



Indian River Lagoon National Estuary Program

1235 Main Street, Sebastian City Hall Complex, Sebastian, FL 32958

“One Lagoon – One Community – One Voice”

March 9, 2017

ATTN: IRLNEP Program Evaluation Team:

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The Indian River Lagoon National Estuary Program is pleased to submit our 2017 Five-Year EPA Program Evaluation Report for your review and comment. We have consciously kept our package concise and formatted to align with the NEP Program Evaluation Logic Model and Standardized Performance Measures for Program Management Core Elements.

NEPs strive for demonstrated progress on CCMP action plans to achieve the long-term outcomes of restoring and maintaining the ecological integrity of estuaries of national significance. However, the strength and value of a national estuary program is tested most when a NEP management conference must respond to a combination of factors that shift the trajectory of an estuary from improving health to declining health.

During this five-year program evaluation time frame (2011-2016), IRLNEP and our Management Conference partners were challenged by a combination of IRL ecosystem events that changed our perception of IRL health and greatly increased the service and support we provided to IRL stakeholders, communities and citizens.

A dramatic ecological state-shift from a benthic aquatic vegetation system to one dominated by planktonic microalgae began in 2011 with an unprecedented pico-cyanobacterial bloom (now referred to as the “2011 superbloom”). The post-2011 IRL is now characterized by intense, recurring and long-lasting algal bloom conditions, widespread loss of seagrass habitat, and episodic wildlife mortality events. On-going blooms of pico-cyanobacteria, dinoflagellates and the Texas brown tide species, *Aureoumbra lagunensis*, are now the “new normal” for the central and northern IRL. These ecosystem shifts challenge our scientific understanding of nutrient enrichment thresholds, nutrient cycling and tipping points for the IRL.

Concurrent with these ecosystem-wide stress-response issues, the southern Indian River Lagoon was severely impacted by massive seasonal freshwater release events from Lake Okeechobee during times of high water. During the Summer of 2013 (the “Lost Summer”), billions of gallons of freshwater were released east through the St. Lucie Estuary (SLE) and southern IRL. As a result, the SLE and southern IRL experienced catastrophic salinity shifts to sustained freshwater conditions. The combination of freshwater, high nutrients and an inoculant of the cyanobacteria *Microcystis* from Lake Okeechobee fueled cyano-HABs of *Microcystis* in portions of the southern IRL.

In 2016, large-volume, high-velocity freshwater releases from Lake Okeechobee from February through November (“the Lost Year”) fueled an intense *Microcystis* cyanoHAB with reported microcystin toxin concentrations that greatly exceeded World Health Organization standards. The 2013 and 2016 events highlight the close watershed connections between the IRL and Everglades ecosystem and the need to look beyond the historic watershed boundaries of the IRL as the IRLNEP begins its CCMP revision in 2017.

In response to these dramatic shifts in ecosystem state and health, the IRLNEP with support of local, state and federal partners within the Management Conference, initiated a historic reorganization of the 25-year IRLNEP in 2015. The driving force for this reorganization was unified agreement that a new structure and business model were needed within the IRLNEP to enhance local community engagement, expand IRLNEP activities to be more inclusive of the entire IRL ecosystem (as well as adjoining systems that influence the lagoon watershed), encourage greater participation from the private-sector, and expand funding for ecosystem restoration at all levels of the public-private-independent sector partnership.

This reorganization is now represented by a unifying theme and developing brand: “*One Lagoon – One Community – One Voice*”. The cornerstones for this brand are identified as “themes” in Section VII. External Factors.

Because this transformational change occurred in the 5th year of the program evaluation timeframe (FY 2011-2016), this Program Evaluation report will provide responses with reference to two timeframes:

1. Fiscal Years 2011-2015.
2. Fiscal Year 2015-2016 (The first fiscal year for the new IRL Council as host of the IRLNEP).

The following list reflects a timeline of activities with a selection of the most significant milestone accomplishments during the program evaluation review period. Comprehensive descriptions of IRLNEP performance are provided in the Program Evaluation report narrative and support documentation. To provide succinct documentation of program compliance to EPA program performance standards and facilitate easy access to support documents, the narrative will identify each support document with a reference number and descriptive title. Each support document can be accessed in 2 ways, through a hyperlink

within the narrative or a hyperlink in a Support Document listing. The entire Program Evaluation package will be available at www.irlcouncil.com on the date of PE report submission to EPA (on or before March 15, 2017).

