ECOSYSTEM INVESTMENT PARTNERS

Response to:

REQUEST FOR INFORMATION (RFI)

PROJECTS TO REDUCE NUTRIENTS AND RESTORE FLOW IN THE LAKE OKEECHOBEE BASIN MANAGEMENT ACTION PLAN (BMAP)

FLORIDA DEPARTMENT OF ENVIRONMENTAL PROTECTION RFI POSTING NUMBER: 2020012

ECOSYSTEM INVESTMENT PARTNERS

DOING BUSINESS AS: EIP IV CREDIT CO., LLC

FEDERAL EMPLOYER IDENTIFICATION NUMBER: 84-3237814

Officer:

Nick Dilks, Managing Partner
5550 Newbury Street, Suite B, Baltimore, MD 21209
nick@ecosystempartners.com / 443.921.9441

Primary Contact Regarding This Submission:

Kyle Graham, Senior Program Manager
kyle@ecosystempartners.com / 828.243.2674

WWW.ECOSYSTEMPARTNERS.COM

INTRODUCTION

Ecosystem Investment Partners (EIP), doing business as EIP IV Credit Co., LLC, is pleased to present this response to the Florida Department of Environmental Protection's (DEP) request for information regarding feasible projects, implementable in a short time frame to reduce Total Phosphorus (TP) and Total Nitrogen (TN) of flows entering Lake Okeechobee. Along with our team members – Brown & Caldwell, Phillips & Jordan, and Haskell – we have prepared the included project, which entails utilizing a performance-based contract to expedite construction and ensure success of delivering a Stormwater Treatment Area (STA) capable of treating waters from several of DEP's priority basins. As DEP reviews the information herein, we are available to answer any questions and/or provide additional details as needed. Thank you in advance for your consideration.

WHO WE ARE

EIP is a national leader in large-scale ecological restoration. We deliver specific and measurable ecological outcomes through innovative and proven mitigation and restoration solutions, utilizing our unique combination of expertise and dedicated capital to deliver the highest quality environmental enhancement, ecological restoration, and conservation projects across the U.S. Since our inception in 2006, EIP has successfully developed 41 mitigation banks and completed numerous large-scale restoration projects in 12 states on more than 87,000 acres, including over 43,000 acres of wetland restoration and 170 miles of stream restoration. In 2019, our national footprint continues to expand with an additional 3,800 acres of wetland restoration and 164 miles of stream restoration underway.

EIP delivers ecological restoration projects through the establishment and operation of stream and wetland mitigation banks or with our innovative pay-for-success solutions that provide large-scale, full-delivery ecological restoration with a fixed price, outcome-based contract. With public agencies across the country increasingly relying on private companies to complete significant environmental initiatives, EIP adds value by shouldering the risk of providing finance, design, and construction for large projects, receiving payment only when pre-defined restoration milestones are achieved. EIP manages all phases of the project from design to management and maintenance to permitting and financing – and often, at a cost savings to traditional design/build contracts. Contractually, there are legal protections at every stage of the project that fully transfer mitigation liability and/or project success risk to EIP. This results in meaningful public-private partnership, where the public sector sets objectives and performance standards, and EIP provides the capital and experience to achieve those outcomes.

EIP's management team has more than 200 years of combined experience in environmental markets, ecological restoration, mitigation banking, land conservation, real estate investment, and investment fund management. Our business model relies on our staff to first identify those geographies and customers with the greatest ecological restoration needs and then team with the best local experts to pursue and implement projects that satisfy those needs. This approach pairs our national experts with local design, permitting, construction, and management resources, allowing us the flexibility to create custom solutions that meet each project's unique requirements. Our philosophy is centered around building trusted, long-terms relationships based on transparency and candor. Doing the right thing for the environment is just good business.

EIP is active in Florida, owning and operating five wetland mitigation banks on which more than 2,500 acres of wetland restoration has been accomplished, including 1,100 acres of herbaceous and forested wetland habitat in the Tampa Bay area. The mitigation credits generated meet the significant need arising from the ongoing growth throughout west-central Florida. Restoration activities vary but include restoring wetland hydrology, reintroduction of native species, and re-instating a prescribed burn regime.

More details about our diversified portfolio of restoration investments can be found online at **www.ecosystempartners.com**.

OUR TEAM

For this effort, EIP has constructed a highly qualified team of firms ideally positioned and capable of delivering this important project for the Florida DEP and the State of Florida. Our team includes three Florida firms: Brown & Caldwell, Phillips & Jordan, and Haskell, all detailed below. Our leads for this project include Troy Anderson as project manager and Kyle Graham as regional sales manager.

Contacts (RFI Section 3.0 "Interested Entity's Contact Information")	
Primary Contact Regarding This Submission	Kyle Graham kyle@ecosystempartners.com 828.243.2674 Senior Program Manager (also serving in the capacity of Regional Sales Manager for the purpose of this response)
Company Website URL	**www.ecosystempartners.com**
Type of Organization	Limited Liability Company (LLC)
How long has the company been in this type of business?	13 years, since 2006
Location of Project Manager that would serve the Department	Troy Anderson, located in Baltimore, MD
Location of Regional Sales Manager that would serve the Department	Kyle Graham, located in Erie, CO

Brown AND Caldwell

BROWN & CALDWELL | WWW.BROWNANDCALDWELL.COM

Established in 1947, Brown & Caldwell (B&C) is a nationally recognized environmental engineering and consulting firm with a history of solving complex water issues with cost-effective, science-based, environmentally beneficial solutions. A top 50 Engineering News-Record-ranked national design firm, B&C employs a staff of over 1,700 professional, technical, and administrative support personnel in offices throughout the U.S., including a staff of over 70 based in six Florida offices: Orlando, West Palm Beach, Ft. Lauderdale, Miami, and Tampa. Florida is also home to many of B&C's national leaders in water resources and stormwater treatment systems, including Ann Redmond, Gregg Jones, and Ana DeMelo, bringing

unmatched local experience in technical execution, project permitting, and addressing challenging site conditions to the EIP team for this effort.

