South Florida Water Management District

GOVERNING BOARD MONTHLY MEETING AGENDA

February 8, 2024
9:00 AM
District Headquarters - B-1 Auditorium
3301 Gun Club Road
West Palm Beach, FL 33406

FINAL

1. Call to Order - Chauncey Goss, Chairman, Governing Board

2. Pledge of Allegiance

3. Employee Recognitions
   - 2023 Employee of the Year: Lissette Sori, Section Administrator - Budget
   - 2023 Team of the Year: Taylor Slough Flow Improvement Project Team
   - January 2024 Employee of the Month: Tadese Adeagbo, STA Vegetation Management Scientist Senior
   - January 2024 Team of the Month: Sea Level Rise and Flood Resiliency Plan Team
   - February 2024 Employee of the Month: John Slingerland, Field Operations & Maintenance Supervisor, West Palm Beach Field Station
   - February 2024 Team of the Month: Infrastructure Map Team
   - 25-Year Service Award: Shiyong Lin, IT Developer - Specialist
   - 25-Year Service Award: Kimberley Nisip, Legal Administrative Specialist
   - 30-Year Service Award: Robert Shuford, Lead Scientist

4. Agenda Revisions

5. Agenda Item Abstentions by Board Members

6. Consider Approval of the Minutes for the December 14, 2023 Meeting

7. Executive Director's Report - Drew Bartlett

8. General Public Comment

9. Board Comment

10. Move Consent Agenda Items to Discussion Agenda

11. Public Comment on Consent Agenda Items

12. Board Vote on Consent Agenda

Consent Agenda

13. Back Up Controller System (Staff contact, Lucine Dadrian, P.E.)

Agenda Item Background:
As part of the District's Resiliency of Coastal Structures and Capital Improvements Program, the Back Up Controller (BUC) System Project (System), located District-wide, will support the water control structure monitoring and control platform improvements for enhanced functionality, manatee protection and storm-resistant structures. The BUC is a requirement for flood control structures and provides a backup system if the primary monitoring and control system fails to allow uninterrupted operations. The BUC will allow the District Control Room to remotely adjust water elevation setpoints providing greater flexibility for overall water management operations. The District has developed the BUC Drawings and the prototype whereas Pantropic Power, Inc. has developed the software for the BUC prototype. Pantropic power will furnish all BUC Panels to be deployed in the field by District staff.

The scope is to maintain standardization of the design and overall integration of the BUC that is integrated into a control panel for each site. The assembly of all control panels must be overseen by the developer and the programming expert to preserve the quality control of the process. An additional controller unit will be designed to combine the BUC with the Manatee Protection System, which needs prototyping & pilot testing and installation to expand the technology in the southern coastal sites.

The project is part of the Coastal Structure Enhancement and Self-Preservation Mode project, which is receiving grant funds from the Resilient Florida Program. This request is to designate Pantropic Power as the sole source supplier of BUC and BUC with Manatee Logic System software programming, assembly, construction, and support services. This contract will be executed through a special procurement under Section 155-6 of the District's Policies and Procedures.

Recommended Action:
Resolution No. 2024-0201 Authorize entering into an 850-day contract with Pantropic Power, Inc. as the sole source vendor, for the Back Up Controller System, in the not-to-exceed amount of $1,000,000, for which dedicated funds (State Revenue Sources) and Ad Valorem funds are budgeted in Fiscal Year 2023-2024 and the remainder is subject to Governing Board approval of future

years budgets. (Contract No. 4600004932)

Resolution No. 2024-0201
Location Map

14. Central Everglades Planning Project North S-8 Pump Station Modification Phase 1 Crane Refurbishment, Broward County (Staff contact, Lucine Dadrian, P.E.)

Agenda Item Background:
As part of the Comprehensive Everglades Restoration Plan, the Central Everglades Planning Project North (CEPP North) - S-8 Pump Station Modification Phase 1 Crane Refurbishment Project, located in Broward County at the intersection of Miami, L-5 and L-4 Canals, will refurbish the 30-ton gantry crane at the S-8 Pump Station. The purpose of CEPP North suite of projects is to convey and distribute additional flows to hydrate the northern portion of Water Conservation Area 3A. S-8 Pump Station Modification Project Phase 1 will support the future Phase 2 project that will modify the pump station to meet the current U.S. Army Corps of Engineers and District standards and extend its service life to serve CEPP North “new water” delivery purpose.

The lowest responsive and responsible bidder is recommended for award. In accordance with District policy and consistent with state law for Request for Bids procurements, this item was competitively bid through a sealed bid process. The bid opening for this project was on January 22, 2024.

Recommended Action:
Resolution No. 2024-0202 Authorize entering into a 360-day agreement with Accurate Welding Services, LLC, the lowest responsive and responsible bidder for the construction of the Central Everglades Planning Project North S-8 Pump Station Modification Phase 1 Crane Refurbishment, in the amount of $1,140,465 for which $500,000 in dedicated funds (Land Acquisition Trust Fund and Everglades Trust Fund) and Ad Valorem funds are budgeted in Fiscal Year 2023-2024 and the remainder is subject to Governing Board approval of future years budgets. (Contract No. 4600004931)

Resolution No. 2024-0202
Location Map

15. Okeechobee Field Station Relocation Project (Staff contact, Lucine Dadrian, P.E.)

Agenda Item Background:
As part of the Everglades Restoration Program, the Okeechobee Field Station Expansion and Relocation Project is located in Okeechobee County. The facility will support restoration projects such as C-44 Reservoir and Stormwater Treatment Area (STA), C-23/24 North and South Reservoirs and STA, C-25 Reservoir and STA, Lake Okeechobee Component A Storage Reservoir, and Aquifer Storage and Recovery facilities as well as critical flood control works. The project also consists of the design and construction of a new facility that combines the Okeechobee Field Station, Okeechobee Service Center, Water Quality Lab, SCADA, alternate Emergency Operations Center, and offices for Florida Fish and Wildlife Conservation Commissions South Region Statewide Nuisance Alligator Program. The new facility will be relocated to a District owned parcel in Okeechobee County. The existing field station has reached the end of its useful life and requires replacement with facilities that meet

present code requirements and expanded facility needs. The existing Service Center is operated in a leased facility and inclusion of the Service Center will allow the services to be provided from a District owned facility.

The new facility will include office space, fleet, structure maintenance, canal maintenance, electrical and SCADA service bays, water quality lab, emergency generator, alternate Emergency Operations Center and back up control center, fueling facility, vehicle wash area, chemical storage, microwave tower and shelter, helipad, parking areas, and associated utilities. This facility will consolidate and centrally locate the works and services provided in support of the District's mission through the combined efforts of planning, operations and maintenance, community and government relations, land management, regulation and in-house construction.

The use of the design-build procurement method allows the District to work in collaboration with a Design-Builder from the conceptual phase through construction of the new facility. In October 2023, the Board approved for State Contracting and Engineering Corporation, to provide design services for 90% and 100% deliverables. The District negotiated the stipulated price for construction of the Microwave Communication Tower, Offsite Water and Sewer Utilities, and Roadway Improvements in the amount of $12,839,904. A future item will support the balance of the construction of the Okeechobee Field Station facility.

Recommended Action:
Resolution No. 2024-0203 Authorize an amendment to the design/build contract with State Contracting and Engineering Corporation, to the Okeechobee Field Station Relocation Project for the construction of offsite utilities, roadways, and microwave tower packages, and the stipulated price proposal in an amount not to exceed $12,839,904, for which $5,000,000 in dedicated funds (Land Acquisition Trust Fund) and Ad Valorem funds are budgeted in Fiscal Year 2023-2024 and the remainder is subject to Governing Board approval of future years budgets. (Contract No. 4600004857-A01)

Resolution No. 2024-0203
Location Map

16. Cooperative Research and Development Agreement Amendments for Aquifer Storage and Recovery Well Studies for the Lake Okeechobee Watershed Restoration Project, Glades and Okeechobee Counties (Staff contact, Jennifer Reynolds)

Agenda Item Background:
As part of the Lake Okeechobee Watershed Restoration Project (LOWRP), the Cooperative Research and Development Agreement Amendments for Aquifer Storage and Recovery Well Studies for the Lake Okeechobee Watershed Restoration Project, located in Glades and Okeechobee Counties, support research for Aquifer Storage and Recovery (ASR) wells. As described in the ASR Science Plan, uncertainties associated with ASR Wells need additional investigation and the United States Army Engineer Research and Development Center (ERDC) has been tasked by the United Stated Army Corps of Engineers (USACE) to conduct studies to address these concerns. The District supports this request from the USACE and is funding the research and studies in support of LOWRP, a component of the Comprehensive Everglades Restoration Plan. Data will be collected from ASR cluster locations located

in Glades and Okeechobee Counties, and the laboratory studies will be conducted by ERDC located in Vicksburg, Mississippi. The total authorization sought from the Governing Board for the Agreement and all amendments is $5,000,000 with the present amendment adding $4,452,676 to the original agreement for a revised total of $4,701,114.

The present amendment for the ERDC studies will cover a multi-year effort and includes: 1) collection of core material for laboratory investigations, batch and small-scale column studies to characterize arsenic speciation and distribution within the Floridan Aquifer System (or FAS) aquifer material and geochemical reactions that occur when FAS aquifer material is exposed to representative surface water, 2) intermediate-scale reactive transport studies for quantifying arsenic speciation and distribution, and reactions within FAS aquifer material under ASR-representative conditions, 3) development of a calibrated and validated reactive transport groundwater model capable of simulating field-scale ASR injections and associated changes in groundwater quality during storage over time, and 4) surface water treatment characterization. Research needs may adapt over time and staff requests flexibility to execute additional minor amendments to the agreement not to exceed a total of $5,000,000 for the research. More information regarding ASR and the ASR Science Plan can be found at: https://www.sfwmd.gov/our-work/alternative-water-supply/asr

Recommended Action:
Resolution No. 2024-0204 Authorize amendments to a Cooperative Research and Development Agreement (CRADA) with the United States Army Corps of Engineers - Engineer Research and Development Center (ERDC) to conduct studies to address uncertainties with Aquifer Storage and Recovery (ASR) Wells, a component of the Lake Okeechobee Watershed Restoration Project (LOWRP), in an aggregate amount not to exceed $5,000,000, for all such amendments, the present amendment adds $4,452,676 to the agreement for a total of $4,701,114, for which dedicated funds (State General Revenue and Land Acquisition Trust Fund) are budgeted in Fiscal Year 2023-2024; authorizing the Executive Director or his designee to execute such amendments. (Contract No. 4600004737)

Resolution No. 2024-0204
CRADA ERDC Proposed ERDC Studies
Backup Document

17. Northern Everglades and Estuaries Protection Plan (NEEPP) Agreement Adjustments (Staff contact, Jennifer Reynolds)

Agenda Item Background:
To supplement the State of Florida's ongoing implementation of the Northern Everglades and Estuaries Protection Program (NEEPP), the District developed and implemented projects with private landowners to store and treat water on their properties. These projects, funded through State Appropriations, help achieve NEEPP goals to protect and restore surface water resources by improving hydrology and water quality for the Northern Everglades ecosystem (373.4595(1)(c), F.S.).

The Florida Legislature has made additional funding available through line item 1686 of the 2023-2024 General Appropriations Act to provide adjustments to specific

existing agreements in the Northern Everglades and Estuaries Protection Program. Staff applied a standard adjustment for each agreement to implement the proviso language.

Staff requests Governing Board approval to amend specific existing agreements with private entities pursuant to the legislature's instruction under line item 1686.

Recommended Action:
Resolution No. 2024-0205 Authorize amendments to specific existing agreements with private entities which support the Northern Everglades and Estuaries Protection Plan pursuant to the legislature's appropriation instruction under line item 1686 of the 2023-2024 General Appropriations Act, in a total amount not to exceed the projected recurring State appropriations for each fiscal year; delegating authority to the Executive Director to execute the amendment.

Contract No.	Project Name
4600004474	Abington Preserve
4600003128	Adams - Russakis Ranch
4600004585	Alderman-Deloney Ranch
4600003955	Bluefield Grove Water Farm
4600004011	Brighton Valley DWM
4600004573	Buck Island Ranch NEWWRNLR
4600002880	Bull Hammock Ranch
4600003437	Caulkins Water Farm
4600004575	Dixie Ranch NEWWRNLR
4600004608	El Maximo Ranch DWM
4600004581	Four Corners Rapid Infiltration
4600004551	Llano Ranches
4600004340	Lykes West Waterhole
4600004802	Mudge Ranch
4600002876	Rafter T Ranch
4600003956	Scott Water Farm
4600004584	Spur Land & Cattle
4600004576	XL Ranch NEWWRNLR

Resolution No. 2024-0205
Summary

18. Mowing Contract, Clewiston Field Station Area of Responsibility, Palm Beach and Hendry Counties (Staff contact, Rich Virgil)

Agenda Item Background:
Maintenance of District lands and rights of way is required to ensure that vegetation is controlled at the appropriate height to provide for optimal performance and operational efficiency of the District's flood control system. This project for the Clewiston Field Station area of responsibility provides for the annual right of way mowing of approximately 6,105 acres of various District lands and canal and levee rights of way in

Palm Beach and Hendry Counties. This item awards the mowing contract to the second responsive and responsible bidder that submitted an equal tie low bid. Although COCO Tree Service won the tie breaker on District solicitation RFB # 6000001410 and was awarded Contract 4600004758 in accordance with Resolution No. 2023-0510 at the May 11, 2023, Governing Board meeting, a decision was made that it was in the best interest of the District to terminate the COCO Tree Service Contract for Clewiston Field Station STA Mowing Services, for convenience. Pursuant to Article 7 - Termination and Remedies of the contract, the District provided 30 calendar days written notice to COCO Tree Service, with an effective termination date of January 11, 2024. Therefore, since Brightview Landscape Services and COCO Tree Service submitted equal low bids, the District is making a Recommendation of Award to Brightview Landscape Services, Inc.

Recommended Action:
Resolution No. 2024-0206 Authorize a 3-year contract with two 1-year renewal options with Brightview Landscape Services, Inc., the second responsive and responsible bidder that submitted an equal tie low bid, for mowing services of various District lands and canal and levee rights of way in the Clewiston Field Station area of responsibility, including Palm Beach and Hendry Counties, in an amount not-to-exceed $705,127.50 of which $102,564.00 is budgeted in Fiscal Year 2023-2024 and the remainder is subject to Governing Board approval of future year budgets. (Contract Number 4600004903)

Resolution No. 2024-0206
Backup Presentation

19. Slope Mowing Contract, Miami Field Station Area of Responsibility, Miami-Dade County (Staff contact, Rich Virgil)

Agenda Item Background:
Maintenance of District lands and rights of way is required to ensure that vegetation is controlled at the appropriate height to provide for optimal performance and operational efficiency of the District's flood control system. This project for the Miami Field Station area of responsibility provides for the annual right of way slope mowing of approximately 556 acres of various District lands and canal and levee rights of way in Miami-Dade County. This item awards the contract for slope mowing to Toler Enterprises, Inc., the second lowest responsive and responsible bidder. Although COCO Tree Service was the low bidder on District solicitation RFB # 6000001416 and was awarded Contract 4600004822 in accordance with Resolution No. 2023-0815 at the August 17, 2023, Governing Board meeting, a decision was made that it was in the best interest of the District to terminate the COCO Tree Service contract for convenience. Pursuant to Article 7 - Termination and Remedies of the contract, the District provided thirty (30) calendar days written notice to COCO Tree Service, with an effective termination date of January 11, 2024. Therefore, since Toler Enterprises, Inc., was the second lowest responsive and responsible bidder, the District is making a Recommendation of Award to Toler Enterprises, Inc.

Recommended Action:
Resolution No. 2024-0207 Authorize a 3-year contract with two 1-year renewal options with Toler Enterprises, Inc., the second lowest responsive and responsible bidder for slope mowing services of various District lands and canal

and levee rights of way in the Miami Field Station area of responsibility, in Miami-Dade County, in an amount not-to-exceed $663,586 of which $132,717 is budgeted in Fiscal Year 2023-2024 and the remainder is subject to Governing Board approval of future year budgets. (Contract Number 4600004904)

Resolution No. 2024-0207
Backup Presentation

20. Pega Permitting Application Enhancement (Staff contact, Duane Piper)

Agenda Item Background:
Information Technology is extending the functionality of the existing Pega Permitting Application for the Works of the District (WOD) module. The WOD module high level functionality includes filling/submitting applications, receiving applications, reviewing applications, and issuing WOD permits as well as receiving and tracking related compliance information. The WOD module consists of two permit types: C-139 Basin and Everglades Agricultural Area. The system will be used by external customers to apply for permits, submit compliance information and is used by internal users to review permit applications, issue permits, review compliance data, and perform post-permit operations. Users will also have the capability to run reports against the data.

This request is to issue a purchase order to Saturn Tech LLC dba Saanvi Technologies for fixed price, deliverables based contractual services to enhance the Pega Permitting Application in the amount of $883,900, using the State of Florida Information Technology Staff Augmentation Services Contract Number 80101507-23-STC-ITSA. This contract was competed by another government agency.

Recommended Action:
Resolution No. 2024-0208 Authorize issuing a purchase order to Saturn Tech LLC dba Saanvi Technologies for fixed cost, deliverables based contractual services to enhance the Pega Permitting Application, using State of Florida Information Technology Staff Augmentation Services Contract Number 80101507-23-STC-ITSA, in the amount of $883,900 for which $450,000 is budgeted in Fiscal Year 2023-2024 and the remainder is subject to Governing Board approval of future years budgets. (Purchase Order No. 4500146310)

Resolution No. 2024-0208

21. Authorize Publication of Notices of Proposed Rule and Adopt Amendments (Staff contact, Maricruz R. Fincher)

Agenda Item Background:
The District included the following rules on its regulatory plan for non-substantive changes to ensure consistency with the District's statutory authority and rules. The proposed amendments include: 1) deleting obsolete language and updating rule references in Rule 40E-1.602; 2) clarifying the use of the District's ePermitting system in 40E-1.6058; 3) repealing Rule 40E-1.659 as unnecessary; 4) updating the civil penalty amount to be consistent with section 373.129, F.S., and removing the incorporated civil penalty matrices in Rule 40E-1.715; 5) including North American Vertical Datum as an alternative to National Geodetic Vertical Datum in the water use forms incorporated in Rules 40E-2.091 and 40E-2.101; and 6) clarifying delivery methods in Rules 40E-7.216 and 40E-7.217, and removing the need for certified

mail/return receipt.

The District published Notices of Rule Development in the Florida Administrative Register on December 27, 2023 (Vol. 49/No. 249). No rulemaking workshops were requested or held.

Staff requests authorization to publish Notices of Proposed Rule for Rules 40E-1.602, 40E-1.6058, 40E-1.659, 40E-1.715, 40E-2.091, 40E-2.101, 40E-7.216 and 40E-7.217, F.A.C. Staff further requests the Governing Board adopt the proposed non-substantive amendments to these rules as long as the District does not receive a request for public hearing or make any substantive changes to the rules.

Recommended Action:
Authorize publication of Notices of Proposed Rule and Adopt Amendments to clarify or update Rules 40E-1.602, 40E-1.6058, 40E-1.659, 40E-1.715, 40E-2.091, 40E-2.101, 40E-7.216 and 40E-7.217, F.A.C.

Notice of Proposed Rule 40E-1
Notice of Proposed Rule 40E-2
Notice of Proposed Rule 40E-7

22. Everglades Ridge, Slough & Constructed Forested Wetland Research Contract (Staff contact, Lawrence Glenn)

Agenda Item Background:
The Comprehensive Everglades Restoration Plan (CERP), the Everglades Forever Act, and the Central Everglades Planning Process (CEPP) depend on ecological and hydrological studies to support decision-making for water management and restoration. This scientific research, a cost-sharing component of CERP, will help to define the hydrology that will sustain a healthy Everglades Ridge and Slough ecosystem and reduce uncertainty in predicting ecosystem responses to water management and climate patterns.

This three-year contract provides for a series of experimental and monitoring studies at the District's 80-acre "living laboratory," the Loxahatchee Impoundment Landscape Assessment (LILA) facility. The work conducted in this study will investigate: (1) the role of water depth in maintaining the natural landscape; (2) the long-term flooding tolerance of constructed forested wetlands; and (3) how constructed forested wetland creation techniques, fine-tuned at LILA, can be used in upcoming CERP restoration activities (CEPP-North). This contract will create a series of maps illustrating how LILA vegetation patterns have changed in response to hydrology over time.

Recommended Action:
Resolution No. 2024-0209 Authorize entering into a three-year agreement with Florida International University to conduct field monitoring for Everglades Ridge, Slough and Constructed Forested Wetland Research in an amount not to exceed $279,000, of which $93,000 in dedicated funds (Land Acquisition Trust Fund and Everglades License Tag Revenue) and Ad Valorem funds are budgeted in Fiscal Year 2023-2024, and the remainder is subject to Governing Board approval of future year budgets. (Contract No. 4600004898)

Resolution No. 2024-0209

Discussion Agenda

23. Professional Engineering Services Contracts (Staff contact, Lucine Dadrian, P.E.)

Agenda Item Background:
As part of the District's Restoration and Capital Improvement Programs, the District has maintained a series of continuing professional engineering services contracts for several years now. This agenda item addresses the need to contract external professional engineering services to facilitate the delivery of the District's capital improvement and restoration projects. The purpose of this Request for Proposals was to solicit technical proposals from qualified firms to provide professional engineering services for the District's Restoration and Operations, Maintenance, Repair, Rehabilitation, and Replacement Projects. Multiple contract awards are anticipated for a contract duration of a 3-year period with two 1-year options to renew. Assignments under each contract will be handled through various work orders under the contract. Approval of this agenda item will allow the District to continue or commence new design and construction support efforts for projects such as the EAA Reservoir, C-23/C-24 South Reservoir, C-25 Reservoir and STA, CEPP North, South, and EAA features, Northern Everglades, Capital Refurbishment and other District initiatives.

The seventeen firms selected for these contracts include J-Tech; Black & Veatch Corporation; Hazen & Sawyer DPC; AECOM Technical Services, Inc.; Brown & Caldwell Corporation; Stantec Consulting Services, Inc.; HDR Engineering, Inc.; Parsons Environmental & Infrastructure Group, Inc.; WGI, Inc; Northstar Contracting Group, Inc.; Carollo Engineers, Inc.; Geosyntec Corporation, Inc.; Erdman Anthony of Florida, Inc.; CDM Smith, Inc.; WSP USA, Inc.; Hatch Associates Consultants, Inc.; Arcadis US, Inc.