EXECUTIVE SUMMARY

During the five-year PE review timeframe, transitions in both IRLNEP work plan priorities and projects are clearly demonstrated. Over the 5-year period, the IRLNEP funded 76 projects that aligned most closely with 13 of the 23 CCMP action plans identified in the 2008 CCMP update. Most significant within those categories of projects, were initiatives that addressed fresh and stormwater discharges, wetlands, public information and engagement, fisheries and monitoring.

The following summary by fiscal year provides a selection of major program milestones and highlights:

FY 2011-2012: IRL Impacted by Algal “Superbloom”:

- IRLNEP work plan projects developed during the previous year focused on water quality and invasive species monitoring with the St. Johns River Water Management District (SJRWMD) and University of Central Florida respectively. Citizen education and engagement projects were implemented as a high-priority application of EPA Section 320 funds. For the first time, IRLNEP funded a project to pilot test nutrient reduction strategies. Grant writing/capacity building support of local community projects that implement the IRL CCMP provided a high return on investment value to local community partners. Local and state agencies began to react and respond to the 2011 superbloom by convening local community and scientific workshops. The SJRWMD convened and funded a consortium of more than 20 scientists to explore available data and identify cause-effect relationships that potentially could explain what triggered and sustained the superbloom. Scientists from IRLNEP, Bethune-Cookman University, Florida Fish and Wildlife Conservation Commission, Florida Institute of Technology, Guana-Tolomato-Matanzas National Estuarine Research Reserve, Harbor Branch Oceanographic Institution at Florida Atlantic University, Nova Southeastern University, Smithsonian Marine Station at Fort Pierce, University of Florida, SJRWMD (current and retired scientists) were all involved and continue to meet in 2017.

FY 2012-2013: IRLNEP and Management Conference response to algal blooms, first recorded bloom of *Aureoumbra lagunensis*, and unusual wildlife mortality events:

- Algal blooms continued with documentation of wildlife morbidity and mortality events, expansive loss of seagrasses, and emergence of an intense Texas brown tide bloom of *Aureoumbra lagunensis* (the first *Aureoumbra* bloom ever recorded for the IRL). IRLNEP work plan projects responded to these changing IRL water quality conditions. Significant investments from the State of Florida and SJRWMD drove scientific initiatives to better understand the algal blooms and internal/external forces driving the blooms. The IRLNEP work plan reflected a change in focus towards increased emphasis on water quality and seagrass monitoring, application

of CWA 320 funds for expanded program staff support, and habitat restoration efforts in areas where water quality supported restoration. Citizen education and engagement continued as a high priority initiative. Growing citizen concerns required a significant increase in IRLNEP staff engagement with local communities and citizens. The IRLNEP work plan continued to invest in local government grant writing/capacity building support of the IRL CCMP. Development of Basin Management Action Plans (BMAPs) for stakeholders and Total Maximum Daily Loads (TMDLs) were developed and adopted by FL DEP in January 2013. IRLNEP was an active participant in the BMAP/TMDL process.

FY 2013-2014: IRLNEP mobilizes Management Conference and community partners to respond to IRLNEP water quality and algal bloom challenges:

- IRLNEP continued to adapt its work plan priorities in response to changing IRL conditions. Work plan projects focused on a new 3-year Indian River Lagoon Protection Initiative of the SJRWMD. Other priorities included nutrient source identification, nutrient loading quantification, and habitat restoration projects. Citizen education and engagement continued along with investment in local government grant writing/capacity building support of the IRL CCMP. Significant discussion began within the IRLNEP Management Conference and with local community leaders about rethinking the business structure and role of the IRLNEP. The Indian River Lagoon Counties Collaborative formed among 6 IRL counties (Brevard, Indian River, Martin, Palm Beach, St. Lucie and Volusia) to discuss local water quality issues and demand action. The IRLNEP Management Conference and IRL Counties Collaborative reached out to other NEPs, including the Tampa Bay Estuary Program and Sarasota Bay NEP for advice and best practices guidance.

