contaminants present a public health threat to the community. However, this project has ongoing enforcement capabilities to reduce the amount of sanitary nuisances that could potentially cause adverse health effects to local residents.

This project will identify old and malfunctioning septic systems to enforce their abandonment, repair, modification, replacement or connection to a central sewerage system. The identification process includes the door-to-door inspections of septic systems within project WBIDs. Chapters 381 and 386, FS, and Chapter 64E-6, FAC, will be the basis for taking action in all cases involving malfunctioning systems and the pollution of direct or indirect sewage discharge into the St. Johns River or its tributaries.

This project will implement load reductions to help achieve the fecal coliform Total Maximum Daily Loads (TMDLs) for the Lower St. John's River (LSJR) Basin tributaries. This project will focus on up to eight (8) WBIDs out of the 75 tributaries considered impaired for fecal coliform. Specifically, the project will accomplish the following:

- Conduct door-to-door rapid block inspections on a daily basis to identify failing septic systems with the potential for direct and indirect discharge into the St. Johns River or its tributaries.
- Provide 100 % of the target audience - all homeowners and tenants within project designated Waterbody Identification (WBID) areas - with educational materials on onsite sewage treatment and disposal systems (OSTDS).
- Develop and implement a post-project survey that will measure the effectiveness of public outreach.
- Investigate all OSTDS-related complaints, within the project WBIDs, involving malfunctioning OSTDS and the pollution of direct or indirect sewage discharge into the St. Johns River or its tributaries.
- Perform existing OSTDS checks and approvals for compliance with rules/regulations regarding OSTDS that could potentially be associated with the direct or indirect pollution discharge of waste into the St. Johns River and its tributaries.
- Issue OSTDS construction permits and inspect OSTDS repairs, abandonments, existing and other OSTDS, which may result in the direct or indirect discharge of pollutive waste.
- Prepare administrative and/or legal action involving those OSTDS in violation of Chapters 381 and 386, Florida Statutes (FS), and Chapter 64E-6, Florida Administrative Code (FAC), associated with polluting the St. Johns River and its tributaries.
- Support the endeavors of *BMAP I and II*, adopted by the Florida Department of Environmental Protection, as endorsed by the Lower St. Johns River Tributaries Basin Working Group.
- Collaborate with the Florida Department of Environmental Protection, City of Jacksonville, Florida Department of Transportation, JEA (local utility company), City of Atlantic Beach, City of Jacksonville Beach, and City of Neptune Beach.
- Achieve reductions in total suspended solids (TSS), fecal coliform and nutrients.
- Perform Walk the WBID field exercise(s), if one is scheduled during the project time frame.

GRANT FUNDED ACTIVITIES

The following activities will be completed by the Environmental Health Director:

- Provide overall supervision of the project activities and the Environmental Supervisor II and Administrative Support assigned to the project;
- Develop a post-project survey that will measure the effectiveness of public outreach
- Ensure that the goals and objectives of the project are met through oversight of the day-to-day management of the project.
- Ensure that all outputs and activities regarding the project are done in an efficient manner; and
- Ensure that the activities are accomplished no later than the end of the project's contract period.

Activities that will be performed by the Environmental Supervisor II include:

- Provide direct supervision and oversight to Environmental Specialist staff to ensure efficient scheduling of public outreach and door-to-door inspections.
- Reviews Daily Activity Reports from all project staff to verify daily/ monthly mileage and time associated with the project.
- Review all inspection forms from project staff to verify results of inspection and status of enforcement.

Environmental Specialist staff responsibilities are detailed below:

- **Public Outreach**: All ESII staff will conduct public outreach within project designated WBID areas, which shall include the following:
  - Conducting phone conversations with homeowners related to this project;
  - Preparing flyers for distribution;
  - Putting out flyers in neighborhoods announcing the project and the related inspections;
  - Providing consultation to homeowners and tenants who are available at the time of OSTDS inspection and are interested in being better informed system users by answering questions related to proper use and recommended frequency of service of their OSTDS;
  - Providing all homeowners and tenants within project designated WBID areas with OSTDS-related educational materials deemed appropriate by the EPA and FDEP. Educational materials consist of a project notification letter, "A Homeowner's Guide to Septic Systems" EPA Pamphlet 832-B-02-006, and "Not in My Septic System" EPA Refrigerator Magnet. Where residents are not available at time of inspections, door hangers are used to leave the materials for them. Additionally, the Grantee's staff will carry a ready supply of OSTDS-related educational materials in their vehicles for distribution at properties where residents are available for consultation; and,
  - Implementing a post-project survey to a statiscally-significant number of homeowners/ tenants that will measure the effectiveness of public outreach.