Recommended Action:
Resolution No. 2024-0210 Authorize the official ranking of firms and entering into a 3-year contract, with two 1-year extensions, with J-Tech; Black & Veatch Corporation; Hazen & Sawyer DPC; AECOM Technical Services, Inc.; Brown & Caldwell Corporation; Stantec Consulting Services, Inc.; HDR Engineering, Inc.; Parsons Environmental & Infrastructure Group, Inc.; WGI, Inc; Northstar Contracting Group, Inc.; Carollo Engineers, Inc.; Geosyntec Corporation, Inc.; Erdman Anthony of Florida, Inc.; CDM Smith, Inc.; WSP USA, Inc.; Hatch Associates Consultants, Inc.; Arcadis US, Inc., subject to successful negotiations to provide professional engineering services for the District's Restoration and Operations, Maintenance, Repair, Rehabilitation, and Replacement Projects, in an amount not-to-exceed $500,000,000 for all 17 contracts, for which the Fiscal Year 2023-2024 budget includes approved Ad Valorem and dedicated funds and the remainder is subject to the Governing Board approval of the future years budgets; if negotiations are unsuccessful with any of the firms, the District may proceed with negotiations in ranked order until a contract is successfully negotiated.

Contract Number	Consulting Firm
4600004909	J-Tech

4600004910	Black & Veatch Corporation
4600004911	Hazen & Sawyer DPC
4600004912	AECOM Technical Services, Inc.
4600004913	Brown & Caldwell Corporation
4600004914	Stantec Consulting Services, Inc.
4600004915	HDR Engineering, Inc.
4600004916	Parsons Environmental & Infrastructure Group, Inc.
4600004917	WGI, Inc
4600004918	Northstar Contracting Group, Inc.
4600004919	Carollo Engineers, Inc.
4600004926	Geosyntec Corporation, Inc.
4600004920	Erdman Anthony of Florida, Inc.
4600004921	CDM Smith, Inc.
4600004922	WSP USA, Inc.
4600004927	Hatch Associates Consultants, Inc.
4600004923	Arcadis US, Inc.

Resolution No. 2024-0210

Technical Reports

24. Water and Ecological Conditions Report - John P. Mitnik and Lawrence Glenn

Staff Reports

25. Monthly Financial Report - Candida Heater, Division Director - Administrative Services
    - Fiscal Year 2022-2023 Annual Work Plan Performance

26. General Public Comment

27. Board Comment

28. Adjourn

Draft Presentations for Agenda Items 23 and 24, CERP Project Update, NEEPP Project Update

Agenda Item Background:

23 Dadrian Professional Engineering Services
24 Mitnik Glenn Water and Ecological Conditions Report
26 Tuttle General Public Comment
CERP Progress Report
NEEPP Project Update

Public Comment Procedure

The South Florida Water Management District Governing Board encourages the public to provide comment and input to the Governing Board. Public comment is accepted at the two dedicated General

Public Comment periods at the beginning and the end of the meeting. Public comment is also accepted on the Consent Agenda and each Discussion Agenda item.

M E M O R A N D U M

TO: Governing Board Members

FROM: Lucine Dadrian, P.E., Engineering, Construction & Modeling

DATE: February 8, 2024

SUBJECT: Back Up Controller System

Agenda Item Background:
As part of the District's Resiliency of Coastal Structures and Capital Improvements Program, the Back Up Controller (BUC) System Project (System), located District-wide, will support the water control structure monitoring and control platform improvements for enhanced functionality, manatee protection and storm-resistant structures. The BUC is a requirement for flood control structures and provides a backup system if the primary monitoring and control system fails to allow uninterrupted operations. The BUC will allow the District Control Room to remotely adjust water elevation setpoints providing greater flexibility for overall water management operations. The District has developed the BUC Drawings and the prototype whereas Pantropic Power, Inc. has developed the software for the BUC prototype. Pantropic power will furnish all BUC Panels to be deployed in the field by District staff.

The scope is to maintain standardization of the design and overall integration of the BUC that is integrated into a control panel for each site. The assembly of all control panels must be overseen by the developer and the programming expert to preserve the quality control of the process. An additional controller unit will be designed to combine the BUC with the Manatee Protection System, which needs prototyping & pilot testing and installation to expand the technology in the southern coastal sites.

The project is part of the Coastal Structure Enhancement and Self-Preservation Mode project, which is receiving grant funds from the Resilient Florida Program. This request is to designate Pantropic Power as the sole source supplier of BUC and BUC with Manatee Logic System software programming, assembly, construction, and support services. This contract will be executed through a special procurement under Section 155-6 of the District's Policies and Procedures.

Additional Item Background:
Core Mission and Strategic Priorities:
The Back Up Controller System Project supports the District's core mission of flood control, water supply and resiliency.

Funding Source:
The construction of the Back Up Controller System project located District wide will be a cost share between the Florida Department of Environmental Protection Grant and Ad Valorem funds.

Staff Contact and/or Presenter:
Lucine Dadrian, P.E., ldadrian@sfwmd.gov, 561-682-2685

ATTACHMENTS:

Resolution No. 2024-0201

Location Map

SOUTH FLORIDA WATER MANAGEMENT DISTRICT

Resolution No. 2024 - 0201

A Resolution of the Governing Board of the South Florida Water Management District to authorize entering into an 850-day contract with Pantropic Power, Inc. as the sole source vendor, for the Back Up Controller System, in the not-to-exceed amount of $1,000,000, for which dedicated funds (State Revenue Sources) and Ad Valorem funds are budgeted in Fiscal Year 2023-2024 and the remainder is subject to Governing Board approval of future years budgets, providing an effective date. (Contract No. 4600004932)

WHEREAS, the Governing Board of the South Florida Water Management District deems it necessary, appropriate, and in the public interest to enter into an 850-day contract with Pantropic Power, Inc. for the Back Up Controller System, in the not-to-exceed amount of $1,000,000.

NOW THEREFORE, BE IT RESOLVED BY THE GOVERNING BOARD OF THE SOUTH FLORIDA WATER MANAGEMENT DISTRICT:

Section 1. The Governing Board of the South Florida Water Management District hereby authorizes entering into a contract with Pantropic Power, Inc. for the Back Up Controller System Project, in the not-to-exceed amount of $1,000,000 for which dedicated funds (State Revenue Sources) and Ad Valorem funds are budgeted in Fiscal Year 2023-2024 and the remainder is subject to Governing Board approval of future years budgets. (Contract No. 4600004932)

Section 2. Sole Source Vendor.

Section 3. This Resolution shall take effect immediately upon adoption.

PASSED and **ADOPTED** this 8th day of February, 2024.

SOUTH FLORIDA WATER MANAGEMENT DISTRICT, BY ITS GOVERNING BOARD
By:

_____
Chauncey P. Goss, II
Chairman

Attest:

_____
District Clerk/Secretary

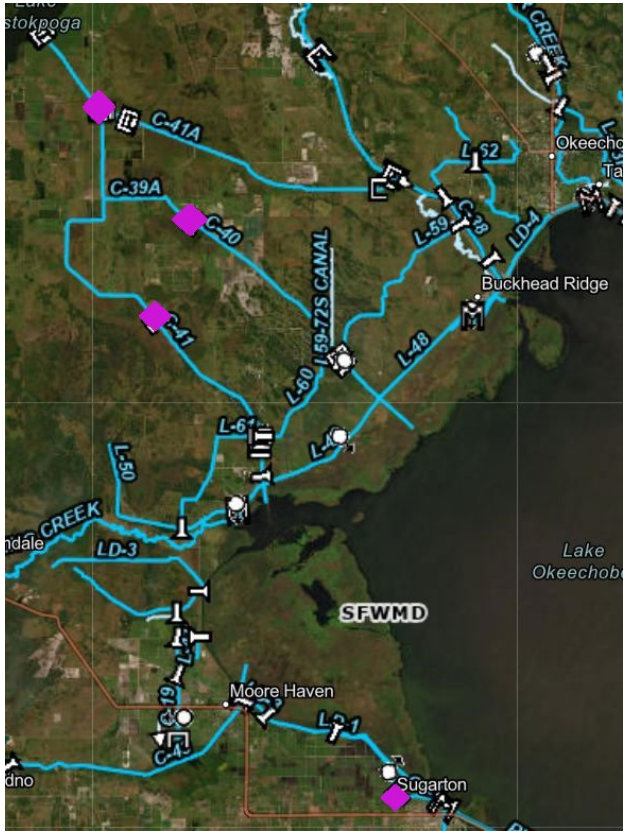
Legal form approved:
By:

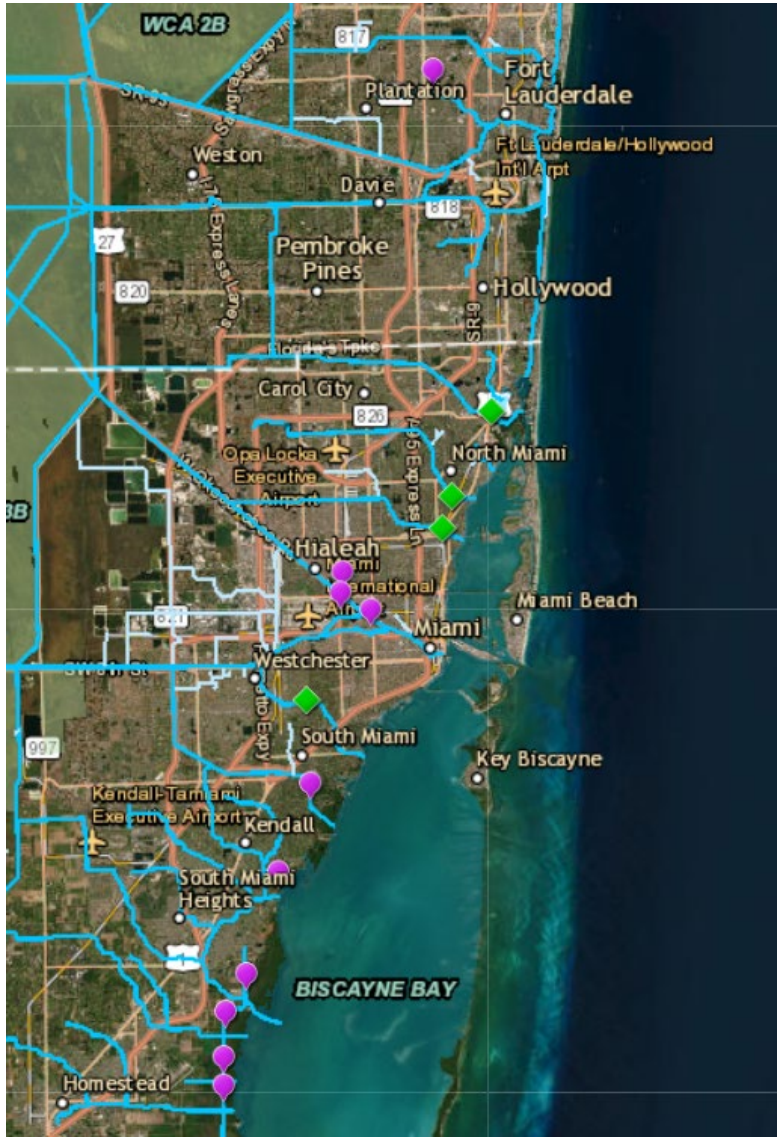
_____
Office of Counsel

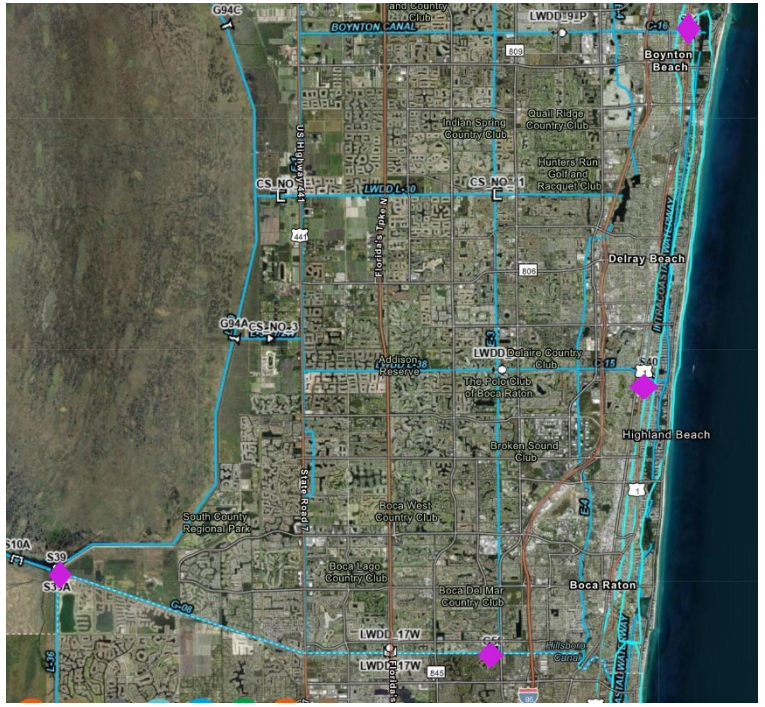
Print name:

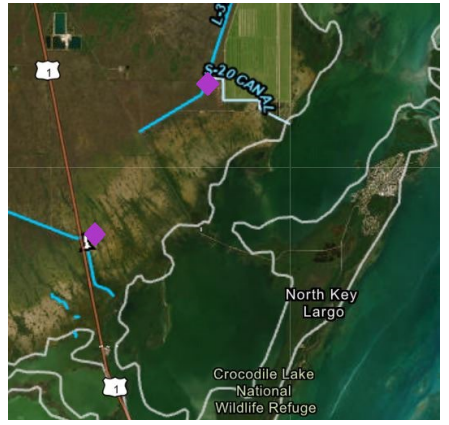
_____

Location Map









Presenter: Lucine Dadrian

M E M O R A N D U M

TO: Governing Board Members

FROM: Lucine Dadrian, P.E., Engineering, Construction & Modeling

DATE: February 8, 2024

SUBJECT: Central Everglades Planning Project North S-8 Pump Station Modification Phase 1 Crane Refurbishment, Broward County

Agenda Item Background:
As part of the Comprehensive Everglades Restoration Plan, the Central Everglades Planning Project North (CEPP North) - S-8 Pump Station Modification Phase 1 Crane Refurbishment Project, located in Broward County at the intersection of Miami, L-5 and L-4 Canals, will refurbish the 30-ton gantry crane at the S-8 Pump Station. The purpose of CEPP North suite of projects is to convey and distribute additional flows to hydrate the northern portion of Water Conservation Area 3A. S-8 Pump Station Modification Project Phase 1 will support the future Phase 2 project that will modify the pump station to meet the current U.S. Army Corps of Engineers and District standards and extend its service life to serve CEPP North “new water” delivery purpose.

The lowest responsive and responsible bidder is recommended for award. In accordance with District policy and consistent with state law for Request for Bids procurements, this item was competitively bid through a sealed bid process. The bid opening for this project was on January 22, 2024.

Additional Item Background:
Core Mission and Strategic Priorities:
The CEPP North S-8 Pump Station Modification Phase 1 Crane Refurbishment Project supports the District’s core mission of ecosystem restoration and flood control.

Funding Source:
The CEPP North S-8 Pump Station Modification Phase 1 Crane Refurbishment Project will be funded through dedicated funds (Land Acquisition Trust Fund and Everglades Trust Fund) and Ad Valorem funds.

Staff Contact and/or Presenter:
Lucine Dadrian, P.E., ldadrian@sfwmd.gov, 561-682-2685

ATTACHMENTS:

Resolution No. 2024-0202

Location Map

SOUTH FLORIDA WATER MANAGEMENT DISTRICT

Resolution No. 2024 02XX

A Resolution of the Governing Board of the South Florida Water Management District to authorize entering into a 360-day agreement with Accurate Welding Services, LLC, the lowest responsive and responsible bidder for the construction of the Central Everglades Planning Project North S-8 Pump Station Modification Phase 1 Crane Refurbishment, in the amount of $1,140,465 for which $500,000 in dedicated funds (Land Acquisition Trust Fund and Everglades Trust Fund) and Ad Valorem funds are budgeted in Fiscal Year 2023-2024 and the remainder is subject to Governing Board approval of future years budgets; providing an effective date. (Contract No. 4600004931)

WHEREAS, the Governing Board of the South Florida Water Management District deems it necessary, appropriate, and in the public interest to enter into a 360-day contract with Accurate Welding Services, LLC, the lowest responsive and responsible bidder for the construction of the Central Everglades Planning Project North S-8 Pump Station Modification Phase 1 Crane Refurbishment, in the amount of $1,140,465.

NOW THEREFORE, BE IT RESOLVED BY THE GOVERNING BOARD OF THE SOUTH FLORIDA WATER MANAGEMENT DISTRICT:

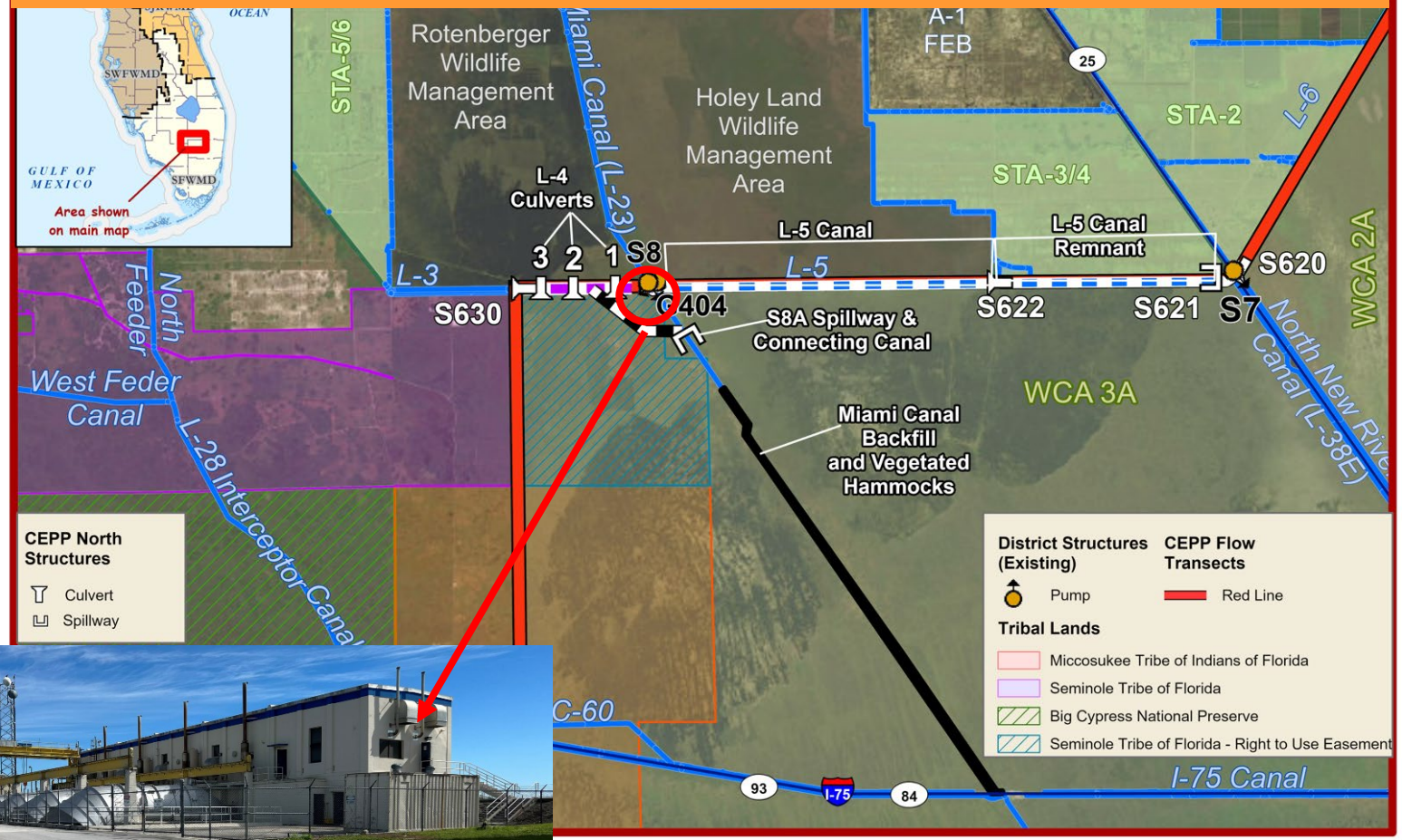
Section 1. The Governing Board of the South Florida Water Management District hereby authorizes entering into a 360-day contract with Accurate Welding Services, LLC, the lowest and responsive bidder for the construction of the Central Everglades Planning Project North S-8 Pump Station Modification Phase 1 Crane Refurbishment, in the amount of $1,140,465 (Contract No. 4600004931).

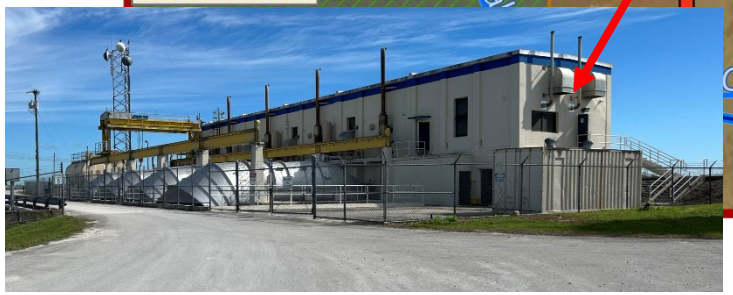
Section 2. This Resolution shall take effect immediately upon adoption.