As evidenced by its active contracts with four of Florida's five water management districts, B&C is widely viewed as an industry leader in water resource protection and water quality enhancement, including its considerable and recognized resume of STA design and construction projects. With high-profile and large-scale projects such as the South Florida Water Management District's (SFWMD) STA 2, Compartment B Buildout and the EAA A-2 STA that encompasses over 16,000 acres of treatment area, B&C has contributed to the district by satisfying treatment goals and regulatory requirements over the past 25 years. For the proposed effort, Jeff Kivett – previously SFWMD's director of operations, engineering, and construction – will lead a B&C team to design, permit, and oversee construction.

PHILLIPS & JORDAN | WWW.PANDJ.COM

Phillips & Jordan, Inc. (P&J), a Phillips Infrastructure Holdings, Inc. company, is a woman-owned, heavy civil and infrastructure contractor established in 1952. P&J's core values and priorities – integrity, safety, quality, and production – guide its daily business practices. The company carries this commitment with them as they pursue challenging projects in three primary service areas: heavy civil infrastructure development (power generation, water resources, and industrial and commercial), right-of-way infrastructure development (power delivery, foundations, and pipeline services), and disaster response.

P&J entered the Florida market in the 1980s and has since worked extensively throughout the state, now serving the state from a fully staffed office in Zephyrhills. The company has a reputation for taking on challenging projects and successfully completing them on or ahead schedule. For the proposed effort, P&J will work with the design team to maximize project and construction efficiencies prior to leading construction of the STA cells and associated infrastructure.

HASKELL | WWW.HASKELL.COM

Founded in 1965 by Preston Haskell as a design-build company, Haskell is a single source provider of design and construction services. Haskell has successfully completed over 2,500 design-build and CMAR projects totaling $13 billion. Headquartered in Jacksonville, FL, Haskell has 1,500 employees in 26 offices located in the U.S. and internationally. For the proposed effort, Haskell will work with B&C to develop the design for the pump stations and will lead construction of the pump stations and associated systems.

OUR PROPOSAL

Establish a Stormwater Treatment Area (STA) along the lower reaches of the Kissimmee River utilizing a performance-based contract

Our goal is to actively reduce nutrient inputs to Lake Okeechobee from some of its hottest contributing Targeted Restoration Areas (TRAs). Over the past decade, STAs established north of Lake Okeechobee have shown potential to be a productive means of nutrient reduction and provided valuable lessons on placement, sizing, operations, and resources needed to effectively establish and operate additional STAs in the future. An article published in February 2019 by the Everglades Foundation, A Phased Assessment of Restoration Alternatives to Achieve Phosphorus Water Quality Targets for Lake Okeechobee, suggests additional STAs are a necessary component toward achieving the state's goals. However, obstacles associated with land rights, access to reliable water, existing soils, and funding complicate and could potentially delay the government's ability to establish STAs through traditional contracting. These hurdles to implementation are similar to those faced by other government entities, including but not limited to:

- **The State of North Carolina**, while implementing its in-lieu fee program could not complete stream and wetlands restoration projects within required timeline utilizing traditional contracting;
- **The State of California's Department of Water Resources**, which was required by a biological opinion associated with water reallocation projects to restore 8,000 acres of tidally influenced delta smelt habitat within 10 years. A combination of complex real estate negotiations and regulatory hurdles significantly increased the difficulty of meeting environmental targets through traditional contracting on the required timelines, resulting in a shift to performance-based contracting; and
- **The State of Maryland**, which after years of cost overruns and projects that failed to meet Chesapeake Bay restoration objectives, has moved away from traditional contracting or grant-making for the implementation of required water quality mitigation projects to pay-for-success contracts with firms like EIP that deliver water quality benefits measured by the pounds of reductions in phosphorus, nitrogen, and sediment.

In all of the above cases, government entities chose to utilize a form of performance-based contracting to meet their objectives. Performance-based contracts eliminated these agencies' exposure to cost overruns and failed projects by transferring the risk of delivering a successful project to the contractor being paid for the desired outcome. Likewise, performance-based contracts provide an avenue for DEP to deliver successful large-scale projects in optimal locations quickly. Additional information regarding public entities' utilization of performance-based contracts to deliver environmental projects can be found via **Environmental Policy Innovation Center** or **Environmental Incentives**.

Our proposed project site is strategically located adjacent to the Kissimmee River in the Taylor Creek/Nubbin Slough subwatershed (Figure 1). The project combines two existing ranches to establish an approximately 3,350-acre STA on the northern reaches of Lake Okeechobee (Figure 2). The project is scalable, such that both smaller configurations and potentially larger configurations are possible. The project is at the intersection of three high priority subwatersheds: Taylor Creek/Nubbin Slough, Lower Kissimmee, and Indian Prairie. The project location allows for treatment of waters from S-154C Basin and the S-154 Basin through the L-62 Canal, as well as flows and loads from the Indian Prairie C-41A Canal, the Lower Kissimmee River Basin/C-38, and directly from Lake Okeechobee. We anticipate selecting water to treat based on the amount of flow and nutrient concentrations – maximizing potential for the project to retain phosphorus and nitrogen.