- **Door-to-door OSTDS inspections**: All Environmental Specialist staff will conduct inspections of all septic systems within project designated WBID areas that have the potential to discharge into the St. Johns River or its tributaries with the exceptions of properties found vacant, properties determined to be connected to central sewer, and properties where access is denied. This activity determines if existing OSTDS are in compliance with applicable statutes and administrative codes. Inspections consist of the following (and include both office and field duties):
  - Researching complainants' addresses (Complaints usually are called in by neighbors or tenants.);
  - Referring complaints to other agencies;
  - Performing follow up record updates and file review;
  - GIS mapping of sewer infrastructure and potential septic systems within designated WBID areas;
  - Probing and inspecting septic tanks and drainfields for signs of failure and sanitary nuisance conditions; and,
  - Issuance of official notice if violations are discovered.

- **Enforcement activities**: Enforcement activities will be handled in accordance with Chapter 386, F.S., and Chapter 64E-6, F.A.C. All Environmental Specialist staff will be required to document any violations discovered during the door-to-door OSTDS inspections and forward the documentation to the Enforcement/ Environmental Manager following review and approval by the Environmental Supervisor II. For all cases that are not resolved with the issuance of an official notice, the Enforcement/ Environmental Manager will be required to issue a legal notice, followed with administrative and/or legal action involving those OSTDSs in violation of Chapters 381 and 386, FS, and Chapter 64E-6, FAC, associated with polluting the St. Johns River and its tributaries. The case package prepared by the Enforcement/ Environmental Manager outlining violations and all agency actions taken to alleviate the

violations, including legal notices, is reviewed and forwarded to the State Attorney's Office requiring the property owner to sign a deferred prosecution agreement.

Water sampling and dye testing will not be routinely conducted as part of this project. When necessary to confirm violations for enforcement cases, water samples may be taken to confirm the presence of fecal coliform bacteria and to provide evidence of sanitary nuisance conditions. Dye testing could also be performed to confirm illicit discharges only for enforcement cases.

- **Walk the WBID**: In 2013 and 2014, "Walk the WBID" field day exercises were conducted for BMAP I and II. Environmental Specialist staff plan on participating in other "Walk the WBID" field day exercises, if FDEP sponsors another exercise within the project timeline. The first part is called "Maps on the Table," which actively integrates multiple local and state agencies' information regarding field conditions and potential sources of pollution. This information is captured by participating agencies on both a map and in a detailed field "to do" list for a particular WBID. The second part of this exercise takes the "Maps on the Table" participants out to walk the watershed, called "Walk the WBIDs." This exercise confirms information flagged on the above mentioned map and "to do" list. Furthermore, any unknown potential illicit connections and other unauthorized discharges into waters of the state are identified. Also, potential water sampling locations are determined. This effort not only removes readily identifiable illicit connections and/or unauthorized discharges, but also, through sampling and thermal imagery performed by the City of Jacksonville, assists in identifying unseen sources of pollution. The Grantee's inspectors will assist in identifying septic tank failures, provide on the ground knowledge of the status of previous repair permits and new septic systems, as well as follow up on septic tank related questions or issues that arise while in the field.

- All potential illicit discharge pipes discovered during "Walk the WBIDs" activities, door-to-door OSTDS inspections, or reported as a consumer complaint will be handled as an enforcement case and will be conducted in accordance with the above procedures.