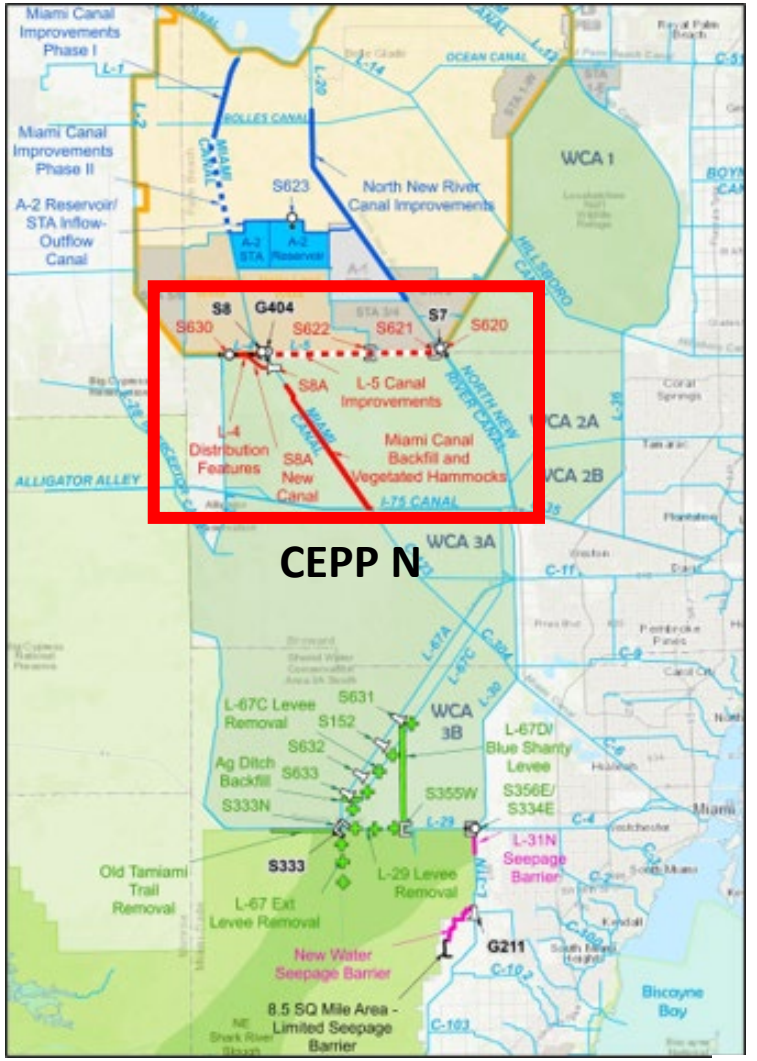
PASSED and **ADOPTED** this 8th day of February, 2024.

Location

Central Everglades Planning Project North (CEPP N)







Project Site: S-8 Pump Station
Broward County

Presenter: Lucine Dadrian

M E M O R A N D U M

TO: Governing Board Members

FROM: Lucine Dadrian, P.E., Engineering, Construction & Modeling

DATE: February 8, 2024

SUBJECT: Okeechobee Field Station Relocation Project

Agenda Item Background:
As part of the Everglades Restoration Program, the Okeechobee Field Station Expansion and Relocation Project is located in Okeechobee County. The facility will support restoration projects such as C-44 Reservoir and Stormwater Treatment Area (STA), C-23/24 North and South Reservoirs and STA, C-25 Reservoir and STA, Lake Okeechobee Component A Storage Reservoir, and Aquifer Storage and Recovery facilities as well as critical flood control works. The project also consists of the design and construction of a new facility that combines the Okeechobee Field Station, Okeechobee Service Center, Water Quality Lab, SCADA, alternate Emergency Operations Center, and offices for Florida Fish and Wildlife Conservation Commissions South Region Statewide Nuisance Alligator Program. The new facility will be relocated to a District owned parcel in Okeechobee County. The existing field station has reached the end of its useful life and requires replacement with facilities that meet present code requirements and expanded facility needs. The existing Service Center is operated in a leased facility and inclusion of the Service Center will allow the services to be provided from a District owned facility.

The new facility will include office space, fleet, structure maintenance, canal maintenance, electrical and SCADA service bays, water quality lab, emergency generator, alternate Emergency Operations Center and back up control center, fueling facility, vehicle wash area, chemical storage, microwave tower and shelter, helipad, parking areas, and associated utilities. This facility will consolidate and centrally locate the works and services provided in support of the District's mission through the combined efforts of planning, operations and maintenance, community and government relations, land management, regulation and in-house construction.

The use of the design-build procurement method allows the District to work in collaboration with a Design-Builder from the conceptual phase through construction of the new facility. In October 2023, the Board approved for State Contracting and Engineering Corporation, to provide design services for 90% and 100% deliverables. The District negotiated the stipulated price for construction of the Microwave Communication Tower, Offsite Water and Sewer Utilities, and Roadway Improvements in the amount of $12,839,904. A future item will support the balance of the construction of the Okeechobee Field Station facility.

Additional Item Background:
Core Mission and Strategic Priorities:
The Okeechobee Field Station Relocation Project supports the District's core missions of flood control, water supply, water quality, and ecosystem restoration.

Funding Source:
Dedicated funds (Land Acquisition Trust Fund) and Ad Valorem funds.

Staff Contact and/or Presenter:
Lucine Dadrian, P.E., ldadrian@sfwmd.gov, 561-682-2685

ATTACHMENTS:

Resolution No. 2024-0203

Location Map

SOUTH FLORIDA WATER MANAGEMENT DISTRICT

Resolution No. 2024 - 02XX

A Resolution of the Governing Board of the South Florida Water Management District to authorize an amendment to the design/build contract with State Contracting and Engineering Corporation, to the Okeechobee Field Station Relocation Project for the construction of offsite utilities, roadways, and microwave tower packages, and the stipulated price proposal in an amount not to exceed $12,839,904, for which $5,000,000 in dedicated funds (Land Acquisition Trust Fund) and Ad Valorem funds are budgeted in Fiscal Year 2023-2024 and the remainder is subject to Governing Board approval of future years budgets, providing an effective date. (Contract No. 4600004857-A01)

WHEREAS, the Governing Board of the South Florida Water Management District deems it necessary, appropriate, and in the public interest to amend the contract with State Contracting and Engineering Corporation authorizing Phase II of the construction of the offsite utilities, roadways, and microwave tower packages of the design/build contract for the Okeechobee Field Station Relocation Project.

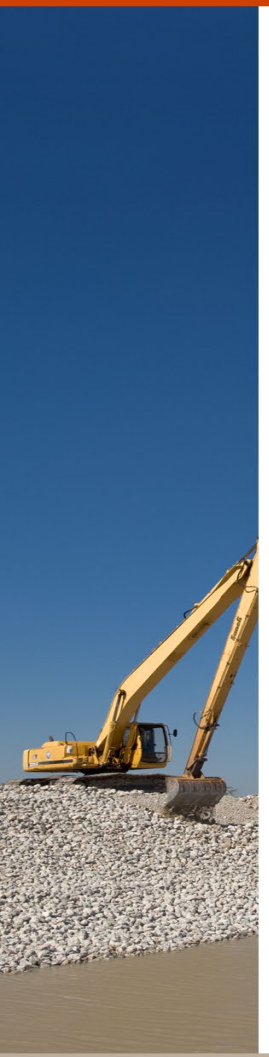
NOW THEREFORE, BE IT RESOLVED BY THE GOVERNING BOARD OF THE SOUTH FLORIDA WATER MANAGEMENT DISTRICT:

Section 1. The Governing Board of the South Florida Water Management District hereby authorizes an amendment to the design/build contract with State Contracting and Engineering Corporation, to the Okeechobee Field Station Relocation Project for the construction of offsite utilities, roadways, and microwave tower packages, for a 1,180-day contract and the stipulated price proposal in an amount not to exceed $12,839,904 for which $5,000,000 in dedicated funds (Land Acquisition Trust Fund) and Ad Valorem funds are budgeted in Fiscal Year 2023-2024 and the remainder is subject to Governing Board approval of future years budgets. (Contract No. 4600004857-A01)

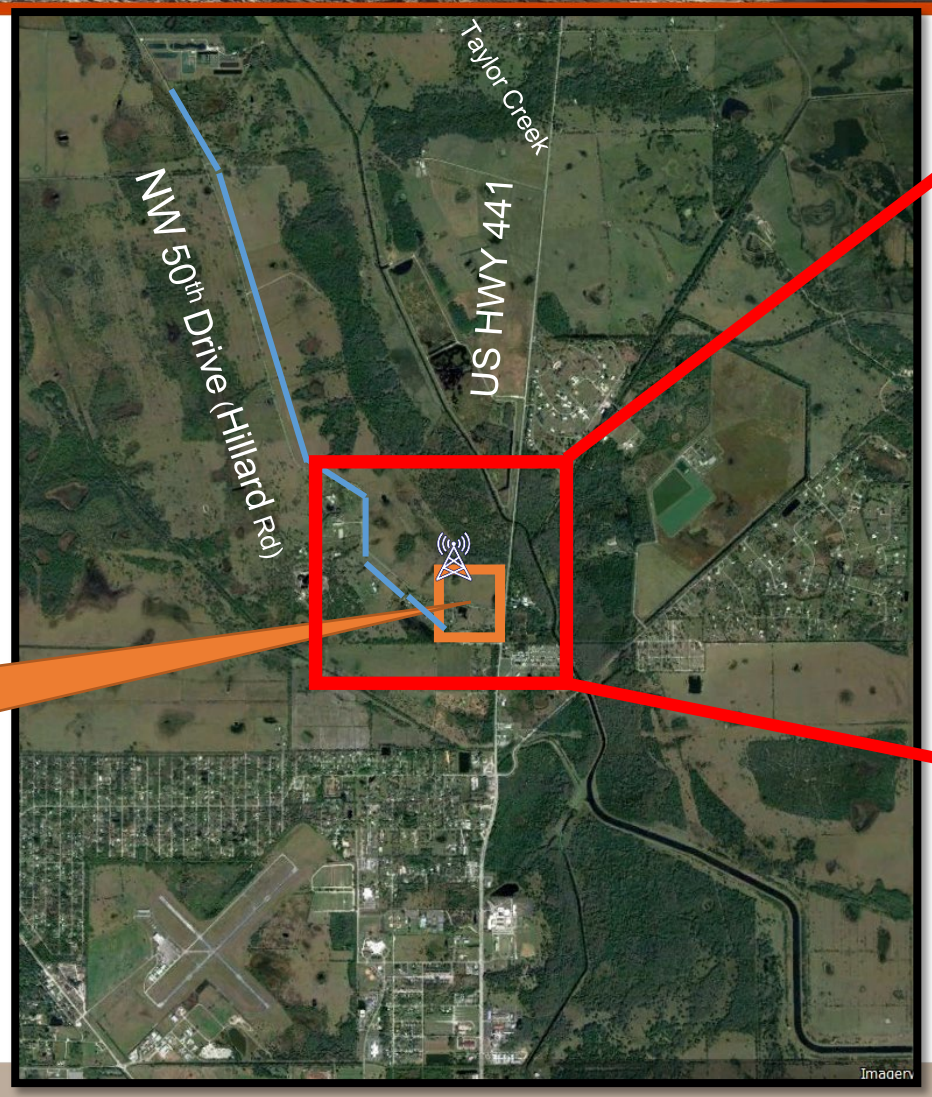
Section 2. This Resolution shall take effect immediately upon adoption.

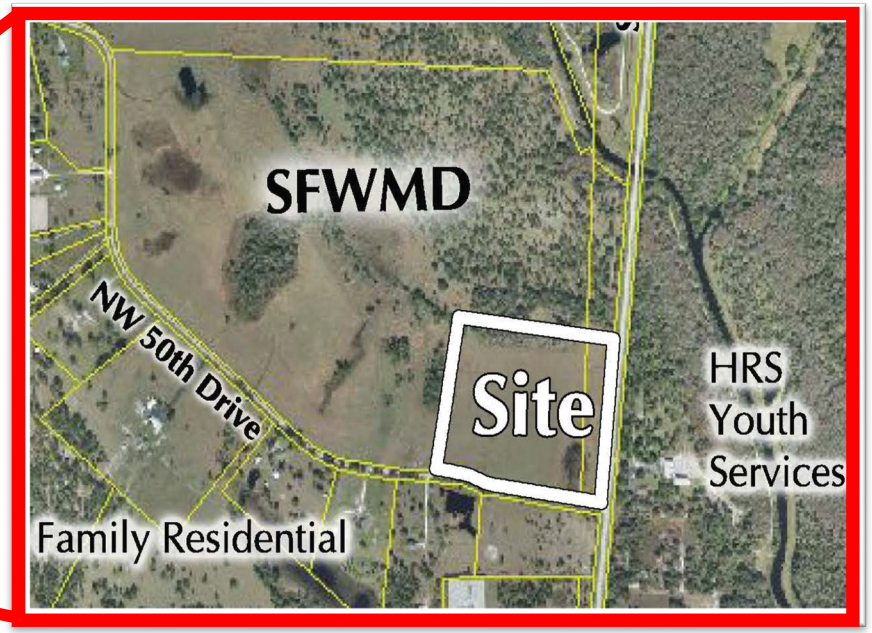
PASSED and **ADOPTED** this 8th day of February, 2024.

Location Map



Future Okeechobee Field Station





M E M O R A N D U M

TO: Governing Board Members

FROM: Jennifer Reynolds, Ecosystem Restoration & Capital Projects

DATE: February 8, 2024

SUBJECT: Cooperative Research and Development Agreement Amendments for Aquifer Storage and Recovery Well Studies for the Lake Okeechobee Watershed Restoration Project, Glades and Okeechobee Counties

Agenda Item Background:
As part of the Lake Okeechobee Watershed Restoration Project (LOWRP), the Cooperative Research and Development Agreement Amendments for Aquifer Storage and Recovery Well Studies for the Lake Okeechobee Watershed Restoration Project, located in Glades and Okeechobee Counties, support research for Aquifer Storage and Recovery (ASR) wells. As described in the ASR Science Plan, uncertainties associated with ASR Wells need additional investigation and the United States Army Engineer Research and Development Center (ERDC) has been tasked by the United Stated Army Corps of Engineers (USACE) to conduct studies to address these concerns. The District supports this request from the USACE and is funding the research and studies in support of LOWRP, a component of the Comprehensive Everglades Restoration Plan. Data will be collected from ASR cluster locations located in Glades and Okeechobee Counties, and the laboratory studies will be conducted by ERDC located in Vicksburg, Mississippi. The total authorization sought from the Governing Board for the Agreement and all amendments is $5,000,000 with the present amendment adding $4,452,676 to the original agreement for a revised total of $4,701,114.

The present amendment for the ERDC studies will cover a multi-year effort and includes: 1) collection of core material for laboratory investigations, batch and small-scale column studies to characterize arsenic speciation and distribution within the Floridan Aquifer System (or FAS) aquifer material and geochemical reactions that occur when FAS aquifer material is exposed to representative surface water, 2) intermediate-scale reactive transport studies for quantifying arsenic speciation and distribution, and reactions within FAS aquifer material under ASR-representative conditions, 3) development of a calibrated and validated reactive transport groundwater model capable of simulating field-scale ASR injections and associated changes in groundwater quality during storage over time, and 4) surface water treatment characterization. Research needs may adapt over time and staff requests flexibility to execute additional minor amendments to the agreement not to exceed a total of $5,000,000 for the research. More information regarding ASR and the ASR Science Plan can be found at: https://www.sfwmd.gov/our-work/alternative-water-supply/asr

Additional Item Background:
Core Mission and Strategic Priorities:
Cooperative Research and Development Agreement Amendments for Aquifer Storage and Recovery Well Studies support the District's core mission of ecosystem restoration, water supply and flood control.

Funding Source:
Dedicated funds (State General Revenue and Land Acquisition Trust Fund) are budgeted in Fiscal Year 2023-2024.

Staff Contact and/or Presenter:
Liz Caneja, ecaneja@sfwmd.gov, 561-682-2586

ATTACHMENTS:

Resolution No. 2024-0204

CRADA ERDC Proposed ERDC Studies

Backup Document

SOUTH FLORIDA WATER MANAGEMENT DISTRICT

Resolution No. 2024 - XXXX

A Resolution of the Governing Board of the South Florida Water Management District authorizing amendments to a Cooperative Research and Development Agreement (CRADA) with the United States Army Corps of Engineers - Engineer Research and Development Center (ERDC) to conduct studies to address uncertainties with Aquifer Storage and Recovery (ASR) Wells, a component of the Lake Okeechobee Watershed Restoration Project (LOWRP), in an aggregate amount not to exceed $5,000,000, for all such amendments, the present amendment adds $4,452,676 to the agreement for a total of $4,701,114, for which dedicated funds (State General Revenue and Land Acquisition Trust Fund) are budgeted in Fiscal Year 2023-2024; authorizing the Executive Director or his designee to execute such amendments; providing an effective date. (Contract No. 4600004737).

WHEREAS, the Governing Board of the SFWMD deemed it necessary, appropriate, and in the public interest to authorize amendments to Agreement No. 4600004737 with the United States Army Corps of Engineers - Engineer Research and Development Center, in an aggregate amount not to exceed $5,000,000, for all such amendments, to conduct research and studies to address engineering and legal risks associated with ASR Wells, for which dedicated funds (State General Revenue and Land Acquisition Trust Fund) are budgeted in Fiscal Year 2023-2024. (Contract No. 4600004737)

NOW THEREFORE, BE IT RESOLVED BY THE GOVERNING BOARD OF THE SOUTH FLORIDA WATER MANAGEMENT DISTRICT:

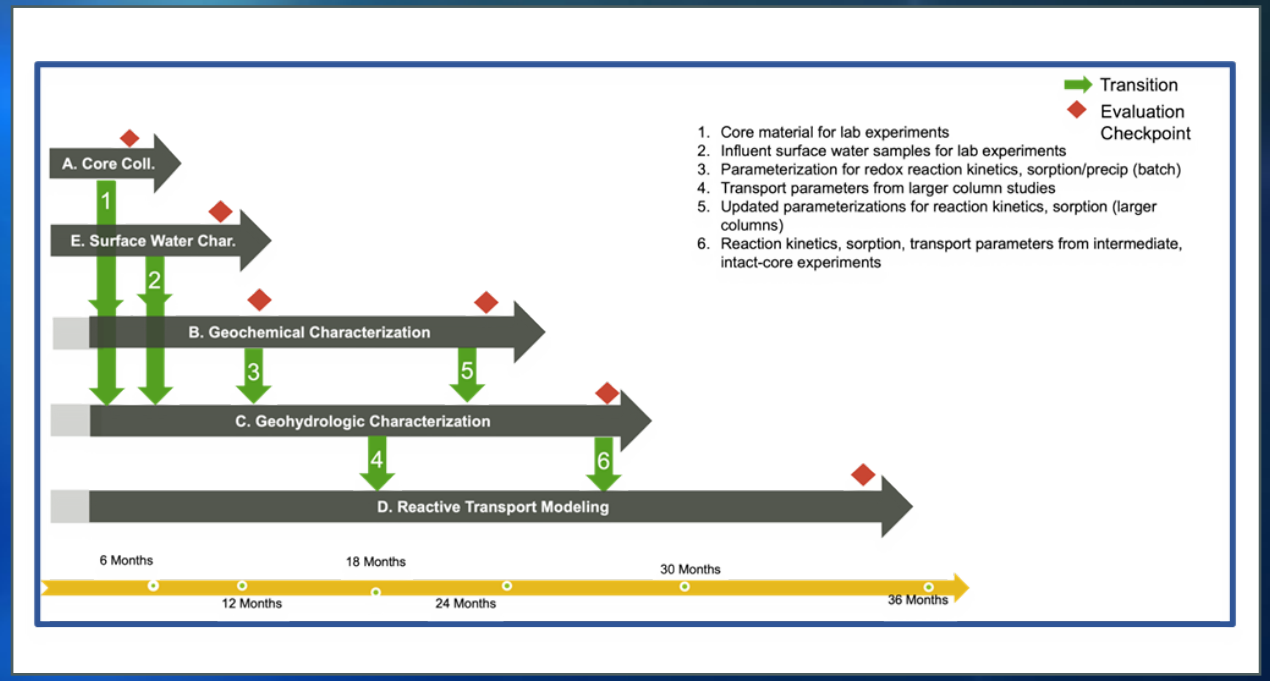
Section 1. The Governing Board of the South Florida Water Management District hereby authorizes the Executive Director or his designee to execute amendments to the agreement with the United States Army Corps of Engineers - Engineer Research and Development Center to conduct research and studies to address engineering and legal risks associated with ASR Wells, in an aggregate amount for all such amendments not to exceed $5,000,000. (Contract No. 4600004737)

Section 2. This Resolution shall take effect immediately upon adoption.

PASSED and **ADOPTED** this 8th day of February, 2024.

Proposed ERDC Studies/Research

- Five main tasks are envisioned for the multi-year effort and are inter-related:
  - Task A: Collection of core material for laboratory investigations
  - Task B: Batch and small-scale column studies to characterize arsenic speciation and distribution within the aquifer
  - Task C: Reactive transport studies for quantifying arsenic speciation, distribution, and reaction
  - Task D: Development of calibrated and validates reactive transport groundwater model
  - Task E: Surface water treatment characterization



APPENDIX B

WORK STATEMENT

COOPERATIVE RESEARCH AND DEVELOPMENT AGREEMENT BETWEEN

U.S. ARMY ENGINEER RESEARCH AND DEVELOPMENT CENTER (ERDC) AND

SOUTH FLORIDA WATER MANAGEMENT DISTRICT

FOR

Management of Water Resources and Water Resources Infrastructure

Pursuant to Article 2.2 of the subject AGREEMENT, this Work Statement defines a particular research activity (consistent with the scope and obligations set forth in Appendix A to be conducted under the AGREEMENT).

1.0. INTRODUCTION

Engineering considerations of the Aquifer Storage and Recovery (ASR) element of the Lake Okeechobee Watershed Restoration Project (LOWRP) can be grouped into three broad categories:

(1) Mobilization and release of pollutants, contaminants, or hazardous substance, and hazardous, toxic, and radioactive wastes (HTRW) constituents;
(2) First-cost construction; and
(3) Long-term Operation and Maintenance (O&M) cost.

To understand risks pertaining to these three categories, ERDC proposes an *ex situ* (i.e., modeling and lab-based) investigation.