Figure 1. Vicinity map of proposed project

Figure 2. Proposed project boundary

Our proposal involves performing all necessary steps to engineer, permit, and construct the proposed STA, as well as five years of operations to maximize the effectiveness of the project and work out potential unforeseen obstacles. We propose a payment schedule in accordance with the following:

Deliverable	**Percentage of Contract Paid**
Preliminary Design Approval	5%
Final Design Report	5%
Land Acquired, Deed Transferred	Cost of Land Acquisition
Pump Fabrication	20%
Final Grading	15%
Final Construction	15%
Successful Year 1 Operations	10%
Successful Year 2 Operations	5%
Successful Year 3 Operations	5%
Successful Year 4 Operations	5%
Successful Year 5 Operations	15%

The EIP team's efforts in preparation for this opportunity are considerable and go well beyond proposing a simple "conceptual" project. Our project is well defined, with important elements in place that will not only allow for completion of construction within an anticipated four-year timeframe, but also provide DEP with a level of certainty that this project is likely to produce results. To establish the feasibility of this project, we have performed the following critical project actions:

- Secured options to purchase real estate necessary for the project;
- Evaluated multiple conceptual STA configurations, pump station locations, and capacities based on configurations considered;
- Performed preliminary modeling of phosphorus and nitrogen reduction that could be obtained by a conceptual configuration;
- Performed a Phase 1 Environmental Site Assessment, including preliminary analysis of existing soils and testing for legacy phosphorus, nitrogen, and contaminants; and
- Engaged contractors to evaluate project risks and provide preliminary opinion of probable cost.

Based on the actions described above, as further detailed in our responses to the RFI items below, our proposal entails delivering a functioning STA capable of retaining on average 23 metric tons (mt) of phosphorus per year within four years of issuing a contract. The proposed approximately $235 million (+/- 10%) pay-for-performance contract would include five years of post-construction operations. Over the expected 20-year life cycle, the project would retain approximately 460 mt (1,014,126 lbs.) of phosphorus at an estimated cost of $234 per pound of phosphorus retained, as well as 427 mt of nitrogen.

REQUESTED INFORMATION

The following information is provided in accordance with RFI Section 5.0 "Requested Information."

1. Specific TRA ID and basin name.

The project is located in both TRA ID 32 (S-154C Basin) and TRA 34 (S-133 Basin). The project will have the capability to treat waters from the following:

- TRA ID 32 – S-154C Basin
- TRA ID 33 – S-154 Basin through the L-62 Canal
- TRA ID 13 – C-41A Canal
- TRA ID 21 – Kissimmee River
- TRA ID 65 – Lake Okeechobee

2. If a private entity is the lead contact, please list any local governments that may be a part of the team. Local government involvement is not a requirement but for this effort is encouraged.

We anticipate that after five years of post-construction operations, the facility would be turned over to the South Florida Water Management District (SFWMD). Coordination of design plans with SFWMD and consultation with DEP is anticipated and included in our preliminary project schedule.

3. What parameter the project or activity will address (TN/TP/flow). If the project or activity addresses multiple parameters, please state in the response.

The project is designed to reduce nutrients: Total Nitrogen (TN) and Total Phosphorus (TP).

4. A general summary of the project or activity being proposed and include at a minimum:

a) Whether the project or activity is based on known and accepted scientific principles of biological, chemical, or physical processes.

b) Whether it has been deployed successfully elsewhere and provide examples.

c) How success is measured or determined.

d) Whether the technology/treatment been previously permitted in the state of Florida. Please identify the permit type and identification (or the associated permit if part of a larger project or activity).

General Summary

We are proposing the establishment of an STA similar to the improved Lakeside Ranch STA (with pump station and new cells online). We propose to utilize a performance-based contract to establish a project that has sufficient access to high phosphorus- and nitrogen-concentrated water for treatment, as well as access to reliable water to maintain the vegetation during the dry season. The proposed project site is adjacent to the Kissimmee River in the Taylor Creek/Nubbin Slough (TCNS) subwatershed and spans approximately 3,350 acres on the northern reaches of Lake Okeechobee. The project is at the intersection of three high-priority subwatersheds: TCNS, Lower Kissimmee, and Indian Prairie.

The property proposed for the project has been in agricultural land use for decades – primarily as improved pasture for cattle ranching. The selected site is outside the recommended Tentatively Selected Plan (TSP) for the Comprehensive Everglades Restoration Plan (CERP) work north of Lake Okeechobee but complements the water quantity work planned for the Everglades by treating the priority basins as identified within the USACE's CERP studies: the S-154 and S-154C Basins.

The site is being proposed due to its location at the northernmost edge of Lake Okeechobee and the high phosphorus content of the proximate waterbodies. The site is geographically located such that there is a high concentration of phosphorus coming directly to the site from the S-154C Basin and the S-154 Basin through the L-62 Canal. The site can also receive flows and loads from the Indian Prairie C-41A Canal and the Lower Kissimmee River Basin/C-38 Canal. Additionally, the location allows non-TMDL-recognized treatment of phosphorus and nitrogen directly from Lake Okeechobee.

STA Configuration

To maximize nutrient retention within the property (as shown in Figures 3-5) we propose to establish two STA systems (STA-2A and STA-2B), each comprised of two cells.