The following tasks will be completed by the Word Processing System Operator:

- Data input into the monthly spreadsheet of the results of public outreach activities, field inspections, and enforcement actions;
- Phone calls with property owners associated with this project;
- Typing correspondence and enforcement letters generated by the other project staff to property owners associated with this project; and
- Maintenance of the project database and spreadsheets required to track work progress in up to eight (8) WBIDs.

MATCH FUNDED ACTIVITIES

The Grantee will be responsible for administration of this project. The Grantee staff that will be performing administration of the project include the Budget Director, Environmental Health Director, Enforcement/Environmental Manager, GIS-Data/Environmental Manager and Senior Word Processing System Operator. Administration includes preparation and submittal of monthly progress reports and payment requests (invoices), a draft project report, and a comprehensive final report following review by DEP staff. The report shall be in Word or Adobe format. Three (3) paper copies and an electronic version of the report are to be submitted to DEP by the Agreement expiration date. The report will include, but not be limited to:

- Progress and problems encountered implementing the program;
- An assessment of whether the goals and objectives of this project were met;
- Results of each activity;
- Project cost accounting (grant and match amounts by category at a minimum) related to the grant for the overall project; and
- Any recommendations for enhancements or expansions to the project that the Grantee or any other government or health department might be able to use to upgrade the overall project for future implementation.

The Budget Director will be responsible for:

- Meeting all budgeting and reporting requirements related to the grant;
- Ensuring all monthly reports as they pertain to fiscal matters are completed and submitted in a timely manner containing accurate information;
- Tracking expenses and expenditures by using the financial information system; and

The Environmental Health Director will be responsible for:

- Providing direct supervision and oversight of the Environmental Supervisor II, Enforcement/ Environmental Manager, and Administrative Support staff;
- Ensuring that the goals and objectives of the project are met;
- Oversight of the day-to-day management of the project;
- Assessing whether outputs and activities regarding the project are done in an efficient manner; and
- Reviewing all project activities to ensure they are accomplished by the end of the project period.

The Enforcement/Environmental Manager will devote in-kind match time by:

- Providing oversight to all enforcement for the project;
- Preparing administrative and/or legal action involving OSTDS in violation; and
- Forwarding enforcement cases to the State Attorney's Office for deferred prosecution.

The GIS-Data/Environmental Manager will provide GIS and data services by mapping all WBID work areas She will devote her in-kind time to the project by:

- Providing GIS and data services mapping of all WBID work areas.
- Map and pinpoint unknown potential illicit connections and other unauthorized discharges into waters of the state.

The Senior Word Processing System Operator will be responsible for:

- Fulfillment of administrative and data input duties associated with the project;
- Reviewing any and all outgoing correspondence associated with the project;
- Working closely with the Environmental Health Director, Enforcement/Environmental Manager, and Environmental Supervisor II on all issues related to this project.

This project will identify and remedy failing septic systems that may be contributing fecal coliforms to the WBIDs specified in the *Project Location and Watershed Characteristics* section.

The goals of this Florida Department of Health in Duval County project, as a BMAP Partner, are:

- Improved water quality trends in the tributaries of the LSJR that also will help improve water quality in the main stem of the river;
- Decreased loading (levels) of the target pollutant (fecal coliform);
- Enhanced public awareness of fecal coliform sources and impacts on water quality;
- Enhanced effectiveness of corresponding corrective actions by stakeholders;
- Enhanced understanding of basin hydrology, water quality, and pollutant sources; and
- The ability to evaluate management actions, estimate their benefits, and identify additional pollutant sources.

The main objectives of this project are:

- To protect the surface waters of the Lower St. Johns River and its tributaries through the enforcement of the State of Florida statutes, rules and regulations governing OSTDS; and
- To protect the public's health.

In order to accomplish these goals and objectives, issues dealing with nonpoint source pollution, especially failing residential and commercial septic tank systems in the target WBIDs, must be resolved.

The outreach and education provided as part of this project increases public awareness of the many fecal coliform sources and their impacts on water quality. The effects of such awareness should result in an increased number of homeowners having their septic systems pumped out and inspected on a regular basis, more efficient water usage, a decrease in hazardous chemicals being discarded into septic systems, and better maintenance of OSTDS in general. It is expected that these effects will be observed long after the end of this project which should aid in further reductions of fecal coliform bacteria from OSTDS.