The first category is driven primarily by uncertainties associated with the rate and extent of mobilization of arsenic and other metals in the Floridan Aquifer System (FAS) but also includes concern for increased potential of mercury methylation in receiving surface water bodies due to elevated levels of sulfate in recovered groundwater. First-cost construction and long-term O&M cost uncertainties are driven by the need for water treatment that may include: 1) pre-treatment of injected water to applicable standards, 2) any pre-treatment to minimize constituents in the injected water that may mobilize arsenic, 3) any treatment of the recovered water to the applicable standards of that receiving surface water body to include elevated sulfur concentrations and 4) pre-treatment (i.e., filtration)

to prevent the aquifer from clogging from accumulated suspended solids in the injected water. ASR well performance constitutes a secondary uncertainty for long-term O&M cost since aquifer porosity and permeability may change over time due to bio-growth and/or solids precipitation and dissolution; mixing dynamics between fresh injected water and the brackish groundwater may also affect long-term performance.

2.0 SCOPE OF WORK

2.1 Task 1. Develop science plan

To address concerns related to mobilization of arsenic and other metals in groundwater, ERDC and SFWMD will collaborate through modeling and lab-based investigations to characterize and quantify biogeochemical reactions, reaction kinetics, and groundwater flow parameters under conditions representative of the FAS during ASR. This information will then be used to parameterize a reactive transport groundwater model suitable for simulating key processes for water quality and the evolution of aquifer conditions over time during ASR cycling. Integrated results at the conclusion of the effort should provide: (1) a defensible and quantitative basis for strategies to prevent groundwater arsenic concentrations from exceeding applicable standards in the FAS due to injection of typical Lake Okeechobee surface water during ASR, (2) science-based information to inform decisionmakers on how to proceed with future ASR feasibility and field studies, and (3) a modeling framework to inform design of future ASR investigations and interpret their results.

Given the number and complexity of these goals, a multi-year effort will be required. Five main tasks are envisioned as follows.

- Task A: Collection of core material for laboratory investigations
- Task B: Batch and small-scale column studies to characterize arsenic speciation and distribution within FAS aquifer material and geochemical reactions that occur when FAS aquifer material is exposed to representative surface water
- Task C: Intermediate-scale reactive transport studies for quantifying arsenic speciation and distribution, and reactions within FAS aquifer material under ASR-representative conditions.
- Task D: Development of a calibrated and validated reactive transport groundwater model capable of simulating field-scale ASR injections and associated changes in groundwater quality during storage over time
- Task E: Surface water treatment characterization

These Tasks are inter-related and dependent. Tasks B and C are designed to characterize arsenic-associated biogeochemical reactions (and associated reaction

kinetics) that can be expected to occur within relevant zones of the FAS during ASR at the cm scale under potential pre-treatment regimes. Studies described below focus on locations within the two key zones of the FAS targeted for ASR storage: Upper Floridan Aquifer (UFA) and Avon Park Permeable Zone (APPZ).

The laboratory investigations proposed in Tasks B and C require: a) subsurface (core) material from the UFA and APPZ, b) groundwater from the UFA and APPZ, and c) physical samples of surface water that reflect the expected composition of treated water that will be injected into the FAS during ASR. The goal of Task A is to obtain the necessary subsurface core material and groundwater for Tasks B and C. Task E will develop a pilot system to evaluate proposed surface water treatment strategies and provide water samples for the batch and column studies in Tasks B and C.

Results of the cm-scale analysis and parameterizations obtained from Tasks B and C will be integrated with available aquifer data and used in Task D to develop a reactive transport model, which can then be used to simulate 1) impacts of subsurface heterogeneity on ASR performance, and 2) fate and transport dynamics over operational space and time scales. This ability to track arsenic fate and transport will provide the basis for assessing how strategies designed to prevent mobilization of arsenic and other constituents of concern will perform across a well field over time.

The timing and dependencies for Tasks A-E are given in Figure 1.

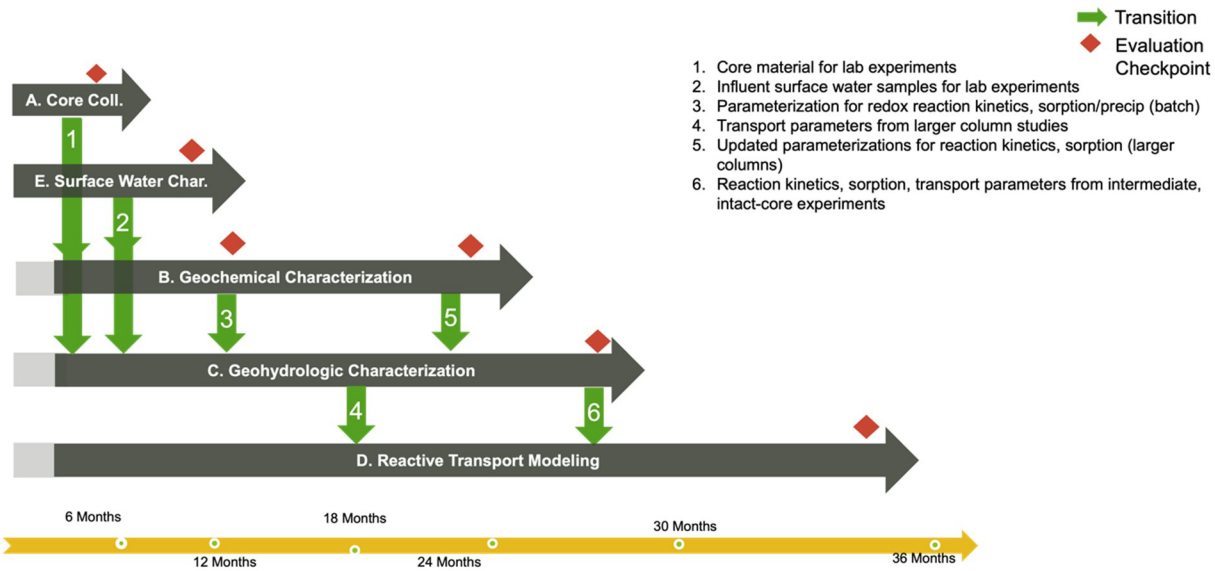


Figure 1 Proposed schedule for ERDC tasks. Inter-task dependencies are enumerated, while Task decision points are discussed below

In order to develop this plan, ERDC and SFWMD will conduct a series of virtual and/or in-person workshops to develop a research plan for the collaborative effort. Workshops will include subject matter experts from relevant federal and state agencies and scientific communities.

Total estimated cost for Task 1 is $50K for ERDC labor and travel. Task 1 was completed through the preparation and presentation of CRADA Amendment 1 and 2.

2.2 Task A: Core material collection

2.2.1 Background

Planned laboratory investigations to characterize biogeochemical reactions and hydraulic flow behavior related to mobilization of arsenic and other contaminants of concern require subsurface material from relevant zones of the FAS. This material must be obtained with care in order to preserve as much as possible *in situ* (i.e., anerobic, reducing) conditions.

ERDC proposes to collect and store subsurface core material from the UFA and APPZ as it is being extracted during the drilling of ASR wells at the L63-N site. Collections will take place over multiple days based on contractor schedules and when drilling reaches relevant zones within the UFA and APPZ. There will be two collection windows during drilling of the APPZ well at L63-N. The first when drilling reaches the UFA (approximately 700 ft below ground surface), and a second when drilling reaches the APPZ. There will be an additional collection window for the UFA when drilling of the UFA L63-N ASR well reaches the UFA. ERDC will coordinate with SFWMD to ensure that ERDC personnel are on-site to process core material and transport it to ERDC facilities for processing.

The initial plan for core collection follows below. Modifications as necessary during field collection will be agreed upon by ERDC and SFWMD. Core collection will consist of: collection of aquifer material in PVC core chambers constructed to accept 1~ 3 ft core lengths (~4 in diameter). Core material will be dispensed into the PVC core chambers quickly to minimize oxidation. Gas within the core chamber (CO_2) will be displaced using oxygen-free formation water (to which sodium dithionate will be added to consume any trace oxygen introduced). The water-filled core chamber will be then be sealed shut with minimal headspace. Core material will be stored at ambient temperature in the field (indoor at room temperature) for the collection period, followed by transport for processing and room-temperature storage at the USACE-ERDC Environmental Laboratory in Vicksburg, MS and at the Pacific Northwest National Laboratory (PNNL) facility in Richland, WA.

For the first collection window, the goal is to collect approximately 20 ft of material from the Suwannee and 20 ft of material from the Ocala zones of the UFA from L63-N APPZ ASR Test Well. The second collection window will feature collection of APPZ core material (~ 40 ft total), also from L63-N APPZ ASR Test Well. The third contingency collection window for UFA core material (~ 40 ft total) would be collected from L63-N UFA ASR Test Well.

2.2.2 Objectives

The goal of Task A is to obtain the subsurface material and groundwater necessary for laboratory experiments planned during Tasks B and C. The Key Requirements, Intermediate Evaluation Criteria for continued investigation, and End State for the Task follow below.

Key Requirements: Coordination with SFWMD is necessary during the windows when L63-N wells reach the relevant formations and target collection depths.

Intermediate Evaluation Criteria for continued task investigation: Core collection during drilling of ASR wells at L63-N is possible and cores can be maintained under anoxic conditions reflective of their original state in the UFA and APPZ aquifers.

End State: Core material and groundwater from UFA and APPZ formations is properly stored and maintained for laboratory studies planned in Tasks B and C.

2.2.3 Task A Cost and Schedule

The estimated cost and schedule for Task A are given below. A detailed cost breakdown for the UFA core collection is given in Table 2.1.

Task A.1: UFA Core collection, preliminary analysis, preservation and documentation ($78,438) Q1FY24
Labor: $63,826
Travel: $6,690
Materials, other: $7,922

Task A.2: APPZ Core preservation, preliminary analysis ($78,438) Q2FY24
Labor: $63,826
Travel: $6,690
Materials, other: $7,922

Task A.3. Contingency UFA Core collection preliminary analysis, preservation and documentation ($78,438)
Labor: $63,826
Travel: $6,690
Materials, other: $7,922

Completion of Task A will depend on drilling schedules but is anticipated to be March 2024.

Table 2.1 Detailed cost breakdown for Task A UFA collection

$ 78,437	: Grand total																							
			LABOR (hourly rates provided, enter hours by activity)																		PER DIEM + Hotel (assume 65/day + 141			Flights or rental car, gas, materials
			Mandy		Steve		Josh I.		Fred		Jim		Tony		Jay		Matthew		Other	hrs	Mandy	Steve	Josh I	Misc
total	category	activity	$ 190	hrs	$ 164	hrs	$ 76	hrs	$ 300	hrs	$ 300	hrs	$ 190	hrs	$ 190	hrs	$ 225	hrs	$ 1					
$ 3,092	Work plan - health and saftey	Develop brief work plan and SSHSP (or activity analysis as needed per guidance) for USACE team for USACE-specific work elements not covered by Stantec's (compressed gas, long haul transp.)	$ 380	2	$ 492	3	$ -	0	$ 600	2	$ 600	2	$ 380	2	$ 190	1	$ 450	2	$ -					
$ 6,421	Materials for preservation of cores	Any equipment required to preserve cores pending receipt of funds for Task 1, 2 etc.? Account for that here. Build in VB (PVC pipe and caps, fittings, compressed N2/CO2 cylinders, regulators, tubing - core saw!)	$ 570	3	$ 656	4	$ -	0	$ 300	1	$ 150	1	$ 1,520	8	$ -	0	$ 225	1	$ -					$3,000.00
$ 8,321	Materials for field prep	Soda kegs filled with O2-free formation water - ready to roll in field or Steve preps before reaching 700 ft depth when core collections starts. Build tanks at EL Load equipment	$ 570	3	$ 1,641	10	$ 760	10	$ -	0	$ -	0	$ 1,900	10	$ -	0	$ 450	2	$ -					$3,000.00
$ 4,025	Labor for prep	Build core tubes in EL	$ -	0	$ -	0	$ -	0	$ -		$ -		$ 3,800	20	$ -		$ 225	1	$ -					
$ 2,380	Shipping	Ship cores to PNNL from Vicksburg	$ -	0	$ -		$ 380	5	$ -		$ -		$ -		$ -		$ -		$ -					$2,000.00
$ 3,093	Flight	Round trip flight	$ 1,520	8	$ -	0	$ -		$ -		$ -		$ -		$ -		$ -		$ -		$ 900		$ 673	
$ 2,280	Driving CHL pickup	Josh drives from VB day 1 return day 5	$ -		$ -	0	$ 2,280	30	$ -		$ -		$ -		$ -		$ -		$ -					$0.00
$ 1,551	Hotels		$ -		$ -		$ -		$ -		$ -		$ -		$ -		$ -		$ -		$ 776		$ 776	
$ 846	Per Diem		$ -		$ -		$ -		$ -		$ -		$ -		$ -		$ -		$ -		423		423	
$ 600	car rental/truck rental	5 days	$ -		$ -		$ -		$ -		$ -		$ -		$ -		$ -		$ -					$600.00
$ 600	Rental car gas	5 days	$ -		$ -		$ -		$ -		$ -		$ -		$ -		$ -		$ -					$600.00
$ 10,640	Collect cores	5 days	$ 7,600	40	$ -	0	$ 3,040	40	$ -		$ -		$ -		$ -		$ -		$ -		$ -	$ -	$ -	
$ 4,070	Drive cores PNNL	VB MS to Richland WA 3 10 hr days (33 hrs)	$ -	0	$ -		$ 3,040	40	$ -		$ -		$ -		$ -		$ -		$ -		$ 1,030			
$ 24,797	Preserve/prelim analysis	PNNL and ERDC prep of the core	$ 4,560	24	$ -		$ -	0	$ -		$ 12,000	40	$ 7,600	40	$ -		$ 225	1	$ -		$ 412			
$ 5,721		REPORT/TECH MEMO: Document field collection procedures, core transport, lab procerssing and preservation pending receipt of funding to start work. Critical to account for this effort.	$ 1,520	8	$ 656	4	$ -		$ 600	2	$ 1,200	4	$ 760	4	$ 760	4	$ 225	1	$ -					
Total Sum																								
$ 78,437		Total hours per person		88		21		125		5		47		84		5		8						
		Total dollars per person	$ 16,720		$ 3,446		$ 9,500		$ 1,500		$ 13,950		$15,960		$ 950		$ 1,800							
	$ 63,826	Total labor																						
	$ 6,690	Total travel																						
	$ 7,922	Total materials, misc																						

2.3 Task B: Geochemical characterization

2.3.1 Background

The goal of Task B is to characterize arsenic speciation and distribution within FAS solids and geochemical reactions that occur when UFA and APPZ aquifer material is exposed to surface water injected during ASR. It consists of several sub-tasks (B.1-B.4) that are described below. All work would be performed by ERDC at ERDC facilities.

Task B is designed to principally address "water quality" uncertainty (Number 1 in the Introduction) by characterizing the geochemical reactions (and associated reaction kinetics) that can be expected to occur within the FAS during ASR at the cm scale under potential pre-injection treatment regimes. This would effectively represent a point within an ASR well field during its operation. To reduce cost and time, ERDC has assumed one of the FAS aquifer zones (the Upper Floridan Aquifer) will be the main focus of replicated experiments, with limited and focused experimentation only conducted on materials from the APPZ.

Tasks B and C would then serve as the basis for groundwater geochemical modeling under Tasks C and D and groundwater fate-and-transport modeling refinement and calibration under Task D. It is ERDC's intent that some aspects of Tasks D such as initial groundwater model development would proceed in parallel while Tasks B and C are underway.

Following acceptance of this SOW and prior to commencement of the Task B activities a Work Plan will be developed describing the Subtask 1-4 activities in detail. The Task B laboratory efforts could commence once concurrence has been achieved on the Work Plan with SFWMD, required funding, required aquifer core material, as well as groundwater and surface water samples are available from Task A activities. It is currently anticipated that rock and water media samples will be available by the beginning of the 2nd Q of FY24 from Task A. Preliminary Task B results will be available after one year; completion of all work in Task B would require two years. Task B will conclude with the publication of a Technical Report, which will be chapter of a larger ERDC report encompassing all ASR Tasks (A-E).

2.3.2 Objectives

The objective of Task B is to characterize arsenic (As) speciation and distribution within FAS solids and geochemical reactions that occur when FAS aquifer material is exposed to representative treated surface water. The planned duration is 2 years.

The proposed effort involves four activities; 1) groundwater and treated surface water sampling with detailed geochemical characterization, with detailed work up of historical data and analysis of newly obtained samples, 2) micro-scale elemental mapping of the sulfide minerals present in representative cores materials to determine the elements present and their concentration, 3) batch studies using representative core material, groundwater, and treated surface water samples to assess potential geochemical reactions and equilibrium thresholds for the elements of interest and surface water pre-treatment effectiveness, and 4) column studies conducted under ASR-relevant hydraulic conditions using surface waters that have been subjected to envisioned pre-treatment strategies to quantify hydrogeochemical reaction kinetics. Activity B.1 described above is only needed for guidance in preparing groundwater and surface water surrogates so that they are representative analogs of the native geochemical conditions of the FAS and surface water bodies, to the degree possible.

The information from the geochemical experiments in Task B will be integrated with results from Task C to generate governing geochemical reactions and kinetic parameters, which will be used to parameterize the reactive transport model in Task D. ERDC and SFWMD will work collaboratively to avoid duplication of effort and to leverage ongoing research efforts. The Key Requirements, Intermediate Evaluation Criteria for continued investigation, and End State for Task B follow below.

Key Requirements: The proposed experiments will require rock cores and waters from the proposed ASR injection/withdrawal locations while maintaining their inherent geochemical properties, i.e., limiting oxygen exposure to subsurface materials. Task B assumes that these materials will be obtained under Task A under the conditions specified below.

- Approximately five core sample segments, each about 3 ft long pending core recovery, are required and should be representative of the depth expected where the ASR injections are proposed to take place, which have the expected highest concentration of sulfide minerals. ERDC is planning to obtain this material under Task A. Further details of the sample collection approach are described in Task A.
- Surface water, consisting of several liters of water, will be obtained in the areas of expected surface water withdrawals for injection purposed by SFWMD. In addition, several different surface waters, consisting of several liters, will be obtained in the areas where groundwater is expected to be discharged to surface water bodies. ERDC Task E will then test these samples to prepare an analog surrogate water sample replicating both ground water and surface water geochemical conditions to the best of our ability for use in the batch and column experiments.
- The experiments will require several tens of liters of the prepared surrogate waters. The final geochemical composition of the surrogate waters will be provided to the SFWMD for joint review and agreement before preparing the surrogate waters for the experiments.

Intermediate Evaluation Criteria for continued investigation: Quantified range of As concentrations that could develop in FAS groundwater following envisioned pre-treatment schemes; supports risk assessment for ASR and pre-treatment performance assessment.

End State: Quantitative (replicated, controlled) experiments yielding geochemical reaction pathways and reaction kinetics that can be used to predict the range of As concentrations that could develop over time in response to ASR within the FAS. Because Task B experiments will be performed using crushed materials, resulting in fresh reactive surfaces and increased reactive surface area, results will provide a laboratory-scale first step in evaluating geochemical processes involved, to be followed by more relevant column tests using intact core samples.

2.3.3 Technical Approach

The proposed geochemical laboratory studies will provide a detailed chemical composition of the minerals, surface, and groundwater from the sampled system. In addition, the geochemical laboratory studies will provide the reaction kinetics and likelihood of re-equilibrium resulting from the introduction of treated surface water to the native rock material as well as the resulting likely concentrations of the elements of interest in the aqueous phase simulating varying time intervals of storage. Further, in conjunction with Task E, proposed pre-treatment methods involving chemical and mechanical means will be tested to determine their impact on rates of kinetics and resulting concentrations of elements of interest. Finally, the geochemical studies will assess the geochemical reactions resulting from the discharge of groundwater to surface water, including the resulting concentration of the elements of interest. In both the case for groundwater chemistry and surface water chemistry, the resulting production of elements of interest in the aqueous phase will be assessed as it relates to regulatory action levels.

Subtask B.1 involves detailed surface and groundwater characterization as needed. Samples will be collected as part of ERDC Task A coring activities. This activity can be supplemented or replaced with previously collected ASR data as available and suitable for use. Assuming existing ASR data is not available or suitable for use due to data quality issues, ERDC plans to make the following analytical measurements for the aqueous and groundwater samples obtained during Task A: standard metals to include (arsenic, mercury, iron, manganese, molybdenum, and vanadium), redox, pH, dissolved oxygen, hardness, dissolved and total organic matter, total dissolved solids, cations, anions, phosphate-phosphorous, nitrate/nitrite-nitrogen, sulfate/sulfide, methane, gross alpha, and any other constituents of concern. Analysis of sample will be performed at ERDCs Environmental Laboratory (EL) in Vicksburg, MS or the Cold Regions Research and Engineering Laboratory (CRREL) in Hanover, NH. Both laboratories have extensive performance performing these types of analytical measurements.

The analytical information will be used to provide the baseline aqueous geochemistry and the likely range of boundary conditions for the geochemical models as well as prepare the surrogate water samples to be used in the batch and column experiments. The exact geochemical makeup of the surrogate water will be discussed with SFWMD once Task A samples have been collected and analyzed. This includes the type and amount of organic matter, biological material, and appropriate chemicals to induce the desired redox conditions. ERDC will consult with experts at the USGS on surrogate water formulation.

Once agreement is achieved on the surrogate water recipe it will be prepared for the Subtasks B.3 and B.4 batch and column experiments.

Subtask B.2 involves micro-scale elemental mapping of the sulfides present in rock cores. Up to a dozen individual sulfide minerals will be mapped. A combination of microscopy methods such as SEM EDAX will be utilized to select sulfide mineral samples of interest for detailed chemical characterization. Detailed chemical characterization will involve laser-induced breakdown spectroscopy (LIBS) to prepare a 2D elemental map of the sulfide mineral samples to be followed with laser ablation – inductively couple mass spectrometry (ICMS) to quantify specific elements of interest identified with LIBS. Subtask B.2 will provide some bounds on the mass of elements of interest in the sulfide samples per volume of rock. In addition, heterogeneities present in the core material will be considered to evaluate the "representativeness" of the samples used for sulfide mineral mapping. Heterogeneities in sulfide concentration likely occur at several scales in the FAS:

- Coarse (meter) facies scale (which may or may not coincide with flow zones)
- Microfacies scale – e.g., some laminae or burrows may be enriched in sulfides
- Microscopic scale – variations in abundances of framboids and cubic crystals

Iron sulfide crystals will also vary in potential exposure to recharged water – pyrite present in very low permeable material or within large (dolomite) crystals may have minimal, if any, exposure to recharged water.