Figure 3. Proposed STA configuration

STA-2A (two treatment cells in parallel)		STA-2B (two treatment cells in series)	
Cell 1	~1,200 acres	Cell 1	~475 acres
Cell 2	~1,200 acres	Cell 2	~475 acres

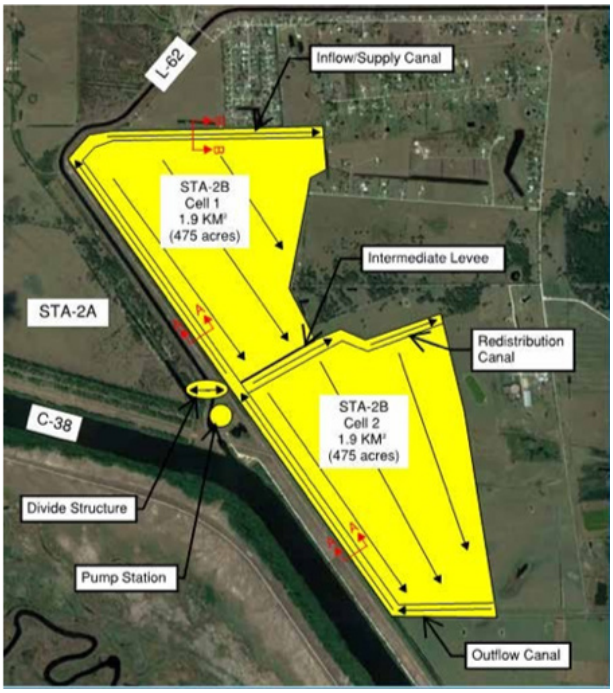

Figure 4. Cells within STA-2A

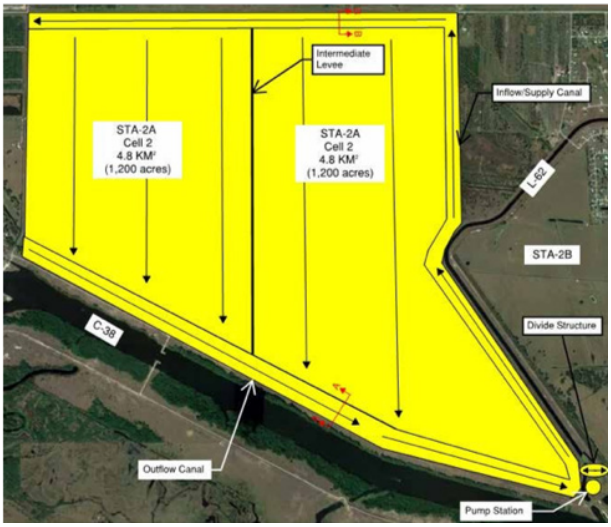

Figure 5. Cells within STA-2A

Each STA will include a constructed wetland that is intended to capture local basin stormwater to reduce phosphorus loading to Lake Okeechobee. These STAs will use C-38 Canal (south of the S-65E Structure) as a reservoir during the dry months and stormwater runoff of the local basins for supply during wet months.

Wetland treatment is proposed to uptake phosphorus and nitrogen from the site via Emergent Aquatic Vegetation (EAV) and Submergent Aquatic Vegetation (SAV), such as cattails (Typha spp.), coontail (Ceratophyllum demersum), and periphyton.

Water levels are desired to be maintained between approximately 15 to 18 inches for optimal vegetation health. Water levels are designed for a maximum depth of 4 feet during large storm events but must be monitored regularly to ensure they drop back to regular water levels to avoid plant death.

An intake pump station and associated infrastructure will be constructed near the area where L-62 Canal discharges into C-38 Canal. This pump station will divert water from C-38 Canal and L-62 Canal to both STAs via conveyance canals. Construction of new inflow/supply canals will consist of gated inflow structures, spreader canals, and associated levees along the perimeter of the STA. Seepage canals will be required for flood

protection purposes along all proposed levees. Construction of collector (outflow) canals will include levees and gated outflow structures. A gravity flow outlet structure will release water back into downstream outflow canals to maintain water levels.

Sections A (Figure 6) and B (Figure 7) highlight typical improvements recommended near existing levees bordering proposed canals and at new levee locations. Section A includes a proposed inflow canal, control levee, and spreader canal to distribute water in the STA. Section B is similar to Section A but with an added seepage canal recommended to be installed adjacent to private property.