Project effectiveness will be evaluated in several ways:

- A monthly spreadsheet will be maintained indicating properties visited, the results of each visit, and a total number of education packets given out;

- All enforcement cases specifically for this project by the enforcement officer and other enforcement staff will be documented on a monthly basis
- A post-project survey will be developed and distributed to measure the effectiveness of public outreach.
- Although not a part of the project, ongoing water quality monitoring is performed by other stakeholders (i.e. Tributary Assessment Team) to determine the overall water quality impacts of BMAP implementation or other similar load reduction projects.

PROJECT TIMELINE AND TASK FUNDING

Task	Description	Grant Funding	Match Funding	No. of months to complete task
1	OSTDS Inspection, Enforcement, and Education	$183,000	NA	Month 1 to Month 12
2	Grant Project Administration	NA	$125,947.21	Month 1 to Month 12
3	Prepare and Submit Draft Annual Report	NA	NA	Month 12 to Month 13
4	Prepare and Submit Comprehensive Final Report	NA	NA	Month 13 to Month 14

Task 1	**Category**	**Grant Funding**	**Match Funding**	**Match Source**
	Salaries	$100,277.90	$0	NA
	Fringe Benefits	$42,858.70	$0	NA
	Travel	$3,000.00	$0	NA
	Contractual	$0	$0	NA
	Equipment Purchases	$0	$0	NA
	Supplies/Other Expenses	$1,079.25	$0	NA
	Indirect/Overhead	$35,784.15	$0	NA
	TOTAL FOR TASK	**$183,000.00**	$0	NA
Task 2	**Category**	**Grant Funding**	**Match Funding**	**Match Source**
	Salaries	$0	$73,699.95	DOH-DUVAL
	Fringe Benefits	$0	$33,850.30	DOH-DUVAL
	Travel	$0	$	NA
	Contractual	$0	$0	NA
	Equipment Purchases	$0	$0	NA
	Supplies/Other Expenses	$0	$3,853.56	DOH-DUVAL
	Indirect/Overhead	$0	$14,543.40	DOH-DUVAL
	TOTAL FOR TASK	$0	**$125,947.21**	DOH-DUVAL
Task 3	**Category**	**Grant Funding**	**Match Funding**	**Match Source**
	Salaries	$0	$0	NA
	Fringe Benefits	$0	$0	NA
	Travel	$0	$0	NA
	Contractual	$0	$0	NA
	Equipment Purchases	$0	$0	NA
	Supplies/Other Expenses	$0	$0	NA
	Indirect/Overhead	$0	$0	NA
	TOTAL FOR TASK	$0	$0	NA

Task 4	Category	Grant Funding	Match Funding	Match Source
	Salaries	$0	$0	NA
	Fringe Benefits	$0	$0	NA
	Travel	$0	$0	NA
	Contractual	$0	$0	NA
	Equipment Purchases	$0	$0	NA
	Supplies/Other Expenses	$0	$0	NA
	Indirect/Overhead	$0	$0	NA
	TOTAL FOR TASK	$0	$0	NA

Total Number of Months for the Project: 14

Total Project Cost (sum of Match and 319 Funding): $307,839.75

POLLUTANT LOAD REDUCTIONS

The water quality impacts are based on several fundamental assumptions about the pollutants targeted by the TMDLs, modeling approaches, waterbody responses, and natural processes. It is difficult to determine quantitative load reductions expected from the management actions to decrease fecal coliform due to a lack of literature values and high variability. Therefore, the benefits of these management actions were evaluated by FDEP on a qualitative basis, matching elimination, reduction, and prevention activities to known or potential sources. The resulting "Sufficiency of Effort Evaluation" reviewed the following information about each WBID:

- Documentation of the most likely sources;
- A GIS database to determine the spatial and temporal distribution of the sources;
- Permit and water quality information;
- Relevant field information; and
- Completed corrective actions.

Because of the difficulty in quantifying pollutant load reductions, no load reductions specific to this project will be provided.