To assess whether core material is representative of the zones with elevated As material samples collected as part of Task A will be analyzed for its As content. The approach likely will involve taking a section of core, pulverizing it, and then digesting a larger mass of material than normal for As analysis to assess whether As is present. Subtask B.2 information in conjunction with results from Subtasks B.3 and B.4 will allow the geochemical modelers to assess the likely conservative concentration range of elements of interest in groundwater resulting from surface water injection.

Subtask B.3 consists of batch studies utilizing *crushed/pulverized* FAS core to a #20 mesh size material to assess the impact of treated (to drinking water standards, oxygen removed) surface water exposure to minerals present in the aquifer material (i.e., sulfide minerals). Additionally, geochemical reaction kinetics will be explored through long-duration batch tests with exposure of surrogate surface water to core material ranging from a few days up to several months. Finally, a groundwater surrogate exposed to crushed core material of various periods of time will be mixed with a surrogate surface water to assess the potential impacts to surface water quality. Periodic exchanging of

surrogate surface water in vessels might provide info on the rate of leaching and whether a finite amount of leachable sulfides is being exhausted. Batch tests with and without DOC added to the surrogate surface water will be conducted.

Core samples obtained under Task A and preserved will be pulverized/crushed in a glove box to prevent atmospheric contact with the material. The crushed material then will be transferred to the reaction batch vessels in the glove box. Since the rock material will require pulverization for the batch experiments the reaction kinetics results will be conservative due to the increased sample surface area. As mentioned earlier following acceptance of this SOW a Work Plan will be prepared that describes in detail the materials used for the experiments, sample preparation process, type of inert atmosphere to be used for Subtasks B.3 and B.4, the number and conditions for each batch test, and analytes and analytical methods.

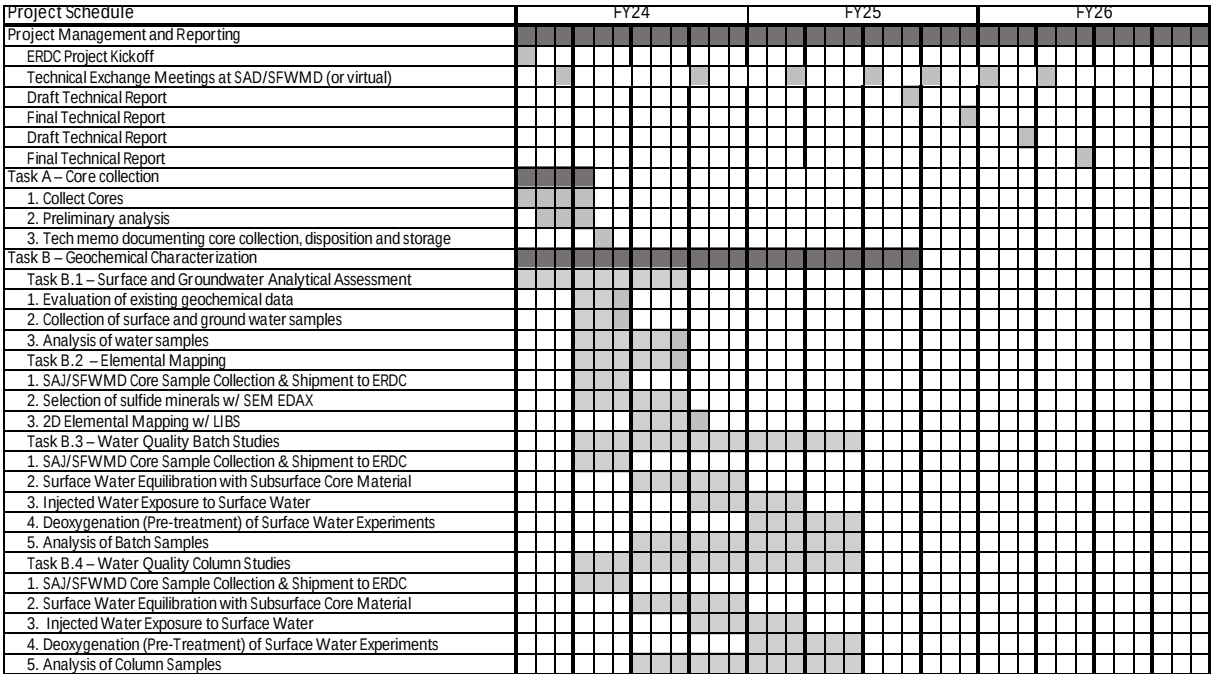
Subtask B.4 involves column tests utilizing *pulverized* rock core material discussed in Subtask B.3. Subtask B.4 will be conducted if the Subtask B.3 results indicate the likely production of As or other undesirable elements of interest above regulatory action levels. Like Subtask B.3, the column tests performed under Subtask B.4 will involve a determination of conservative kinetic rates for the elements of interest and the likely resulting groundwater concentrations. The column tests will provide more realistic kinetic reaction rates than the batch tests. However, the pulverized core column tests under Task B will not assess As geochemical reactions as it relates to fracture flow. *Intact core column testing will not be conducted as part of Task B but rather under Task C*. Task C will assess As fate-and-transport as a function of fracture flow.

The Subtask B.4 column tests themselves, will consist of introducing a surrogate surface water into sealed columns containing crushed core material and then allowing the water to equilibrate with the core material for varying time intervals. Water will be extracted from the column at various intervals to assess the impact of simulated aquifer storage time on the production of elements of interest and their resulting concentration. Towards the end of the column experiment both chemical and mechanical deoxygenation approaches as discussed for Task E will be assessed for their impacts on controlling/limiting the production of undesirable elements. Successive column flushes with a surrogate of injected water then native groundwater will be evaluated so that transport parameters that approximate that in the aquifer can be evaluated. Again, following acceptance of this SOW a Work Plan will be prepared that describes in detail the materials used for the column experiments, sample preparation process, type of inert atmosphere to be used, the number and conditions for each column test, and analytes and analytical methods to be used.

Name	Org	Role
Tony Bednar, Ph.D.	ERDC EL	Lead PI
Jay Clausen, Ph.D.	ERDC CRREL	Co-PI
Jenifer Netchaev	ERDC EL	Contract lab coordination and analytical analysis
Meg Bishop	ERDC CRREL	LIBS As analysis
Sam Beal, Ph.D.	ERDC CRREL	Batch and column experiments
Warren Kadoya, Ph.D.	ERDC CRREL	Batch and column experiments
Caitlyn Arnold	ERDC CRREL	Administrative support

2.3.4 Task B Cost and Schedule

Table 2.2 Proposed schedule for Tasks A and B



Labor	Hours	Cost Estimate ($K)
Dr. Tony Bednar	780	169.1
Dr. Jay Clausen	600	144.6
Jenifer Netchaev	2720	297.8
Meg Bishop	1100	111.5
Dr. Sam Beal	1000	149.3
Dr. Warren Kadoya	1100	133.7
Caitlyn Arnold	597	62.6
Equipment and Supplies		
General lab supplies and glove box		135.5
Services		
Editing and shipping		10.3
Hazardous Waste Disposal		7.5
Travel		
ASR site visit and 2 project meetings		19.9
Management and FIF		58.2

Cost

Task B.1: Surface and Groundwater Analytical Assessment: $50,000
Task B.2: Elemental Mapping: $150,000
Task B.3: Water Quality Batch Studies: $600,000
Task B.4 Water Quality Column Studies: $500,000
Total: 1,300,000

Labor: $1,068,820
Supplies: $135,450
Travel: $19,900
Other: $75,830

2.4 Task C: Geohydrologic Characterization

2.4.1 Background

The experimental studies proposed in Task C will provide local (essentially point-scale) parameterizations for reaction kinetics. However, the heterogeneous hydrogeologic conditions that affect the fate, transport, and mobilization are difficult or impossible to capture in batch systems or small columns. Developing reaction rates and transport parameters that are field relevant requires larger systems with longer transport and residence times. Task C will focus on characterizing reaction kinetics associated with changes in redox state and arsenic dissolution/precipitation dynamics as the composition of injected water changes. This will include laboratory experiments of increasing complexity from initial column studies using granular material to studies using *intact cores*

at aquifer pressure combined with novel electrical geophysical measurements (e.g., DC electrical conductivity, AC electrical conductivity, spectral induced polarization [SIP], and magnetic susceptibility). Importantly and in contrast to Task B, the intermediate-scale experiments will be run at realistic field conditions (e.g., aquifer pressure: Upper Floridian Aquifer 550 ft; ~250 psi; Ocala-Avon Park 1200-1600 ft, ~600 psi), which affects both carbonate and sulfide solubility, and using intact rock cores. Analysis of arsenic in both aqueous and solid phases will be performed for the experiments. In addition to refined process understanding, the resulting data will support validation of the well-field scale (Task D) reactive transport model formulation and parameterization under controlled boundary conditions and material composition. Finally, issues of upscaling and the representativeness of cores with respect to fracture properties will be assessed through modeling exercises. If permeability and fracture composition of the available lab-scale cores differ significantly from field observations (e.g., with respect to hydraulic conductivity), modeling for simplified 2D discrete fracture networks (DFNs) will assess the sensitivity of arsenic mobilization and other processes of interest to fracture-network characteristics (e.g., fracture density, extent, and connectivity). This modeling will leverage the USGS' previously compiled fracture database for the UFA to help construct representative (albeit 2D) DFNs for hypothesis testing.

2.4.2 Objectives

The goal of Task C is to quantify arsenic speciation and distribution reactions within FAS aquifer material under ASR-representative conditions through a series of intermediate-scale reactive transport studies that will be performed collaboratively by ERDC and PNNL. The Key Requirements, Intermediate Evaluation Criteria for continued investigation, and End State for Task C follow below.

Key Requirements: Cores: Ideally for 24 experiments (12 columns UFA and 12 columns APPZ, each representing triplicates of 4 treatment conditions), 240" total, selected carefully to include sufficient intact blocks and fractures. A total groundwater and injection water volume of ~ 1,000 L will be required for the experiments (<2,400 L groundwater and surface water total, with appropriate subvolumes representative of select pretreatments). Groundwater will be maintained under CO_2 headspace.

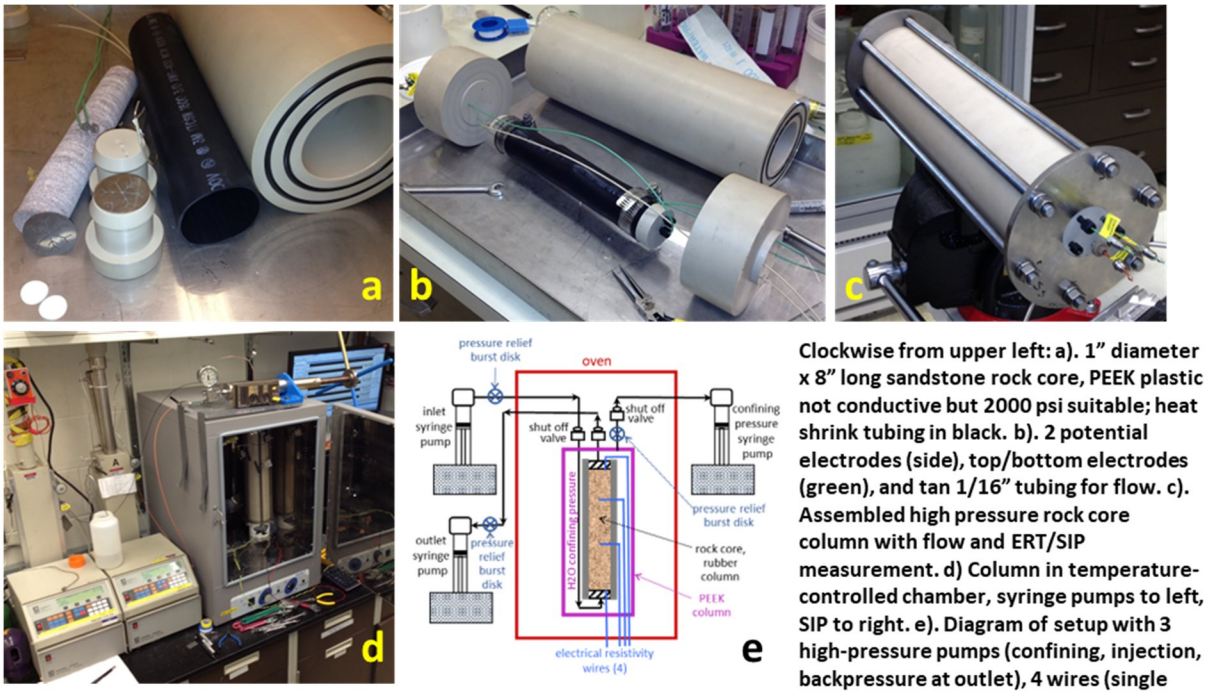
Intermediate Evaluation Criteria for continued investigation: Numerical modeling can recover reactive transport dynamics under controlled experimental conditions and upscaling of flow and transport model parameters to length-scales required for well-field application is valid.

End State: Improved quantification of impact of transport processes on mixing and reaction time scales driven by subsurface transport at a potential ASR site. Validated and upscaled effective parameters for a numerical fate and transport model of potential ASR sites.

2.4.3 Technical Approach

Tasks B and C are highly coordinated efforts to quantify the range of As concentrations that could develop in the FAS during ASR under field-representative conditions, as well as the uncertainty associated with this estimate. Outcomes of Task C provide quantitative hydro-biogeochemical processes and parameters required to project field-scale ASR performance over space and time. Sufficient core for 24 experimental columns is required, 240 inches of core in total, as planned under Task A work. Cores will be selected carefully to include intact blocks as well as fractures to ensure columns are representative of field conditions. A total groundwater volume and injection water volume of ~ 1,000 L will be collected in Task A for this work.

Task C.1: Initial column experiments. Columns will be configured for flow-through experiments with pressure and temperature controlled to approximate field conditions (e.g., 240-600 psi) at the ASR site. As a precursor to implementing the flow-through experiments, simple stop-flow experiments will also be run in the prepared columns. Column experiments will be performed in order of increasing complexity, starting from simple and progressing to conditions representative of the actual field setting. Arsenic aqueous and solid phases will be assessed. Representative pressure (and temperature) is needed because both CO_2 and H_2S solubility increases with pressure, and, as a consequence, calcite and pyrite solubility is a function of pressure. The H_2S solubility increases 2-3 times at 250 psi (Bailey and Peters, 1976), and CO_2 solubility increases ~17 times (Signet et al., 1962). Although arsenic reactions directly involve the dissolution/precipitation of arsenopyrite, because arsenate can incorporate into calcite, arsenic solubility is also indirectly linked to calcite dissolution/precipitation.



Clockwise from upper left: a). 1" diameter x 8" long sandstone rock core, PEEK plastic not conductive but 2000 psi suitable; heat shrink tubing in black. b). 2 potential electrodes (side), top/bottom electrodes (green), and tan 1/16" tubing for flow. c). Assembled high pressure rock core column with flow and ERT/SIP measurement. d) Column in temperature-controlled chamber, syringe pumps to left, SIP to right. e). Diagram of setup with 3 high-pressure pumps (confining, injection, backpressure at outlet), 4 wires (single measurement location), electrical resistivity with AC current (SIP).

Figure 2. *Setup for high-pressure, temperature-controlled electrical resistivity column study*

Engineered material (ground calcite + FeAsS). The calcite/FeAsS ratio will be based on analysis of cores. Columns will be packed with granular material. Experiments will be run first as stop-flow experiments at 500 psi and then as flow-through experiments under multiple flow rates. Temperature will be controlled to reflect realistic field conditions. Experiments will be performed at different oxic/anoxic conditions to evaluate the change in As mobility (i.e., initial dissolution from FeAsS and possible precipitation at long times) as well as any dissolution of limestone and/or dolomite over time scales from minutes to months (if necessary). The kinetics of FeAsS dissolution and arsenate precipitation observed in the engineered materials will provide a basis for design of intact FAS core column experiments (e.g., lengths, flow rates, flow duration, etc.). Electrical geophysical measurements (DC electrical conductivity, spontaneous potential, magnetic susceptibility, and AC electrical conductivity or spectral induced polarization) will be conducted during batch and flow-through experiments. The geophysical datasets will help to track the progress of geochemical reaction fronts and guide experiment duration. PNNL staff scientists have extensive experience conducting integrated geochemical/geophysical experiments. Our laboratory setup and column designs allow for cost-effective, streamlined combination of experiments.

Intact cores. Column flow-through experiments will be designed and performed using intact FAS core materials. Available cores will be examined to identify those with natural fracture surfaces with FeAsS. As with engineered material, electrical geophysical

measurements will be conducted during experiments. In addition to providing information to assess reaction pathways and kinetics, measurements will be performed to assess potential pore clogging, permeability and porosity changes. Work on intact cores has the potential to provide valuable insight into FeAsS mobilization at the ASR site. However, upscaling the results of this work requires that the important characteristics of discrete fractures present at the site (i.e., the connectivity, extent, density, and orientations) are represented in the cores. Translating laboratory results from cores to field-scale conditions is problematic when field-scale processes are controlled by large or poorly connected fractures that are not contained (or even often seen) in cores. This upscaling risk with respect to discrete fractures will be mitigated first through careful selection/evaluation of cores, as mentioned above. Second, the risk can be further mitigated through modeling experiments to upscale beyond the borehole, as detailed below under Task C.2; these modeling experiments will leverage existing, field-based information about the statistical distributions of fracture orientations and lengths. Anisotropy poses another challenge to upscaling. To assess anisotropy, we will extract subcores orthogonal to the cores' major (vertical) axis to measure horizontal (along with vertical) hydraulic conductivity and assess small-scale anisotropy. If sub-coring indicates that vertical cores are not sufficiently representative of field conditions, we will assess using subcores for column experiments. A total of 240 inches of intact core, divided for use in up to 24 columns, will be acquired under Task A for this work. A set of experiments will be performed at atmospheric conditions to assess the role of pressure on salient processes and potential As mobilization.

Analysis of As aqueous and solid phases. Column experiment effluent samples will be used to quantify arsenic mass balance by: a) total As leached, b) As species leached (described below), and c) solid phase analysis of the rock to quantify initial As in the pyrite. Selected samples will also be used to understand any limestone and dolomite dissolution with measurements of aqueous pH, ORP, Fe, Ca, Mg, and carbonate. Aqueous total As, As(III) (as arsenite) and As(VI) (as arsenate) will be measured in experiments to quantify As mobility by: (a) total As by inductively coupled plasma - mass spectrometry (ICP-MS), and (b) aqueous As(III) and As(VI) by ion chromatography (IC) on the front end of the ICP-MS, for selected samples. Arsenic in solid phases will be characterized before and after experiments initially using sequential liquid extractions that include: (a) aqueous As (described above), (b) ion exchangeable As (to quantify adsorbed As as arsenite or arsenate), (c) carbonate-incorporated As (As(V)), and (d) arsenopyrite-bound As). The different extraction fluids used for these extractions are: (a) groundwater, (b) 1.0 mol/L Na nitrate, (c) pH 2.3 acetic acid/Ca nitrate solution, and (d) 5M HCl (and analysis of As, Fe, and S; Heron et al, 1994). Selected pre- and post-experiment solid samples will then be analyzed by a variety of surface phase techniques to identify actual As solid phases.

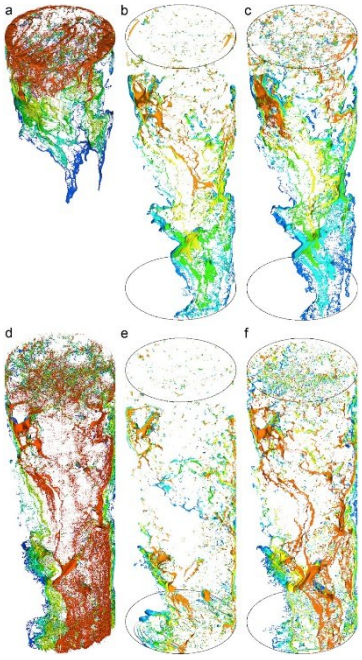


Figure 3. Micro XCT imaging of transport in cores.

It is hypothesized that arsenopyrite initially present as precipitates in the calcite partially or fully dissolves in the suboxic and oxic injected groundwater, releasing As into aqueous solution as arsenite and arsenate. Arsenite may be more present in suboxic or anaerobic injected water and arsenate present in oxic water. Release of Fe(II) from arsenopyrite is also oxidized and precipitates as one or more Fe(III) oxides such as goethite. Aqueous arsenate adsorbs to calcite, whereas there is limited adsorption of arsenite (Yokoyama et al., 2012). Aqueous arsenate also incorporates and coprecipitates into calcite, altering its structure (Alexandratos et al., 2007). Aqueous arsenite and arsenate also adsorb to iron oxides. Initial surface mineralogy will be characterized on the micron scale using an electron microprobe and X-ray fluorescence on thin sections taken from experiments. This technique is used to produce 2-D maps of elements of hypothesized mineral precipitates (i.e., Fe, As, S, Ca, C). If As uptake into calcite is observed from electron microprobe, As valence state maybe be determined using X-ray absorption near edge structure (XANES) and the crystal structure near the As atoms using extended X-ray absorption fine structure (EXAFS) at the Argon Advance Photon Source (APS) or the Stanford Synchrotron Radiation Lightsource (SSRL). Solid samples will also be subjected to iron extractions to quantify changes in ferrous and ferric phases (and As in these phases) before and after leaching (Heron et al., 1994). The analyte list for aqueous and solid sample digests can easily be expanded beyond arsenic to other constituents of interest (e.g., mercury, iron, manganese, molybdenum, and vanadium).

Prior to leaching experiments, cores used in columns will be imaged by X-Ray Computed Tomography (XCT) to evaluate the interconnectedness of fractures. An example of a salt tracer injection into a sandstone core shows high flow paths (Figure 3) and dead-end pathways (from Scheibe et al., 2015).