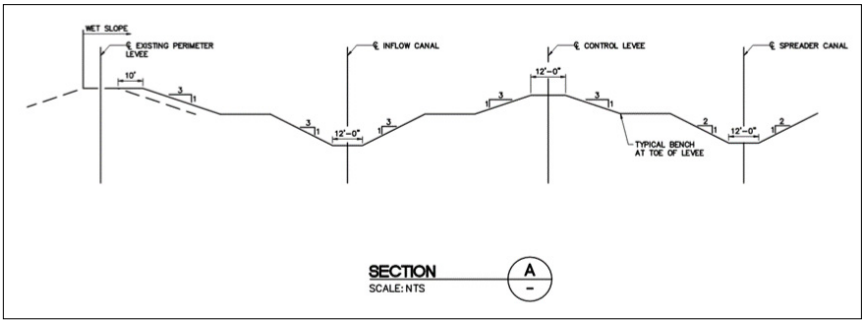

Figure 6. Canal and levee schematic for Section A

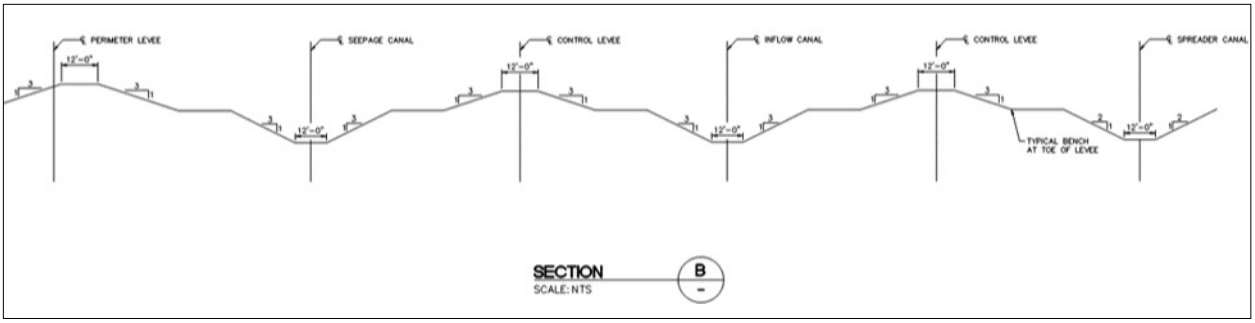

Figure 7. Canal and levee schematic for Section B

Operations Plan

The project will be operated to maximize the treatment of phosphorus and nitrogen from the stormwater runoff of the surrounding area. The expected treatment will come from S-154C Basin, S-154 Basin, Indian Prairie Subwatershed, Lower Kissimmee Subwatershed, and Lake Okeechobee. The priority of basin water treated will be driven by the basin that contains the highest concentration of phosphorus. Based on current available data, the following is the anticipated priority of operations.

- **S-154C Basin**. The project will be located predominately in the S-154C Basin. All flows from this basin will be captured though either localized flood control pump stations where water flows under State Road 70 or within the footprint of the project.

- **S-154 Basin**. The main pump station for the project complex will be located on the L-62 Canal near the S-154 Structure and C-38 Canal. The pump station will prioritize the flow and loads from the L-62 Canal and deliver these flows to the STA inflow distribution canals. When flows are greater than the pump station capacity, a gravity bypass structure will allow bypass of the pump station to maintain the level of flood protection the canal currently provides.
- **Indian Prairie Subwatershed**. Flows from the Indian Prairie Basin are partially discharged to Lake Okeechobee by the C-41A Canal through the S-78 Structure. When there is capacity in the main pump station for the new STA and there are flows out of the S-78 Structure, the pump station will deliver these flows to the STA inflow distribution canals.
- **Lower Kissimmee Subwatershed**. Flows from the Lower Kissimmee Basin are discharged to Lake Okeechobee by the C-38 Canal through the S-65E Structure. When there is capacity in the main pump station for the new STA and there are flows out of the S-65E Structure, the pump station will deliver these flows to the STA inflow distribution canals.
- **Lake Okeechobee**. When there is available water in Lake Okeechobee and pump station capacity in the main pump station for the new STA, the pump station will deliver these flows to the STA inflow distribution canals.

The new pump station will deliver local basin water through inflow canals to the northern side of the STAs. Water control structures will be utilized to move the untreated water through the protection levees to a distribution canal utilized to spread the water across the created wetland and develop a sheet flow across the landscape. Flows will move from the north through a wetland landscape of EAV and SAV to a collection canal at the south end of the STA. Water control structures will then be used to transfer the treated water from the STA through the protection levees and into a discharged canal. The treated water is then discharged through a gravity structure into the C-38 Canal and into Lake Okeechobee.

The STA will also contain a series of seepage canals. Water stored up to 4 feet above grade creates a potential impact to surrounding landowners. To offset a potential increase in water table on these lands, the seepage canal will intercept seepage from the STA and return it to the STA for ultimate treatment and discharge to Lake Okeechobee. In some instances, the seepage canal will be used to transfer flows from adjacent properties to the STA where their current drainage would be cut off by the project.

Similar to other recent SFWMD projects, the proposed STA will include new Supervisory Control and Data Acquisition (SCADA) and telemetry infrastructure throughout the project area. SCADA will be addressed during the design phase to identify SCADA needs for the construction and operations of the STA. SCADA is recommended at pump stations and water control structures at a minimum. Coordination will be performed with SFWMD to ensure compatible systems are installed.

Operations and Maintenance

The proposed STA will include new infrastructure, such as a new pump station, inflow/outflow structures, levees, stormwater wetlands, etc. Coordination with O&M will take place during the design phase to identify operations and maintenance needs for the STAs once completed. STAs are highly managed systems involving various personnel for routine operation and maintenance of pumps, gates, structures; planting of desired vegetation; and removal of unwanted vegetation. Routine operation and maintenance items include

levee inspection, hydraulic and water depth control, cleaning of inlet/outlet structures, wetland vegetation management, and mosquito and animal control.

The STA will need to be actively maintained by a crew. Items such as the pump station, water control structures, water quality monitoring devices, levees, and communication equipment will require routine maintenance and repairs to keep the project operational. In addition, to maximize the treatment efficiency of the project, a vegetation crew will be required to monitor and treat the area to maintain the density and type of vegetation on the site.

a) Whether the project or activity is based on known and accepted scientific principles of biological, chemical, or physical processes.

Since the 1990s, phosphorus controls have been implemented to improve water quality in the Everglades Protection Area under the Everglades Forever Act, with a major component being Everglades STAs. SFWMD has continuously studied and refined its approach to STA design and operations, and today, STAs are recognized as the most effective and proven approach to watershed-scale phosphate reduction, allowing nutrient uptake to occur via emergent, submergent and floating plants, periphyton, plant litter accumulation, sediment storage, and chemical precipitation particulate settling.

b) Whether it has been deployed successfully elsewhere and provide examples.

Our project is modeled on SFWMD's STAs, using its design standards. According to the SFWMD's 2019 South Florida Environmental Report, over its 24-year operational history, the Everglades STAs have treated approximately 20.1 million acre-feet of water and retained 2,604 metric tons of TP with a 77% TP load reduction. In Water Year 2018, with 57,000 acres of treatment area, the STAs treated a combined 1.6 million acre-feet of water and retained 275 metric tons of TP, which equated to a 77% TP load reduction. Approximately 107,000 acre-feet of the water treated in the STAs came from Lake Okeechobee; the remaining water came from agricultural and urban runoff.