FY 2014-2015 Creation of the IRL Council as a new network governance model to respond to the IRL ecological regime shift:

- The IRL Council, an independent special district of the State of Florida, was created (February 2015) by Interlocal Agreement among Florida Department of Environmental Protection, St. Johns River Water Management District, South Florida Water Management District, Volusia County, Brevard County St Lucie County and Martin County with the primary goals of hosting the IRLNEP, reorganizing the program to enhance local government engagement and expanding financial resources. The Interlocal Agreement was amended (September 2015) to include the Indian River County Lagoon Coalition, comprised of representatives from the cities of Vero Beach, Sebastian and Fellsmere in Indian River County. The U.S. EPA was an active participant in the reorganization process. This interlocal agreement called for expansion of local annual contributions to the IRLNEP to supplement annual EPA Section 320 funding.

FY 2015-2016: First fiscal and operating year of the IRL Council as the new host organization for the IRLNEP with a primary focus to restructure the IRLNEP Management Conference to be more inclusive with expanded scientist, community and citizen engagement.

- The IRL Council (through Interlocal Agreement) made FY 2015-2016 financial commitments of \$1.5 million in state and local annual contributions to match the \$600,000 Section 320 funds from EPA. IRLNEP continued to implement its work plan obligations within the host agency, SJRWMD. Work plan projects focused on habitat restoration, stormwater remediation, living shorelines, community education and outreach, and novel scientific research to investigate molecular tool development and implementation to advance rapid assessment of pico- and nano-planktonic algae in the IRL.
- The IRL Council began its 1st fiscal year with \$1.5 million in expanded revenues for work plan implementation from the state, regional and local parties to the IRL Council interlocal agreement. A new IRLNEP Executive Director was hired October 1, 2015. The Executive Director hired 2 full time equivalent staff positions (FTE's) with local funds (Chief Operating Officer on December 1, 2015 and Administrative-Communications Director on April 25, 2016). Strategic staffing decisions were made by IRL Council to keep administrative and overhead costs low. The current IRLNEP staff composition provides future options and opportunities for staff additions, as needed, to respond to changing needs and demands of the evolving program. Financial and legal services were provided through 3rd party contract support (Special District Services, Inc. for financial management and Torcivia, Donlon, Goddeau & Ansay, P.A. for legal services). Based on current IRLNEP staff workloads, geographic size of IRL and scale/complexity of the ecological challenges, it is anticipated that additional staff capacity will be required. These growing program capacity needs can be addressed through third-party contract support or hiring of FTE staff.
- The IRL Council was named as the new host of the IRLNEP on January 8, 2016. All IRLNEP assets were transferred from the SJRWMD to the IRL Council, including all FY 2015-2016 projects identified by the previous IRLNEP Management Conference. The IRLNEP negotiated scopes and contracts for FY 2015-2016. In addition, IRLNEP staff quickly mobilized the RFP process to identify projects for FY 2016-20167 (current year). A revised approach to work plan development has been implemented for FY 2017-2018 to enhance alignment of work plan projects, timing of annual revenues and full integration of the new IRLNEP management conference in decision making.
- A vision and structure for a new IRLNEP Management Conference was created in FY 2015-2016. Management Conference advisory committees to the IRL Council (Policy Board) include a Management Board (33 members); Citizens Advisory Committee (22 members representing all 5 counties); Science, Technology, Engineering and

Modeling Advisory Committee (representing 22 academic, NGO and research institutions) and a new IRLNEP Innovators and Investors Network (IRLI²) to encourage greater participation from the IRL business and industry community. Fourteen (14) work plan projects were funded through the EPA work plan grant with a focus on citizen engagement, habitat restoration and nutrient reduction. IRLNEP continued to invest in local government grant writing/capacity building support of the IRL CCMP. The importance of that local partner capacity development increased as the state of Florida responded to the local restoration needs by investing greater local cost-share funding for IRL restoration and infrastructure improvements.

The Executive Summary above provides a basic foundation for understanding the transformation that has occurred both within the Indian River Lagoon and the IRLNEP as we reorganized to better respond to changing ecosystem conditions. Full narrative explanations of IRLNEP performance, standardized performance measures for program management core elements and support documents are provided in the PE package narrative.

We look forward to your site visit in June. Please don't hesitate to contact us at any time with questions or if you require additional information.

Sincerely,

A handwritten signature in black ink, appearing to read "Duane E. De Freese". The signature is fluid and cursive, with the first name "Duane" being the most prominent.

Duane E. De Freese, Ph.D. Executive Director