Column test data modeling. One-dimensional (1D) reactive transport modeling will be used to design experiments and interpret experimental results. Geophysical modeling will be used to interpret the electrical signatures of As mobilization at column scale, which would inform utility for potential future field-scale process imaging. Geophysical results may provide insight into where in the columns (e.g., at fracture locations) and at what times—and thus geochemical conditions—As mobilization occurs. PNNL staff have extensive experience with MODFLOW/MT3DMS/RT3D family of codes,

HYDROBIOGEOCHEM, STOMP, and PFLOTRAN for reactive-transport modeling, which will be leveraged during Task D. Geochemist Workbench (version 12) will be used to evaluate calcite, dolomite, pyrite, and arsenopyrite solubility at different pressures.

Task C.2: Intact column experiments. Reactive transport modeling results of the Task C.1 experiments will be used to design intact flow-through column tests with targeted length, flow rate, duration and geophysical, aqueous and solid-phase analysis required to quantify the range of arsenic concentrations that could develop *in situ* during ASR within FAS under two injection scenarios identified by the project delivery teams. We envision two column tests initially subject to "control" conditions, i.e., formation groundwater flowing through intact cores at pressured and flowrates representative of ambient, pre-ASR injection conditions to provide "baseline" measure of geophysics and aqueous geochemistry. Once a representative "baseline" is achieved, influent would then be switched to surface water that has been subject to two pre-treatments representative of potential ASR injections. The 1D reactive-transport models developed under Task C.1 will be calibrated to the experimental data to identify geochemical and hydraulic parameters for the intact FAS media. Geophysical modeling will be performed to estimate geophysical parameters (DC electrical conductivity, spontaneous potential, and induced polarization spectra) as geochemical conditions are varied. These results will be interpreted for signatures of As mobilization, pore clogging, permeability and porosity changes.

An example of changes in iron sulfides is shown in a column experiment in which initially a 1.2% ferriydrite-coated sand (ferrous iron) was chemically reduced to FeS by 10 pore volumes, then slowly oxidized over the next 300 pore volumes. Visually, decreased FeS is observed (i.e., black precipitate) during oxidation, which resulted in the precipitation of a ferric phase goethite (orange in right panels Figure 4).

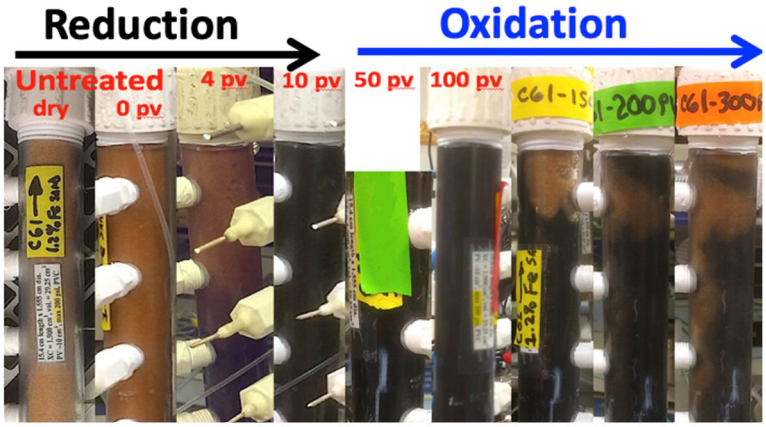


Figure 4. Black FeS to orange ferric phase goethite observed during column tests completed during a previous separate study.

Scaling. Although field-scale simulation is outside the scope of this work, predictive modeling provides a powerful framework to assess the extensibility of laboratory results to the field-scale. Extending column experimental results to field scale is especially

problematic if the intact cores do not contain the features that control flow and transport at the field scale. This limitation occurs when important field-scale features, such as large, permeable fractures, are not recovered by coring. Core permeability will be compared to field-scale measurements from the FAS to assess the representativeness of cores. If cores used in Task C appear to be significantly lower in permeability compared to field-scale FAS media and exhibit insufficient fracture connectivity to release measurable As, modeling under this sub-task will assess simplified 2D fracture networks, guided by field-based fracture-network statistics, with varying fracture density, extent, and connectivity to assess sensitivity of As mobilization to fracture-network characteristics.

2.4.4 Cost and Schedule

Table 2.3 Proposed schedule for Task C

Project Schedule	FY24												FY25											
Task C – Geohydrologic characterization																								
Task C.1 – Initial column experiments																								
1.Engineered material (ground calcite + FeAsS)																								
2. Intact cores																								
3. Analysis of water and solid phases																								
4. Data analysis and modeling																								
Task C.2 – Intact column experiments																								
1. Stop-flow column experiments																								
2. Geophysical monitoring of columns																								
3. Analysis of water and solid phases																								
Task C.3 – Quantified ASR As conc. range & upscaling analysis																								
1. Data analysis and modeling																								
2. Upscaling – translate lab-scale results to field scale																								
3. Solid-phase characterization																								
4. In-progress reporting																								

Cost:

C.1. Initial column experiments: $73,600

- C.1.1. Engineered materials: $16,600
- C.1.2. Intact cores: $24,800
- C.1.3. Analysis of water and solids: $11,300
- C.1.4. Data analysis and modeling: $20,900

C.2. Intact column experiments: $843,700

- C.2.1. Stop-flow column experiments: $669,800
- C.2.2. Geophysical monitoring: $93,700
- C.2.3. Analysis of water and solids: $80,200

C.3. Quantified ASR As conc & upscaling: $381,600

- C.3.1. Data analysis and modeling: $150,600
- C.3.2. Upscaling: $82,800
- C.3.3. Solid phase characterization: $27,900
- C.3.4. Progress reporting: $120,300

Total: $1,298,700
Labor: $1,163,000
Supplies: $64,000
Travel: $72,000

2.5 Task D: Reactive Transport Modeling

2.5.1 Background

While the lab experiments and field data are essential for characterizing subsurface water and substrate materials, as well as defining reaction rates, and possibly identifying more constituents of concern, a coupled hydraulic/fate and transport simulation tool allows the integration of this information for the entire ASR domain, both near and far field. A validated flow and reactive transport model is essential to 1) explore the long-time fate and transport of arsenic or other constituents of concern driven by ASR operation, and 2) quantify the impacts of material heterogeneity and variability in subsurface composition on arsenic mobilization, fate, and transport. By fate and transport, we mean the reactions and interactions among aqueous and solid phase constituents that could create conditions favorable to mobilization of arsenic or other harmful metals, as well as subsequent transport and transformation of these substances. A validated and calibrated site-scale model can also be used to guide the selection of locations for monitoring wells, inform operational cycling to improve operational efficiency, and minimize the risk of arsenic mobilization. Informed by assimilation of the in-situ data, the model can be used to provide continually updated predictions of subsurface flow and constituent fate and transport for any constructed ASR system.

2.5.2 Objectives

The goal of Task D is to develop and validate a flow and reactive transport model for potential ASR sites in the FAS. The Key Requirements, intermediate Go/No-Go criteria for continued investigation and End State for Task D follow below.

Key Requirements: Geochemical and geohydrologic model parameterization from laboratory experimentation and field sampling and onsite aquifer testing, including detailed characterization of potential ASR sites from geophysical investigations and analysis of the rock cores, will be used to inform the groundwater reactive transport model.

Intermediate Evaluation Criteria for continued investigation: The model has the ability to simulate transport of conservative constituents in the Kissimmee River ASR (KRASR) pilot tests performed from 2009 to 2013.

End State: Numerical model to quantify uncertainty in strategies to prevent arsenic (or other constituents of concern) mobilization. Model-based design of well-operation and monitoring schemes for ASR sites, with a focus on arsenic fate and transport along with recommendations for future simulation efforts as part of ASR Science Plan.

2.5.3 Technical Approach

The project site is data rich, with previous ASR studies having been conducted (USACE and SFWMD, 2013) as well as current studies being conducted as part of the ASR Science Plan (USACE and SFWMD, 2022). The proposed modeling will take advantage of these previous/ongoing efforts. Data from continuous cores collected in the project footprint will be used to help characterize the domain. As part of Task A, sections of cores from the Ocala Limestone are currently being collected and split between ERDC and PNNL for column experiments, with the results being used for this modeling effort. Additional information will be gleaned from construction of exploratory ASR and monitoring wells as well as aquifer performance tests and potential tracer tests (See USACE 2022).

Along with data collection, scoping and development of a local-scale density-dependent groundwater flow model is currently on-going for a domain that includes the C-38N and C-38S ASR system locations (USACE and SFWMD, 2022). This model should be available by the start of this Task D effort. Our plan is to utilize this density-dependent groundwater flow model, and modify it as needed to build a reactive transport groundwater model that will allow the analysis of arsenic mobilization, fate, and transport. The local-scale flow model is being developed using SEAWAT, a three-dimensional (3D) variable-density groundwater flow and solute transport code developed by the USGS. SEAWAT was also used previously for the ASR Regional Study and Kissimmee River ASR (KRASR) model simulations. The SEAWAT model files will serve as a basis for the proposed reactive transport model development. We propose to evaluate 5 primary different reactive transport models:

1) RT3D, Multi-Species Reactive Transport Simulation Software for Groundwater Systems, which is a software package for simulating three-dimensional, multi-species, reactive transport of chemical compounds (solutes) in groundwater flow. The advantage of RT3D is that it a MODFLOW based model, like SEAWAT, and

can utilize the grid, as well as the hydraulic boundary conditions and flows from available SEAWAT models allowing us to focus on the reactive transport component of the problem. RT3D has not been previously used for ASR in South Florida, so its applicability would need to be assessed.

2) PHAST simulates multicomponent, reactive solute transport in three-dimensional saturated groundwater flow systems by combining the USGS' PhreeqcRM reactive transport model and the HST3D groundwater flow model. PhreeqcRM is a computer program for simulating chemical reactions and transport processes in natural waters. The program is based on equilibrium chemistry of aqueous solutions interacting with minerals, gases, solid solutions, exchangers, and sorption surfaces. Extensible chemical databases are available for PhreeqcRM, which allows application of the reaction, transport, and inverse-modeling capabilities to almost any chemical reaction that is recognized to influence groundwater quality. PHREEQC version 3 (on which PhreeqcRM is based) has previously been used by the Jacksonville District to evaluate reactive transport, but the HST3D flow model has not been previously used for ASR in South Florida.
3) PHT3D is a multicomponent transport model for three-dimensional reactive transport in saturated porous media. The most recent version of the code (v2.10) incorporates MT3DMS (5.3) for the simulation of three-dimensional advective-dispersive multi-component transport and the geochemical model PHREEQC-2 (v2.17) for the quantification of reactive processes. PHT3D uses PHREEQC-2 database files to define equilibrium and kinetic (e.g., biodegradation) reactions. We will investigate upgrading this to PHREEQC version 3.
4) PhreeqcRM, is a geochemical reaction module to perform kinetic and equilibrium chemical reaction calculations for reactive transport simulators (models) that use an operator-splitting approach. This approach allows the reaction module to take component concentrations from the model cells of the transport simulator, run geochemical reactions, and return updated component concentrations to the transport simulator model cell. We will investigate if SEAWAT can be used for the transport simulator, as previous implementations of PhreeqcRM were with other transport models (e.g., FEFLOW).
5) PHREEQC (version 3), linked directly to SEAWAT using Basic Model Interface (BMI) compliant versions of both codes. PHREEQC calculates 1-D transport, so it will be necessary to modify this code to calculate the 3-D transport calculations in SEAWAT.

In addition to collaborating closely with Task B and C teams in developing the arsenic fate and transport module, the Task D team will work directly with USGS experts obtain their input on what application may be most appropriate.

The selected flow and reactive transport model will be used to evaluate the fate and transport of arsenic as a result of the planned ASR operations, with an emphasis of concentrations above the Maximum Contaminant Limits (MCL) at any location as a result of the injection of the deoxygenated and treated to drinking water standard water into the aquifer.

Available data in the vicinity of the C-38C/C-38N site, including: groundwater chemistry, groundwater levels, pathogen levels, surface water chemistry, sediment and rock core geochemistry, rainfall recharge, and cycle testing groundwater chemistry, will be processed as required for input into the selected flow and reactive transport model. These data will be used to establish the initial and boundary conditions and a complete set of required input information for the model.

The current SEAWAT model will be evaluated for sufficiency in use for transport modeling by simulating conservative constituents transport as observed in the KRASR cycle tests. If the supplied hydraulics model cannot adequately be used to simulate conservative constituents under the processes of advection and dispersion, we will assess the ability to modify the model to make it adequate. If we deem this is not possible within the budgeted time and cost, then the reactive transport modeling task will conclude.

We will be required to add reaction kinetics to represent selected chemical species, (e.g., arsenic), in aqueous and sorbed phases. Existing reaction pathway for the geochemical reactive transport will be evaluated based on column tests and data and information coming from past and current ASR studies. If methods from the literature are not appropriate, i.e., cannot history match observed data, we will develop our own geochemical reaction kinetics method. Based on the current understanding, this geochemical reactive transport will include: arsenic (As(III) and As(V) species), electron acceptors (e.g., oxygen, nitrate, nitrite, ferric iron), electron donors (e.g., ferrous iron, sulfide), the carbonate system, and other critical UFA and APPZ minerology and aqueous geochemical constituents that govern redox potential in each. Arsenic dissolution, sorption, precipitation reaction kinetics will be modeled using appropriate reaction order and stoichiometry as determined during Tasks B and C.

Reactive transport modeling will be evaluated through calibration and comparison against the column test results from Tasks B and C. As an additional potential validation effort, we will attempt to simulate As/Mo in the previous KRASR cycle tests. As the water chemistry of the injected water in the KRASR pilot project will be different from the test water in Task B and C, this validation effort may prove difficult. If this is the case, then

the potential utility of the model to simulate As/Mo in the proposed project will have to be assessed in conjunction with collaborating partners. If the model is deemed sufficient, we will proceed with tests in described below, otherwise the reactive transport modeling task will conclude.

Coupled flow and reactive transport models are highly complex, as they incorporate both groundwater flow and solute transport (advection, dispersion, diffusion, and biogeochemical processes). It is important to appreciate that there will be considerable uncertainty in predicting the exact future concentrations of As in the subsurface. A series of simulations will be performed with stochastic/probabilistic representation of hydraulic and biogeochemical parameters to quantify uncertainty in the selected model parameters. While this study focuses on As, we may simulate molybdenum in conjunction with As, as previous ASR pilot tests indicated that Mo behaved similarly as As during the cycle testing, and may therefore be a good proxy for As, helping to reduce uncertainty in how the As may behave in future scenarios.

After the completion of the laboratory and field tests to evaluate the overall performance of the ASR system, we will consider additional constituents on the MCL list of EPA and Florida Drinking Water Standards (such as molybdenum, mercury, phosphorus, sulfide, etc.) that might need to evaluated in addition to arsenic and as part of the reactive transport modeling. This would be guided by the laboratory, field data, and the results of the current modeling of arsenic. We will make recommendations about additional modeling efforts to be carried forward/added to the ASR research program.

2.5.4 Cost and Schedule

Table 2.4 Proposed schedule for Task D

Project Schedule	FY24	FY25	FY26
Task D – Reactive Transport Grounwater Model			
1. Assess existing SEAWAT hydrodynamic model			
2. Modify SEAWAT model as required			
3. Evaluate and select reactive transport models			
4. Data collection and reduction			
5. Develop kinetics routine for arsenic/molybdenum			
6. Simulate selected cycle tests			
7. Evaluate/calibrate/adjust reactive transport routine			
8. Simulate fate/transport of arsenic in local and regional models			
9. Evaluation of additional constituents on the EPA MCL list			

Cost:

Total: $1,376,900

Travel: $16,933

Labor: $1,080,367

Contracts: $193,100

Supercomputer time and software: $86,500

Labor	Hours	Cost Estimate (K)
Charles Downer	991	$207.6
Stephen Turnbull	1519	$249.3
Clay LaHatte	980	$111.5
Steve England, Clarissa Murry, and Laura Bitner (NAD, North Atlantic Division)	1145	$225.6
Aaron Byrd	420	$70.9
Jaime Graulau-Santiago (SAJ)	720	$108.0
Junior engineer/Post Doc	1432	$116
Contracts and Services		
Limnotech and Aquaveo Contracts		$193.2
Super Computer time and software licenses		$77.8
Travel		
To SWFMD		$17.0

Task D Budget by sub-task

- D.1. Assess existing SEAWAT hydrodynamic model ($100,315 total) FY24Q2
  Labor: $88,900
  Supercomputer time and software licenses: $11,415

- D.2. Modify SEAWAT model as required ($137,562 total) FY24Q2
  Labor: $109,200
  Subcontracts $16,900
  Supercomputer time and software licenses: $11,462

- D.3. Evaluate and select reactive transport models ($140,492 total) FY24Q1
  Labor: $96,600
  Subcontracts $32,400
  Supercomputer time and software licenses: $11,492

- D.4. Data collection and reduction ($219,804 total) FY24Q2
  Labor and Travel: $197,100
  Subcontracts $11,200
  Supercomputer time and software licenses: $11,504

- D.5. Develop kinetics routine for arsenic ($242,743 total) FY25Q1
  Labor: $151,500
  Subcontracts $78,900
  Supercomputer time and software licenses: $12,343

- D.6. Simulate selected cycle tests ($199,110 total) FY25Q3
  Labor: $164,300
  Subcontracts $22,600
  Supercomputer time and software licenses: $12,210

- D.7. Evaluate/calibrate/adjust reactive transport routine ($90,829 total) FY25Q3
  Labor and Travel: $74,300
  Subcontracts $8,500
  Supercomputer time and software licenses: $8,029

- D.8. Simulate fate/transport of arsenic in local and regional models ($161,545 total) FY25Q3
  Labor: $145,000
  Subcontracts $8,500
  Supercomputer time and software licenses: $8,044

- D.9. Evaluation of molybdenum and additional constituents on the EPA MCL list ($84,500 total) FY26Q1
  Labor: $70,400
  Subcontracts $14,100

2.6 Task E: ASR Source Water Treatment Characterization

2.6.1 Background

A key part of the ASR project is the treatment of source water from rivers such that it can be stored in the FAS and subsequently recovered without negatively impacting the water quality. In addition to meeting State of Florida requirements to treat the source water to potable standards (with the exception of primary and residual disinfection rules), the water also needs to be treated in a manner that does not mobilize contaminants from the mineral matrices of the aquifer during the injection, storage, and recovery process. Arsenic is one of the primary contaminants of mobilization concern in ASR projects. Previous studies (Werth et al., 2022) have assessed strategies for mitigation of arsenic mobilization potential in ASR, and the strategies recommended are dependent on the native aquifer conditions. For the case of the aquifers in the present ASR project near Lake Okeechobee, the aquifer presents a highly reducing environment with no oxygen. As such, the treatment strategy is depicted by the green arrows in the following diagram (Figure 5).

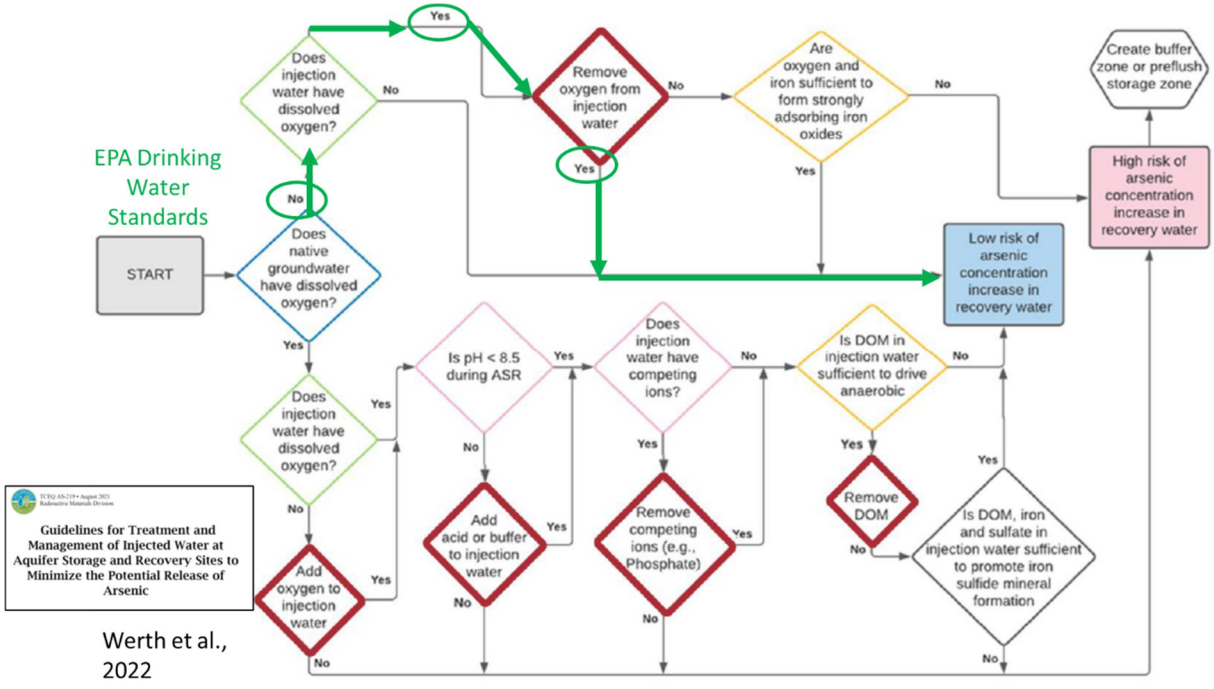


Figure 5 The green arrows highlight the water treatment pathway for minimizing arsenic mobilization potential for the Lake Okeechobee ASR project.

Previous work by SFWMD has identified and validated an efficient water treatment process that can treat high-DOC river waters in the Okeechobee region to potable standards for ASR. The process employs a sequence of inline coagulation and low-pressure membrane filtration, along with supporting steps. Key water quality parameters that drove the design selection process included: color (related to DOC); coliform

bacteria; and turbidity.

While the inline coagulation and membrane filtration process achieves drinking water standards, it does not remove oxygen from the water, nor does it attempt to stabilize the water through alkalinity or pH adjustments. As such, the removal of oxygen prior to injection is currently under investigation for the SFWMD, with final designs forthcoming.