Among the lessons learned over the years, including with STAs implemented north of Lake Okeechobee, is that reliable water supply to the STA is critical to ensuring phosphorus uptake. Situations where an STA has experienced a dry-up have resulted in export of phosphorus. A critical design feature of our project is its location at the junction of the L-62 and C-38 Canals, which will ensure our ability to maintain adequate water levels in the STA cells to continuously reduce phosphorus and nitrogen loads.

SFWMD continues to study operational aspects of STA management, and the EIP team will continue to maintain contact with the district's science and operations staff to ensure our operational approach is as sound as feasible.

c) How success is measured or determined.

Similar to existing STAs, nutrient loads of water will be measured entering and exiting the STA to determine the amount of nutrients retained. Additional monitoring will occur throughout the project to determine effectiveness of individual cells. Success will be measured by the overall mass of nutrients removed and the cost per unit mass achieved. The response to item 8 below describes our proposed approach in more detail.

d) Whether the technology/treatment been previously permitted in the state of Florida. Please identify

the permit type and identification (or the associated permit if part of a larger project or activity).

Multiple STAs have been permitted in Florida since the 1990s. The response to item 9 below describes the requisite permitting in more detail.

5. Estimate of total costs for the project or activity, including operation and maintenance costs if applicable. If a multi-year project or activity provide a cost breakdown by year for up to a 20-year period.

We propose utilizing a performance-based contract to deliver this project. The contract would include all activities necessary to deliver a fully functioning project, with payments tied to deliverables or performance. To ensure the project functions and performs as anticipated, we propose the contract includes five years of operations, after which the facility would be turned over to DEP or SFWMD.

Deliverable	Approximate Timing	Percentage of Contract Paid	Estimated Payment Amount
Preliminary Design Approval	3/2021	5%	$10,209,508
Final Design Report	3/2022	5%	$10,209,508
Land Acquired, Deed Transferred	3/2022	Cost of Land Acquisition	$30,808,407
Pump Fabrication	12/2022	20%	$40,838,319
Final Grading	3/2023	15%	$30,628,739
Final Construction	3/2024	15%	$30,628,739
Successful Year 1 Operations	5/2025	10%	$20,419,159
Successful Year 2 Operations	5/2026	5%	$10,209,508
Successful Year 3 Operations	5/2027	5%	$10,209,508
Successful Year 4 Operations	5/2028	5%	$10,209,508
Successful Year 5 Operations	5/2029	15%	$30,628,739
		TOTAL Amount	**$235,000,000**

Similar to other STAs, we anticipate a 20-year functioning life for the project. Following the five years of operation outlined above, an additional cost of approximately $900,000 per year will be needed to operate the facility for years 6-20. Therefore, the anticipated cost to retain approximately 460 mt of phosphorus and 427 mt of nitrogen with this facility over the next 20 years would cost $248,500,000.

6. Estimated reduction benefits (TN/TP concentration or load – please state clearly if using another metric) to the specific basin or basins and include how that calculation was developed. If a multi-year project or activity provide reduction benefits by year.

Phosphorus

The hydrologic data utilized in determining a reduction in phosphorus were obtained from the SFWMD's environmental database, DBHYDRO. The historical data daily mean flow rates and TP concentrations data from June 2009 to June 2019 were obtained for the following monitoring stations:

- TRA ID 32 – S-154C Basin
- TRA ID 33 – S-154 Basin
- TRA ID 13 – C-41A Canal
- TRA ID 20 – S-65E Basin

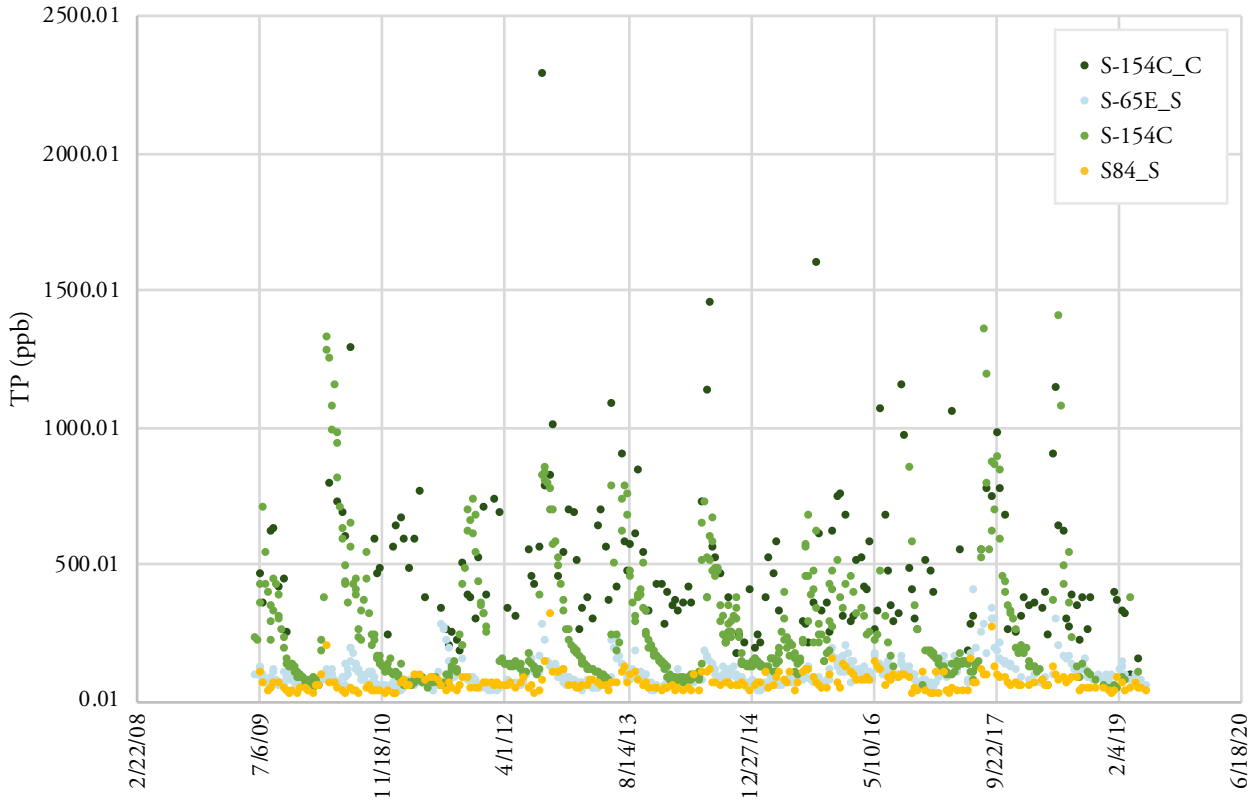

Figure 8. Timeseries of observed TP (ppb) for the S-154C-C, S-154C, S-84S, and S-65E monitoring stations

Utilizing the DMSTA model used by SFWMD and developed by Walker and Kadlec, a range of potential phosphorus reduction for the project was determined. DMSTA simulates daily water and mass balance in a user-defined series of wetland treatment cells, each with specified morphometry, hydraulics, and phosphorus cycling parameters.

Several assumptions were made to prepare the DMSTA model, including STA configurations, cell size, flow path width, vegetation type, inflow and outflow hydraulic, seepage estimates, legacy phosphorus on the land, and phosphorus removal rate (settling rates).

In the data series we chose, the phosphorous concentration timeseries were pre-processed before using in the model and are summarized below.

Average Phosphorus Concentration (ppb) for All the Basins	
Basin	Average Phosphorus Concentration (ppb)
S-154C	708
S-154	Limited Liability Company (LLC)
150	13 years, since 2006
S-84S	150
S-65E	201

Then, the flow and concentration timeseries were prioritized for each of the basins in the following order: S-154C, S-154, C-41A, and S-65E, all with a maximum flowrate of 500 cfs. A major purpose of shifting inflows from one basin to another is to meet our design goal of 15 to 18 inches inundation depth, to ensure the STA cells do not dry out, resulting in an export of phosphorus.

These results show that for the proposed area, the range of removal is an average of 23 mt/yr (50,500 lb/yr). With respect to the phosphorus discharge levels, the anticipated flow weighted mean concentration is 0.056 mg/L. When looking at each of the TRAs based on the priority of the basins, the complete flows and loads from S-154C and approximately 95% of the flows and loads from the S-154 basin will be treated.

Additional refinements to model parameters and analysis of inflow distribution from the L-62, C-38, and L-41A Canals will need to be investigated in the future to enhance model results and cell configurations. Optimizing flow distributions within the STA will provide a better understanding of the dynamics of the area and additional benefits from the results obtained with this preliminary model.

Nitrogen

There has been recent interest in the additional benefit of nitrogen removal in the Lake Okeechobee watershed, including in the STAs, however there has been limited research in evaluating which models are most appropriate for STA systems. For this project, the team has reviewed the existing literature and created a simple model following the below modified steady-state equation (Kadlec and Knight, 1996; Kadlec and Wallace, 2009):

$$\frac{C_o - C^*}{C_i - C^*} = \frac{1}{(1+klPq)^P}$$

where

C_o = outlet concentration, mg/L
C_i = inlet concentration, mg/L
C^* = inlet concentration, mg/L
k = inlet concentration, m/d
P = inlet concentration, mg/L
q = inlet concentration, m/d

After identifying appropriate rate constants and background concentrations for the system, the above equation was applied to measured inflows and nitrogen concentrations in the S-154C and S-154 Basins from January 2013 through September 2019 to estimate concentrations of nitrogen leaving the project's treatment wetlands. Inflow and outflow concentrations in mg/L were then converted to loading values in kg/d to determine an average TN removal rate.

At this stage in the feasibility assessment, only the S-154C and S-154 Basins were investigated. Treatment of additional flows from the Indian Prairie, Lower Kissimmee, and Lake Okeechobee TRAs are anticipated to provide additional nitrogen removal. The average result of these efforts are as follows:

Basin	Nitrogen (mg/L) In	Nitrogen (mg/L) Out	Nitrogen Removed (mg/L)	Nitrogen Removed (kg/d)
S-154C	2.02	1.5	0.52	10.47
S-154	1.72	1.53	0.19	48.05

8. Monitoring plan that will quantify benefits from the project or activity. If the monitoring plan includes data associated with a regulatory permit or requirement, state in the plan.

Water quality monitoring will be implemented to quantify phosphorus and nitrogen load reductions attributable to the STA system. At a minimum, the monitoring program will consist of regular monitoring of inflow and outflow water volumes and phosphorus and nitrogen concentrations for calculation of overall phosphorus and nitrogen removal from water flowing into Lake Okeechobee. A pilot study will be conducted to determine the best sample collection methodology and frequency for this specific project. The results from similar studies on other STAs in south Florida will be used to inform the design of and interpret results from the pilot study.

Additional monitoring programs will be developed to assess the impacts of the chemical, biological, operational, and design characteristics of the STA on its phosphorus removal performance. In addition to the inflow and outflow data that will be collected to determine overall load reductions, data will be collected (as needed) in the contributing and receiving waterbodies, as well as from within the treatment system. These programs will be designed to identify key drivers of phosphorus removal so the results can be used to optimize operations to maximize nutrient removal. These studies could include investigations into the effects of the following factors on phosphorus (and nitrogen) dynamics:

- Inflow volumes (e.g., pulse vs. consistent, high vs. low) and nutrient concentrations;
- Season, rainfall, and temperature;
- Water residence time, depth, and flow path within the STA;
- Particle dynamics, sediment accrual, and flux mechanisms;
- Vegetation type, location, and maintenance schedules; and
- Aquatic, terrestrial, and avian fauna.