2.6.2 Objectives and Metrics

There are three primary objectives relating to the ASR source water treatment support study to be pursued by ERDC and SFWMD. Note, we refer to this Task as **Task E** in the following:

1. Generate representative injection water samples to support batch and column studies in ERDC arsenic mobilization studies (Tasks B and C, respectively).
   Metrics: Key water quality parameters (pH, alkalinity, total dissolved solids [TDS], turbidity, DOC, nitrate, and phosphorus) match previous pilot-scale studies within 20%. Water sample volumes are sufficient for Tasks B and C (batch and column studies).
2. Assess and integrate deoxygenation and stabilization approaches for reducing arsenic mobilization potential during injection, storage, and recovery.
   Metrics: Oxygen below detection limits; pH and alkalinity levels match baseline aquifer conditions.
3. Generate membrane backwash water samples that can be used to optimize dewatering and wastewater management strategies.
   Metrics: Sufficient volumes of backwash water collected for backwash testing supplied by SFWMD. Solids content and flotation properties match previous pilot study data. Volumes generated are sufficient to support SFWMD studies for solids management optimization. SFWMD will have the samples processed and characterized the water quality, settling/flotation properties, and other attributes relevant to the design analysis. Backwash water will be collected in separate tanks for each membrane type.

2.6.3 Technical Approach and Risks

Given that a key objective of Task E is to generate representative water samples for ERDC ASR Support Tasks B and C, a small pilot system will be assembled for use at the ASR site. After optimizing the pilot system, the treated (injection) water samples will be collected, preserved, and used for Task B and C experiments as quickly as possible after collection (within 48 hours). This pilot system approach will allow the research team to generate samples on demand as they are needed. The pilot system will initially be optimized at the ASR site in as soon as funding is received, and the research team will return to the site when addition samples are required.

The Task E approach will include measurement of water quality parameters that are relevant to arsenic mobilization. The parameters to be monitored in both the source water

and treated (injection) water shall include: pH, turbidity, ORP, DO, COD, BOD-5, TOC, DOC, color, $SUVA_{254}$, TN, TP, PO_4^{-3}, NO_3^-, NO_2^-, NH_3, TDS, sulfide, iron, arsenic, mercury, alkalinity, sulfate, and chloride. Assessment of these parameters will help verify that the water is representative and help guide the most appropriate times to collect samples for Tasks B and C, since source water quality, and particularly DOC, can vary seasonally. The biodegradable organic matter, as indicated by BOD-5, DOC, and other parameters, can impact arsenic mobilization potential indirectly by aiding consumption of any remaining oxygen or other electron donors once injected. As such, low DOC conditions could be more favorable for arsenic mobilization when injecting into an anoxic or anaerobic aquifer. While low DOC source waters may be easier to treat to potable standards, they may present more of a challenge with respect to arsenic mobilization due to the resultant lower DOC.

The treated (injection) water samples will vary in quality as the source water quality changes. Previous studies and historical data indicate that source water quality at the ASR sites is variable and impacted by the rainy season (Table 2.5 from Stantec, 2021). Additional data at the pilot ASR site indicates that October-December present relatively high DOC conditions, and therefore collecting data by December is important to the Task E effort.

Table 2.5 Source water quality variation in ASR source waters (SFWMD Lake Okeechobee Watershed Restoration Project (LOWRP) Aquifer Storage and Recovery (ASR) Wells Water Treatment Technology Evaluation, Technical Memorandum (2021, Stantec, SFWMD)

Constituent	Unit	Std	Median	25-%ile	75-%ile	Min	Max	No. Samp
pH	std units	6.5-8.5	7.0	6.7	7.3	5.5	9.1	535
TDS	mg/L	500	176	143	213	80	395	47
TSS	mg/L	-	6	4	8	2	22	89
Turbidity	NTU	-	3.1	2.3	4.4	0	27	538
Color	PCU	15	128	91	181	1	580	513
DOC. Carbon	mg/L	-	18	16	21	12	40	344
TOC	mg/L	-	18	16	21	12	39	359

While pH, TDS, TSS and turbidity are relatively consistent, color levels in the Lake Okeechobee Watershed are highly variable. Color levels in Kissimmee River and L-63 canal range from 1 to over 500 PCU during the start of the rainy season.

The Task E technical approach for the pilot treatment system will be to mimic previous pilot testing conditions. However, the pilot system for Task E will be smaller in size than the previous pilot systems tested at the ASR site by SFWMD, and smaller membrane modules with less surface area and rated for flows up to 0.5 gpm will be used. The test flow rate per unit membrane surface area will be held constant and set to match the membrane operating conditions used in the previous SFWMD pilot demonstration. This process will include screening, pumping, straining, chemical addition, membrane filtration. In addition to matching flux, the pilot system will be designed to mimic the

coagulation contact time, and membrane cleaning cycles used in the previous pilot study. The pilot system treatment train is depicted in Figure 6.

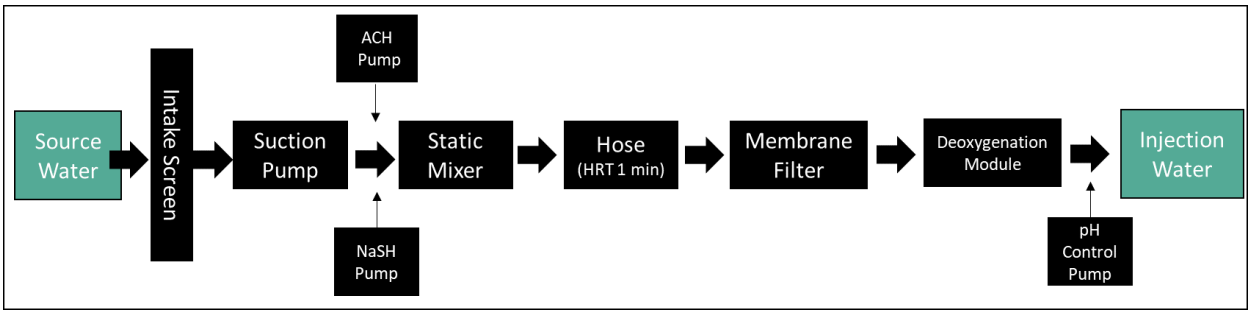
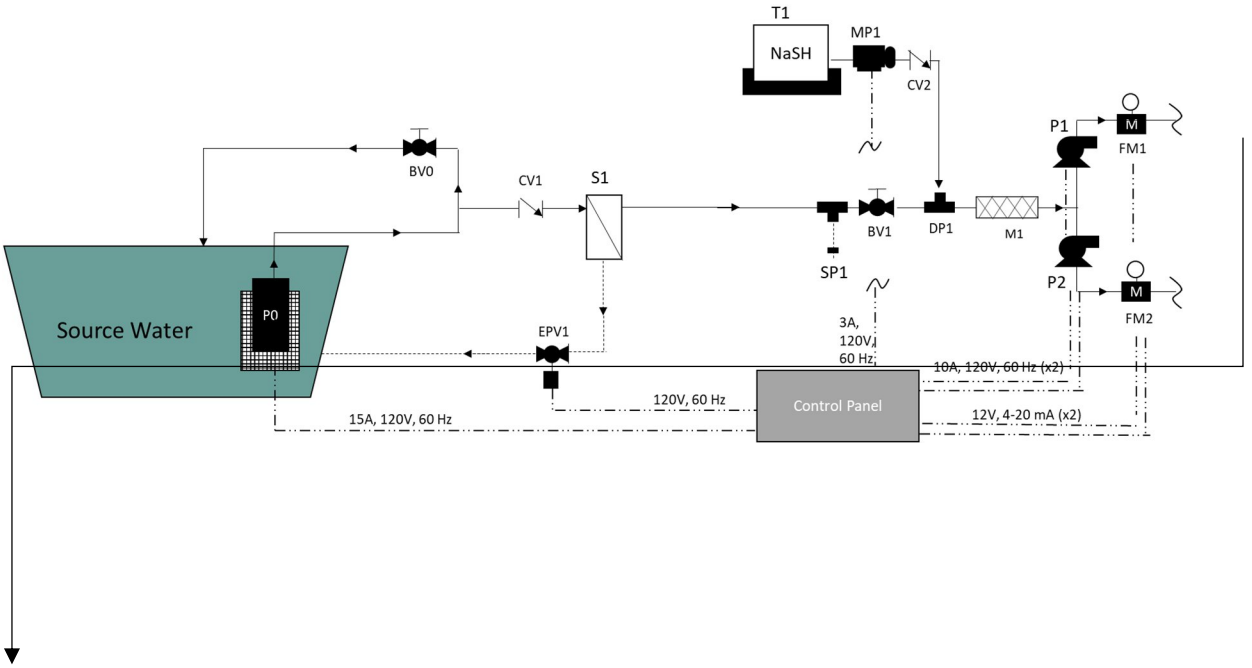


Figure 6 ASR source water treatment train. NaSH addition, deoxygenation, and pH/alkalinity control will be variables during testing. A ceramic and polymeric membrane filter system, with their corresponding coagulant (ACH) dosing rates, will be compared as well.

However, this treatment train will allow for evaluation of deoxygenation processes under consideration by SFWMD for the 10-mgd demonstration testing facility, which were not tested in the previous pilot study. These deoxygenation processes include chemical reduction and physical oxygen removal through membrane systems.

A process and instrumentation diagram (P&ID) was developed to depict process equipment, interconnecting piping and valves and is illustrated below in Figure 7.



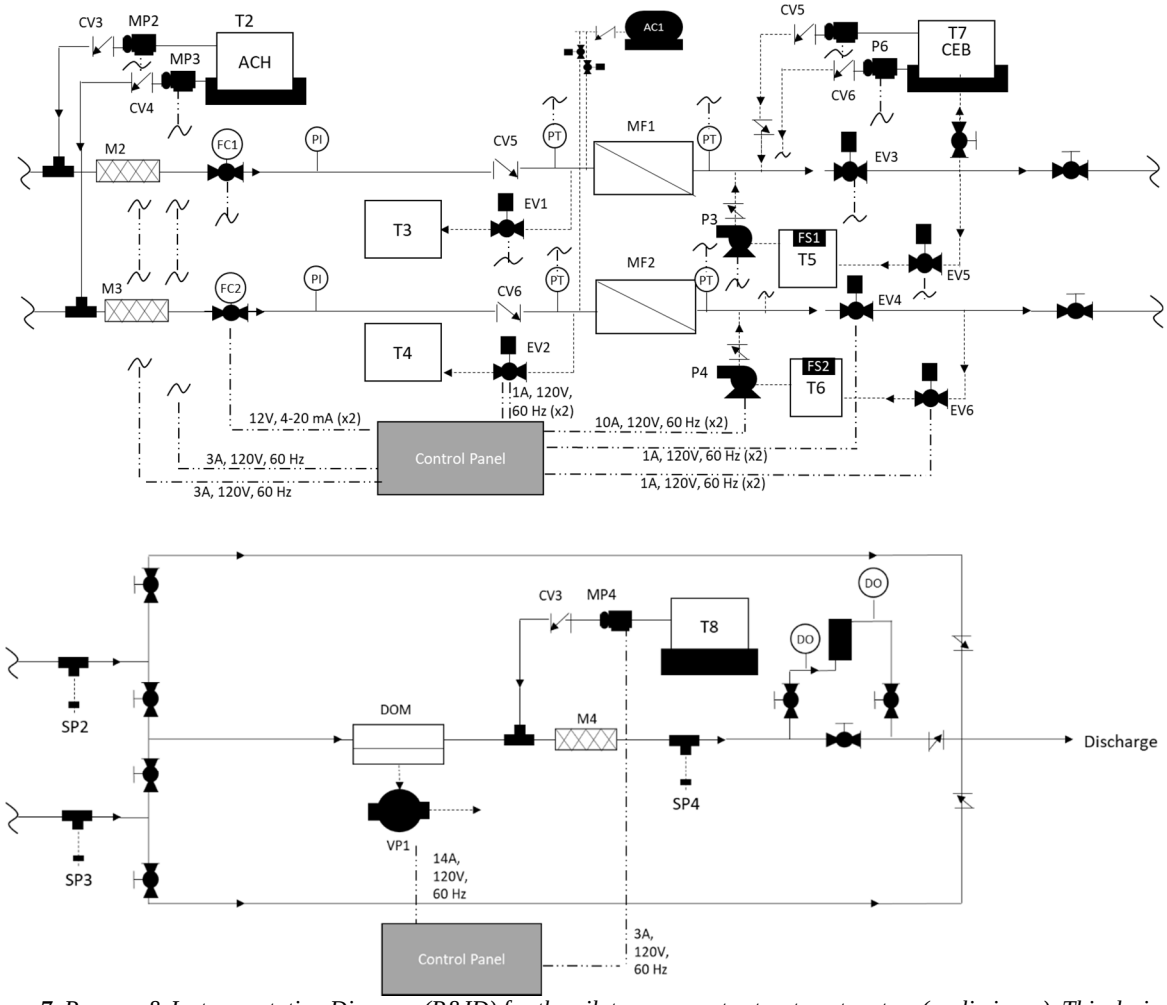


Figure 7 *Process & Instrumentation Diagram (P&ID) for the pilot source water treatment system (preliminary). This design allows for parallel testing of two membrane modules with the same source water to provide accurate head-to-head comparison data.*

This design allows for concurrent testing of the membranes with the same raw water. It also facilitates collection of coagulated water or filtrate samples with or without operation of deoxygenation processes. The P&ID will be developed and updated as the pilot skid is constructed and tested. The control strategy narrative will conceptually include targeting of constant membrane feed flow via control of a variable frequency drive (VFD) operation for the feed pump and/or an electronic flow control ball valve to adjust feed pressure to compensate for membrane fouling over time, filtrate storage for backwash (level switch), backwash automation (timer controlled), and chemical dosing (flow paced). Any chemical and temperature control membrane processes, such as clean-in-place protocols or ZeeWeed membrane activation protocols, will be performed manually as needed. It is not expected that clean-in-place protocols will be needed over the duration of the experimentation.

Coagulant dosing rates will be set to mimic previous pilot studies, which targeted 10 ppm ACH (as aluminum) for the ceramic membranes and 2 ppm ACH (as aluminum) for the polymeric membranes. Coagulant contact time upstream of membrane filtration will be

set to 1 minute to maintain consistency with previous pilot studies. The coagulant doses may be adjusted based on source water conditions or updated guidance from membrane manufacturers.

Controls approach: Backwash cycles based on timers; Flow controlled based on Flow Meter readings and target setpoint, via flow control valves that can increase pressure to compensate for membrane fouling; One CEB per day

All cycle times adjustable from interface; All components can be powered on or off from the interface; Full automation based on user settings.

Operations Phase	Purpose	Cycle	Controls
Run	Produce treated water	0:19 min on; 0:01 min off; 23:40 per 24:00 cycle	Target constant flow via Flow Control Valves informed by Flow Meters
Backwash	Remove Particulate Foulants from Membranes	0:19 min off; 0:01 min on Air scour 20 sec; Backwash 30 sec; Forward flush 10 sec	Timers only
Chemically Enhanced Backwash	Remove Particulate and Biofilm Foulants from Membranes	Once per day at 23:40 Run backwash cycle (1 min) Run CEB pump (1 min) Soak (15 min) Run backwash cycle 3x (3 min)	Timers only

Figure 8 Controls Approach. Cycle times for backwashing will be adjustable to reflect desired operations for each membrane.

An electrical riser diagram is illustrated in Figure 9. The system can be designed to accommodate local line power (480V, 3 Ph, delta) via a transformer to 208V 3 Ph 60 Hz Wye, which is required for operation of the Variable Frequency Drive (VFD) motors. 208V 3Ph power is also standard for military systems, so a military generator can be used. Power for individual devices will be transformed and controlled inside the main control panel for the system.

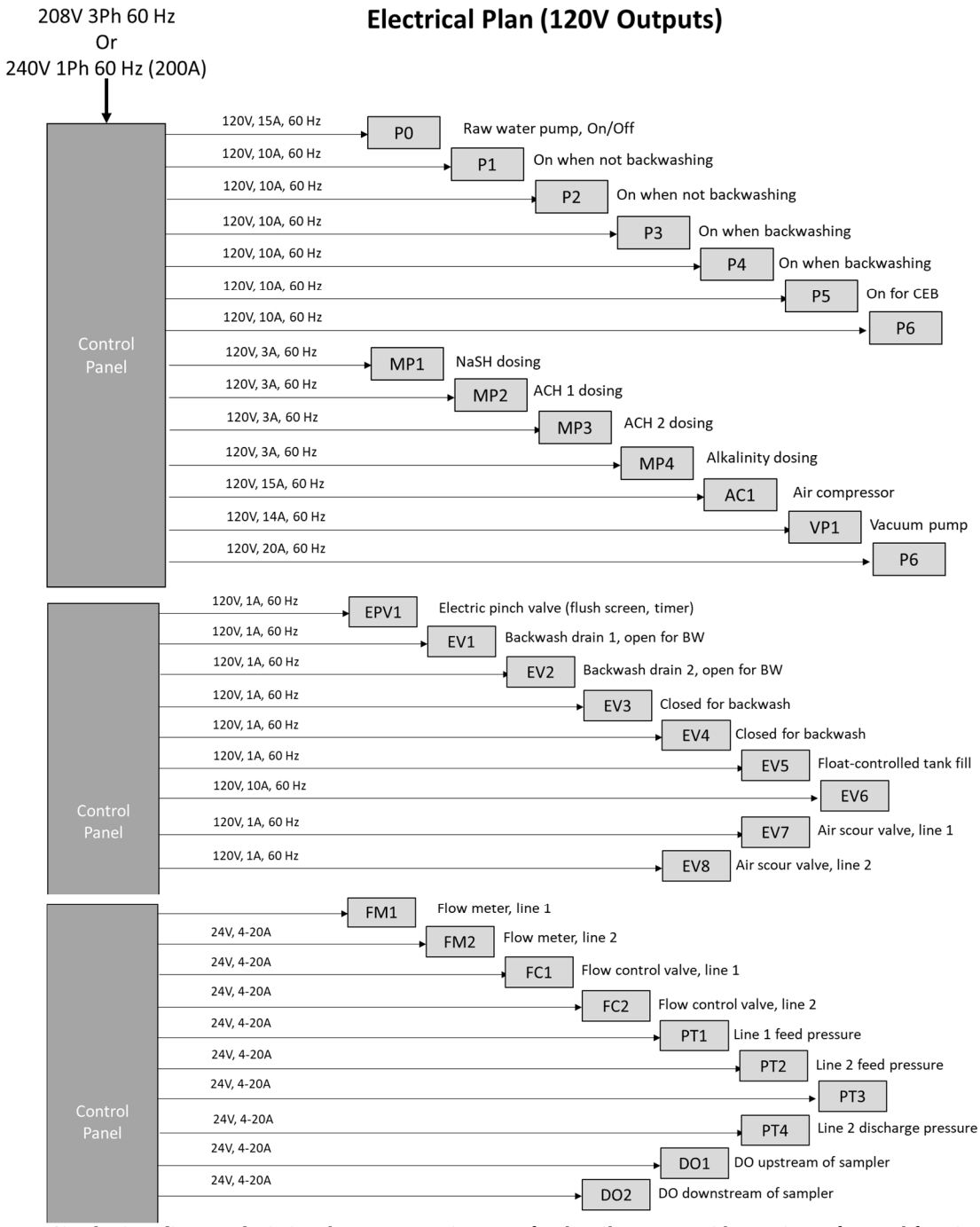


Figure 9 *Simple riser diagram depicting the power requirements for the pilot system with notations of control functions.*

2.6.4 Sub-Tasks

Task E.1 Design and acquire components for pilot treatment skid (Oct-Nov)

The design process has been initiated, a bill of materials has been generated, and acquisition is ongoing. A design review meeting was held with stakeholders to review and improve the design. Going forward, an operational protocol will be developed for the two

types of membranes (ceramic and polymeric) to be tested. Operating protocols will mimic those conditions determined to be optimal in previous pilot scale testing at the ASR site. Components not currently available in CERL's inventory have been ordered from manufacturers and distributors through small purchases. The estimated time of completion for the entire acquisition process is two months.

Task E.2 Assemble and flow test pilot treatment skid (Nov-Dec)

The pilot skid is being assembled on a Unistrut frame mounted to a steel pallet for easy loading and unloading. Tanks with secondary containment will be provided for chemical storage. A simple control panel with relays for UF backwash cycles will be provided. Dosing pumps will be controlled and adjusted to match flow rates. Backwash pressure will be manually adjusted with a ball valve to follow manufacturer guidelines. System power will be 208V 3Ph at 60 Hz. Three phase power will allow for VFD control of pump flow rates. Pump speeds and an automated flow control ball valve will be adjusted via the control panel to maintain target flow rates. Piping will be schedule 80 PVC, with flexible hoses used for long runs. Hose and pipe diameters will be adjusted to match water velocities from the previous pilot studies. Hose lengths will be adjusted to match hydraulic retention times from the previous pilot studies. Power cables and panels will be NEMA-4 and the control panel will receive 208V 3PH power. A transformer will be provided to convert grid power (480V 3Ph) to a 208V 3Ph 60 Hz Wye configuration feed. As a backup, a milspec AMMPS generator will be provided. Flow testing of the system with clean water will be conducted to calibrate flow meters, check controls, and verify target flow rates and chemical dosing rates. This work will be performed at ERDC CERL in Champaign, Illinois. A clean water tote tank will be made available at the field site for use as needed for commissioning and other activities (chemical dilution).

Task E.3 Perform field test of pilot treatment skid and collect backwash wastewater samples

Extended pilot testing will be performed continuously over a 7-day period for each membrane type upon authorization and funding of Task E.3 (estimated February 2024). The primary objective of this field test will be to optimize and validate system performance while generating membrane backwash wastewater samples that will support assessment of wastewater management options. Experimental plans will be jointly prepared by SFWMD and ERDC at least two weeks prior to commencement of fieldwork.

Table 2.6 *December Test Plan*

Activity	**Day of Testing**															
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**
Install system and check power, controls	■	■														
Calibrate dosing pumps and flow meters			■													
Baseline performance testing				■												
Optimization of system operations					■	■	■									

Baseline data collection (Coag MF)								■								
Deox. 1 data collection (Coag MF Degas)									■	■						
Deox. 2 data collection (NaSH Coag MF)											■	■				
Verification test of optimal condition													■			
Backwash water collection under optimal cond.														■		
Onsite water quality analysis samples (I&E) (#)				**6**	**6**	**6**	**6**	**3**	**9**	**9**	**9**	**9**	**3**	**3**	**3**	
ERDC water samples for Task 1 batch tests								**3**	**9**	**9**	**9**	**9**				
ERDC water samples for Task 2 column tests															**3**	
Influent Water Contract Samples (#)								**3**		**3**		**3**			**3**	
Treated Water Contract Lab Samples (#)								**3**		**3**		**3**			**3**	
System shutdown for storage until next test																■

Task E.4 Collect, ship, and analyze water samples for Task B and C support

If Task B experiments are ready for water samples during the initial pilot testing in Task E.3, samples will be collected under different treatment conditions according to the following matrix. A different condition will be tested each day.