9. Any applicable permits (existing or expected) that may be associated with the project or activity.

The majority of permits that will be needed are as follows:

County

- Planning and zoning permits in Highlands County and Okeechobee County. The site is primarily in Okeechobee County, with a small portion of the project – about 15 acres – in Highlands County. The area is primarily zoned agriculture and residential rural, which allows for the construction of water conservation features. A small area of the property is zoned as single-family residential and may need to be rezoned.
- Building permits for the pump station and associated maintenance building
- Site plan approvals for overall STA project development

State

- National Pollutant Discharge Elimination System (NPDES) permit (pursuant to Section 403.0885, Florida Statutes) to maintain and discharge from the STA
- Clean Water Act Section 401 Water Quality Certification

SFWMD

- Environmental Resource Permit
- Consumptive use permits

USACE

- Clean Water Act Section 404 Permit
- Civil Works Section 408 Permission – needed to work in and around federally authorized projects (Lake Okeechobee and associated levees)

10. A schedule that includes estimated time and readiness to proceed for the project or activity. The Department anticipates any project or activity – that meets criteria listed in this request – that is implementable within three years will have a higher priority if funding is made available.

In preparation for this opportunity, the following actions have already been performed:

- Project feasibility analysis (Phase 1, preliminary site layout evaluation, and initial nutrient modeling);
- Land control; and
- Subcontractor interviews and selection.

It is proposed that approximately 24 months will be needed to complete engineering, design, and permitting, and 24 months will be needed to construct the project. As such, the constructed facility should be in operation within four years of issuing the contract. Once the site has been operated and maintained for five years, the site will be turned over for ongoing operation and management.

Start Dates	Finish Dates	Activities	2020	2021	2022	2023	2024	2025
4/1/20	4/1/20	Notice to Proceed						
4/1/20	9/30/20	Design Development Report						
7/1/20	3/31/22	Permitting						
10/1/20	3/31/21	Preliminary Design						
4/1/21	4/15/21	SFWMD Review						
4/16/21	9/30/21	Intermediate Design						
10/1/21	3/31/22	Final Design						
4/1/22	4/15/22	SFWMD Review						
4/16/22	9/30/23	Construction						
10/1/23	6/30/25	Flooding and Optimization						

11. Identify any necessary infrastructure needed for this project or activity (e.g., electricity, connection to sewer, land easements). Provide a plan to address any infrastructure deficiencies that may be present at the location of the project or activity.

The STA will mostly be comprised of existing material on site for creation of the levees. Concrete and mechanical equipment will be provided for the pump station and water control structures. The plan is to utilize electricity or potentially natural gas for pump station operations. Our preference is for natural gas pumps if there is an accessible gas transmission line nearby. To minimize the need for electrical transmission lines, solar panels will be utilized to provide energy throughout the facility wherever practical. We will need an easement on SFWMD property that runs adjacent to the proposed project site to accommodate these facilities.

12. Does this project or activity include the purchase or lease of land? If Yes, provide a summary of agreements, leases, or pertinent information to demonstrate status of land acquisition.

The project requires purchasing two large tracts of property. EIP has both properties under contract.

14. Provide any additional information the Department should be aware of or should consider. Expand on any relevant topics that were not specifically described in this RFI.

The project team has a long period of collaboration. EIP and B&C have worked together continuously on projects in Delaware, Louisiana, Alaska, and now Florida since 2012. B&C and Haskell have a long history together as well, including joint venture and design build projects in Florida, South Carolina, and Washington, as well as the award-winning Bush Beans Process Water Reclamation Facility in Tennessee. Finally, Haskell and P&J have collaborated on many projects throughout the southeastern U.S.

15. Yes or No, Does the interested entity agree that the plans for monitoring, audits and site inspections, which are meant to demonstrate and confirm the project or activities efficacy and reliability, can be prepared in full cooperation with the Department; use EPA or Department standard methods; use only laboratories with National Environmental Laboratory Accreditation Program (NELAP) certification; and that the plan must meet the full approval of the SFWMD?

Yes

CONCLUSION

EIP's proposed STA project represents a valuable opportunity for the State of Florida and DEP to implement an effective process for the reduction of nutrients in Lake Okeechobee and other related natural waters. Our team is comprised of highly qualified leaders in this industry, with significant Florida experience designing and constructing similar facilities.

Our performance-based contract approach with its fixed-price, outcome-based contract reduces the state's risk on this investment, ensuring a viable and operable facility will be the result. Our project is far along in the development process, including having active contracts pending for the parcels to be used for the new STA, which means the project can be implemented rapidly. Our operational plan includes five years of demonstration, allowing our team to address field issues and fine-tune operations before DEP or SWFMD assumes operations. Our projected mass of nutrients removed and anticipated project costs per pound of TP and TN removed are well within industry standards and represent a worthwhile investment by the State of Florida.

Overall, we strongly believe that the proposed project described in this proposal would be an ideal part of DEP's overall strategy to improve water quality in the Lake Okeechobee watershed and that our team is perfectly positioned to deliver this project on your behalf. We appreciate your consideration and are available to answer any additional questions you may have as you consider this opportunity.

ECOSYSTEM INVESTMENT PARTNERS
5550 NEWBURY STREET, SUITE B
BALTIMORE, MD 21209
443.921.9441

WWW.ECOSYSTEMPARTNERS.COM