Table 2.7 Treatment Matrix Summary

Treatment Train	Deoxygenation Method	Additional Stabilization Methods
Inline coagulation + ceramic membrane filtration Aqua-Aerobic Multi-bore C-series	None	None
	Chemical reductant	None
		pH matching to sub-surface WQ
		pH and alkalinity matching to sub-surface WQ
	Membrane degassing (3M Liquicell)	None
		pH matching to sub-surface WQ
		pH and alkalinity matching to sub-surface WQ
Inline coagulation + polymeric membrane filtration ZeeWeed 1500 *Lower ACH dose*	None	None
	Chemical reductant	None
		pH matching to sub-surface WQ
		pH and alkalinity matching to sub-surface WQ
	Membrane degassing (3M Liquicell)	None
		pH matching to sub-surface WQ
		pH and alkalinity matching to sub-surface WQ

The team will redeploy to collect additional samples as needed to support the Task B and Task C studies. In particular, it may be of interest to compare data from December (high DOC) to data from the dry season (low DOC), since DOC could have an impact on sub-surface redox processes and affect arsenic mobilization potential.

Task E.5 Characterize water quality of samples

Water quality in the source water and the treated (injection) water will be monitored carefully, with at least three samples of each analyzed during each test condition. Additional analyses will be performed on samples collected for Tasks B and C prior to their use in batch or column studies to verify their consistency with those collected at the ASR site. Parameters to be analyzed will include but are not limited to: pH, turbidity, ORP, DO, COD, BOD-5, DOC, color, $SUVA_{254}$, TN, TP, PO_4^{-3}, NO_3^-, NO_2^-, NH_3, TDS, sulfide, iron, arsenic, mercury, alkalinity, sulfate, chloride, radium, total coliforms, and *E. coli*. Standard methods will be used by a certified contract lab for the analyses, and sample processing shall abide by associated hold times and preservation conditions for the respective methods. Some parameters will also be measured onsite due to their potential to change during storage and shipment, including ORP, pH, and DO. ERDC has a standing Indefinite Delivery Indefinite Quantity (IDIQ) contract for water quality analysis by standard methods at certified laboratories. An experimental plan detailing samples planned for each date, the location for each analysis to be performed, methods, and hold times will be developed prior to each field deployment. It will also include a safety plan specific to the worksite and work to be performed.

Appropriate sample collection and storage methods shall be used for the given experimental condition. The primary variable with respect to sample preservation will be oxygen. Samples that are deoxygenated will be stored in zero headspace containers after purging the storage vessel with multiple sample volumes. Special air tight cylinders with purging capabilities and oxygen sensors upstream and downstream of the sampling device, as well as an air bleeder valve, shall be employed for deoxygenated samples (Figure 10). Aerobic samples will be collected per standard sampling protocols.

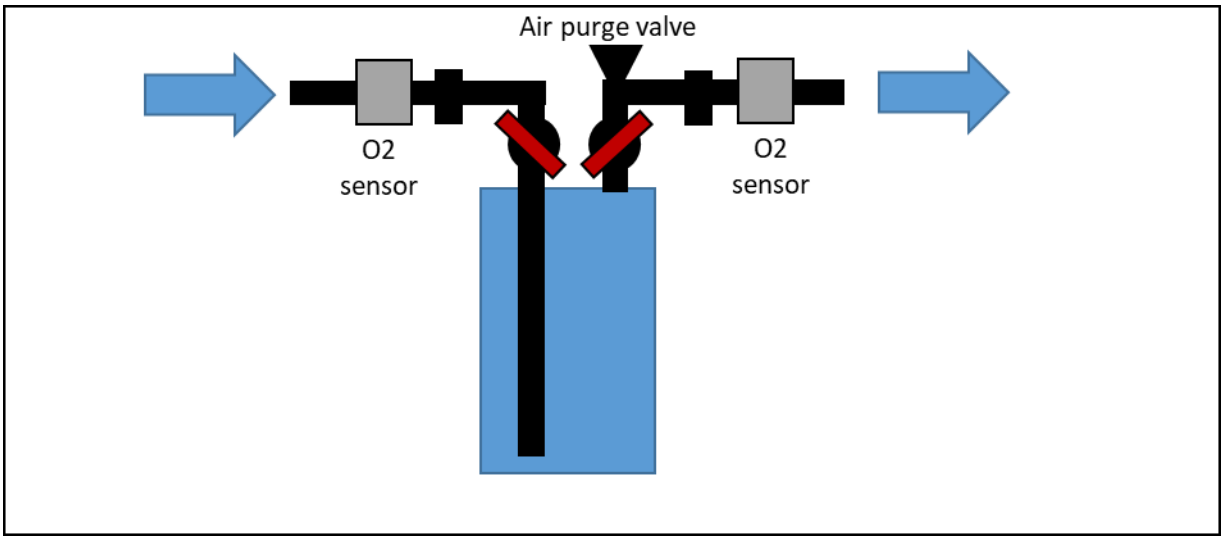


Figure 10 Concept for an inline collection vessel for deoxygenated samples. Vessels will be purged of air and filled continuously until the O2 readings are equal upstream and downstream. Ball valves will isolate the sample, followed by disconnection of unions and capping of pipe stubs.

2.6.5 Task E Milestones and Schedule

Table 2.8 Task E milestones and schedule

	FY24 Q1			FY24 Q2			FY24 Q3			FY24 Q4		
Tasks & Milestones (FY2024)	O	N	D	J	F	M	A	M	J	J	A	S
Acquire materials and equipment	■	■										
Skid assembly and flow testing		■	■									
Field water pilot testing (ASR site)					■			■			■	
Bench scale stabilization studies and WQ analysis					■	■	■	■	■	■	■	
Report of observations for stabilization												■
Report of operational observations for treatment												■

Table 2.9 Task E Team and Responsibilities

Name	Org	Role
Martin Page, Ph.D.	ERDC CERL	Experimental planning and design
Jay Clausen, Ph.D.	ERDC CRREL	Senior technical advisor- chemistry
Andy Hur, Ph.D.	ERDC CERL	Pilot system assembly and testing
Yongkyu An	ERDC CERL	Controls design and assembly
Meg Bishop	ERDC CRREL	Bench scale testing and water quality data analysis
Jenifer Netchaev	ERDC EL	Contract lab coordination
Jennifer Gent	SFWMD	Site access coordination

2.6.6 Task E Budget

Table 2.10 Total Task E Budget

Labor	**Hours**	**Cost Estimate ($K)**
Dr. Jay Clausen	160	31
Dr. Martin Page	180	30
Yongkyu An	240	16
Dr. Andy Hur	500	74
Meg Bishop	1000	75
Equipment and Supplies		
Pilot skid		32
Chemicals		9
General lab supplies		9
Services		
NTTL- WQ testing		16
ERDC EL IDIQ WQ testing		72
Travel		
ASR site	10 person-wks	24
Management and FIF		32
TOTAL		**$420K**

Task E Budget by sub-task

- Task E.1 Design pilot system and acquire equipment for test skid ($47,000 total) FY24Q1
  Labor: $15,000
  Equipment & supplies: $32,000

- Task E.2 Assemble and flow test pilot system ($73,000 total) FY24Q1
  Labor: $68,000
  Equipment & supplies: $5,000

- Task E.3 Field testing and optimization of pilot system ($116,000 total) FY24Q2
  Labor: $76,000
  Equipment & supplies: $4,000
  Travel: $16,000
  Water Quality Contract Lab Analysis: $20,000

- Task E.4 Generate, process, and ship water samples for Tasks B & C ($40,000 total) FY24Q2-Q4
  Labor: $28,000
  Equipment & supplies: $4,000
  Travel: $8,000

- Task E.5 Laboratory testing, water quality analysis, and reporting ($164,000 total) FY24Q2-Q4
  Labor: $108,000
  WQ Analysis Contract Lab: $52,000
  Equipment & supplies: $4,000

3.0. REPORTING

Progress briefings to USACE and SFWMD leadership will be provided as necessary.

At the conclusion of Task 1, the following will be available: Science plan detailing research and development necessary to address key ASR concerns.

At the conclusion of Task A, a report documenting the retrieval and initial characterization of the UFA and APPZ core material will be produced and published per the CRADA.
At the conclusion of Tasks B and C (end of Year 2), a report documenting the experiments and results will produced.

At the conclusion of Task D (Year 3), a report documenting its results and the overall findings of the effort will be produced and published per the CRADA.

At the conclusion of Task E, a report documenting the design of the pilot system and results of the surface water treatment will be produced and published per the CRADA.

ERDC will provide quarterly obligation and expenditure accounting of the funds.

4.0. COST AND SCHEDULE

Given the complexity and duration of the proposed effort, Tasks will be funded incrementally. Total estimated cost for Task 1 is $50K for ERDC labor and travel. Task 1 will be complete within four months of acceptance of funds. Costs and schedule for additional Tasks are detailed above. The proposed sub-task funding is summarized in Table 4.1

Table 4.1 Task Funding summary

Task	**Task Cost ($)**	**Funding Date**	**Completion**
Task 1	50,000	3Q FY23	1Q FY24
Task A.1	78,438	1Q FY24	1Q FY24
Task A.2	78,438	1Q FY24	2Q FY24
Task A.3	78,438	2Q FY24	2Q FY24
Task B.1	50,000	2Q FY24	4Q FY24
Task B.2	150,000	2Q FY24	4Q FY24
Task B.3	600,000	2Q FY24	2Q FY25
Task B.4	500,000	2Q FY24	2Q FY25
Task C.1	73,600	2Q FY24	3Q FY24
Task C.2	843,700	2Q FY24	2Q FY25
Task C.3	381,600	2Q FY24	4Q FY25
Task D.1	100,315	2Q FY24	4QFY24
Task D.2	137,562	2Q FY24	1QFY25
Task D.3	140,492	3Q FY24	4QFY24
Task D.4	219,804	3Q FY24	1QFY25
Task D.5	242,743	1Q FY25	2QFY25
Task D.6	199,110	3Q FY25	4QFY25
Task D.7	90,829	4Q FY25	1QFY26
Task D.8	161,545	4Q FY25	1QFY26
Task D.9	84,500	1Q FY26	2QFY26
Task E.1	47,000	1Q FY24	1Q FY24
Task E.2	73,000	1Q FY24	1Q FY24
Task E.3	116,000	2Q FY24	3Q FY24
Task E.4	40,000	2Q FY24	1Q FY25
Task E.5	164,000	2Q FY24	1Q FY25
TOTAL AMOUNT	**4,701,114**		

5.0. POINTS OF CONTACT

5.1. ERDC:

Technical POC

Matthew Farthing, Ph.D.
U.S. Army Senior Research Scientist, Hydrodynamic Phenomena
U.S. Army Engineer Research and Development Center
Matthew.W.Farthing@usace.army.mil
601-618-6615

Administrative POC

Melissa Keen
Technology Transfer Officer
U.S. Army Engineer Research and Development Center
Melissa.A.Keen@usace.army.mil
601-634-4880

5.2. SFWMD:

Project Manager/POC

Elizabeth Caneja
Lead Project Manager, South Florida Water Management District
ecaneja@sfwmd.gov
561-682-2586

M E M O R A N D U M

TO: Governing Board Members

FROM: Jennifer Reynolds, Ecosystem Restoration & Capital Projects

DATE: February 8, 2024

SUBJECT: Northern Everglades and Estuaries Protection Plan (NEEPP) Agreement Adjustments

Agenda Item Background:
To supplement the State of Florida's ongoing implementation of the Northern Everglades and Estuaries Protection Program (NEEPP), the District developed and implemented projects with private landowners to store and treat water on their properties. These projects, funded through State Appropriations, help achieve NEEPP goals to protect and restore surface water resources by improving hydrology and water quality for the Northern Everglades ecosystem (373.4595(1)(c), F.S.).

The Florida Legislature has made additional funding available through line item 1686 of the 2023-2024 General Appropriations Act to provide adjustments to specific existing agreements in the Northern Everglades and Estuaries Protection Program. Staff applied a standard adjustment for each agreement to implement the proviso language.

Staff requests Governing Board approval to amend specific existing agreements with private entities pursuant to the legislature's instruction under line item 1686.

Additional Item Background:
Core Mission and Strategic Priorities:
The NEEPP agreements support the District's core mission to safeguard and restore South Florida's water resources and ecosystems, protect our communities from flooding, and meet the region's water needs connecting with the public and stakeholders.

Funding Source:
A total of $10 million in dedicated funds (General Revenue Fund) is budgeted in Fiscal Year 2023-2024. Future years are subject to future legislative funding and Governing Board approval of future years budgets.

Staff Contact and/or Presenter:
Megan Jacoby, mjacoby@sfwmd.gov, 561-682-6517

ATTACHMENTS:

Resolution No. 2024-0205

Summary

SOUTH FLORIDA WATER MANAGEMENT DISTRICT

Resolution No. 2024 - 0205

A Resolution of the Governing Board of the South Florida Water Management District to authorize amendments to specific existing agreements with private entities which support the Northern Everglades and Estuaries Protection Plan pursuant to the legislature's appropriation instruction under line item 1686 of the 2023-2024 General Appropriations Act, in a total amount not to exceed the projected recurring State appropriations for each fiscal year; delegating authority to the Executive Director to execute the amendments; providing an effective date.

Contract No.	Project Name
4600004474	Abington Preserve
4600003128	Adams - Russakis Ranch
4600004585	Alderman-Deloney Ranch
4600003955	Bluefield Grove Water Farm
4600004011	Brighton Valley DWM
4600004573	Buck Island Ranch NEWWRNLR
4600002880	Bull Hammock Ranch
4600003437	Caulkins Water Farm
4600004575	Dixie Ranch NEWWRNLR
4600004608	El Maximo Ranch DWM
4600004581	Four Corners Rapid Infiltration
4600004551	Llano Ranches
4600004340	Lykes West Waterhole
4600004802	Mudge Ranch
4600002876	Rafter T Ranch
4600003956	Scott Water Farm
4600004584	Spur Land & Cattle
4600004576	XL Ranch NEWWRNLR

WHEREAS, the Northern Everglades and Estuaries Protection Program (Section 373.4595, Florida Statutes) has established the Lake Okeechobee, Caloosahatchee, and St. Lucie River Watershed Protection Plans to improve hydrology, water quality, and aquatic habitat within these watersheds.

WHEREAS, the South Florida Water Management District has partnered with private entities to implement Dispersed Water Management projects to support Watershed Protection Plan objectives.

WHEREAS, the Florida Legislature has made appropriations to enable standard adjustments to specific existing agreements with private entities for projects supporting

the Northern Everglades and Estuaries Protection Program.

NOW THEREFORE, BE IT RESOLVED BY THE GOVERNING BOARD OF THE SOUTH FLORIDA WATER MANAGMENET DISTRICT:

Section 1. The Governing Board of the South Florida Water Management District hereby authorizes amendments to specific existing agreements as necessary to enable disbursement of specific State appropriations and implement the legislature's instruction under line item 1686 of the 2023-2024 General Appropriations Act.

Section 2. This resolution shall take effect immediately upon adoption.

PASSED and **ADOPTED** this 8th day of February, 2024.

SOUTH FLORIDA WATER MANAGEMENT DISTRICT, BY ITS GOVERNING BOARD
By:

_____
Chauncey P. Goss, II
Chairman

Attest:

_____
District Clerk/Secretary

Legal form approved:
By:

_____
Office of Counsel

Print name:

_____

Project Name	Status	CPI Since Execution	FY24 Service Payment Adjustment	Construction Adjustment	TOTAL ADJUSTMENT
El Maximo Ranch DWM	CONST	19.7%	$ 762,150.46	$ 3,211,376.77	**$ 3,973,527.23**
Brighton Valley DWM	O & M	21.9%	$ 683,729.53	$ -	**$ 683,729.53**
Lykes West Waterhole	O & M	17.6%	$ 113,546.02	$ -	**$ 113,546.02**
Llano Ranches	O & M	32.0%	$ 10,246.36	$ -	**$ 10,246.36**
XL Ranch NEWWRNLR	O & M	3.9%	$ 6,117.50	$ -	**$ 6,117.50**
Abington Preserve	O & M	35.9%	$ 10,765.34	$ -	**$ 10,765.34**
Buck Island Ranch NEWWRNLR	O & M	3.9%	$ 21,528.89	$ -	**$ 21,528.89**
Rafter T Ranch	O & M	31.0%	$ 50,494.79	$ -	**$ 50,494.79**
Dixie Ranch NEWWRNLR	O & M	3.9%	$ 7,688.13	$ -	**$ 7,688.13**
Mudge Ranch	O & M	32.0%	$ 15,209.44	$ -	**$ 15,209.44**
Four Corners Rapid Infiltration	O & M	3.3%	$ 83,638.16	$ -	**$ 83,638.16**
Bluefield Grove Water Farm	O & M	22.5%	$ 1,002,673.81	$ -	**$ 1,002,673.81**
Scott Water Farm	O & M	22.5%	$ 1,306,150.63	$ 492,770.36	**$ 1,798,920.99**
Adams - Russakis Ranch	O & M	31.0%	$ 17,841.48	$ -	**$ 17,841.48**
Bull Hammock Ranch	O & M	31.0%	$ 8,843.17	$ -	**$ 8,843.17**
Spur Land & Cattle	O & M	3.9%	$ 5,824.34	$ -	**$ 5,824.34**
Alderman-Deloney Ranch	O & M	3.8%	$ 807.68	$ -	**$ 807.68**
Caulkins Water Farm	O & M	27.5%	$ 1,511,267.73	$ -	**$ 1,511,267.73**
			$ 5,618,523.44	$ 3,704,147.13	**$ 9,322,670.57**

M E M O R A N D U M

TO: Governing Board Members

FROM: Rich Virgil, Field Operations Division

DATE: February 8, 2024

SUBJECT: Mowing Contract, Clewiston Field Station Area of Responsibility, Palm Beach and Hendry Counties

Agenda Item Background:
Maintenance of District lands and rights of way is required to ensure that vegetation is controlled at the appropriate height to provide for optimal performance and operational efficiency of the District's flood control system. This project for the Clewiston Field Station area of responsibility provides for the annual right of way mowing of approximately 6,105 acres of various District lands and canal and levee rights of way in Palm Beach and Hendry Counties. This item awards the mowing contract to the second responsive and responsible bidder that submitted an equal tie low bid. Although COCO Tree Service won the tie breaker on District solicitation RFB # 6000001410 and was awarded Contract 4600004758 in accordance with Resolution No. 2023-0510 at the May 11, 2023, Governing Board meeting, a decision was made that it was in the best interest of the District to terminate the COCO Tree Service Contract for Clewiston Field Station STA Mowing Services, for convenience. Pursuant to Article 7 - Termination and Remedies of the contract, the District provided 30 calendar days written notice to COCO Tree Service, with an effective termination date of January 11, 2024. Therefore, since Brightview Landscape Services and COCO Tree Service submitted equal low bids, the District is making a Recommendation of Award to Brightview Landscape Services, Inc.

Additional Item Background:
Core Mission and Strategic Priorities:
Mowing the District's rights of way reduces and controls vegetative growth along canal banks which can impede operations, inspections and access to the District's water control facilities.

Staff Contact and/or Presenter:
Rich Virgil, rvirgil@sfwmd.gov, 561-682-6759

ATTACHMENTS:

Resolution No. 2024-0206

Backup Presentation

A Resolution of the Governing Board of the South Florida Water Management District authorizing a 3-year contract with two 1-year renewal options with Brightview Landscape Services, Inc., the second responsive and responsible bidder that submitted and equal tie low bid, for mowing services of various District lands and canal and levee rights of way in the Clewiston Field Station area of responsibility, including Palm Beach and Hendry Counties, in an amount not-to-exceed $705,127.50 of which $102,564.00 is budgeted in Fiscal Year 2023-2024 and the remainder is subject to Governing Board approval of future year budgets. (Contract No. 4600004903)

WHEREAS, the Governing Board of the South Florida Water Management District, at its May 11th, 2023, meeting authorized entering into a contract with COCO Tree Service for right of way mowing services of various District lands and canal and levee rights of way in the Clewiston Field Station area of responsibility, including Palm Beach and Hendry Counties; and

WHEREAS, COCO Tree Service due to poor performance was unable to perform services under the terms and conditions of the contract; and

WHEREAS, the Governing Board of the South Florida Water Management District is authorized to consider the bids submitted for the original contract award and to authorize a contract with the second responsive and responsible bidder that submitted and equal tie low bid; and

WHEREAS, the Governing Board of the South Florida Water Management District, deems it necessary, appropriate and in the public interest authorizing a 3-year contract with two 1-year renewal options with Brightview Landscape Services, Inc., the second responsive and responsible bidder that submitted and equal tie low bid, for mowing services of various District lands and canal and levee rights of way in the Clewiston Field Station area of responsibility, including Palm Beach and Hendry Counties, in an amount not-to-exceed $705,127.50 of which $102,564.00 is budgeted in Fiscal Year 2023-2024 and the remainder is subject to Governing Board approval of future year budgets.

NOW THEREFORE, BE IT RESOLVED BY THE GOVERNING BOARD OF THE SOUTH FLORIDA WATER MANAGEMENT DISTRICT:

Section 1. The Governing Board of the South Florida Water Management District hereby approves the contract with Brightview Landscape Services, Inc., for mowing services of various District lands and canal and levee rights of way in the Clewiston Field Station's area of responsibility. (Contract No. 4600004903)

Section 2. This resolution shall take effect immediately upon adoption.

PASSED and **ADOPTED** this 8th day of February 2024.

SOUTH FLORIDA WATER MANAGEMENT DISTRICT

STA Right of Way Mowing Services, Clewiston Field Station

Richard Virgil
Division Director
Field Operations & Land Management Division
Governing Board Meeting
February 8th, 2024

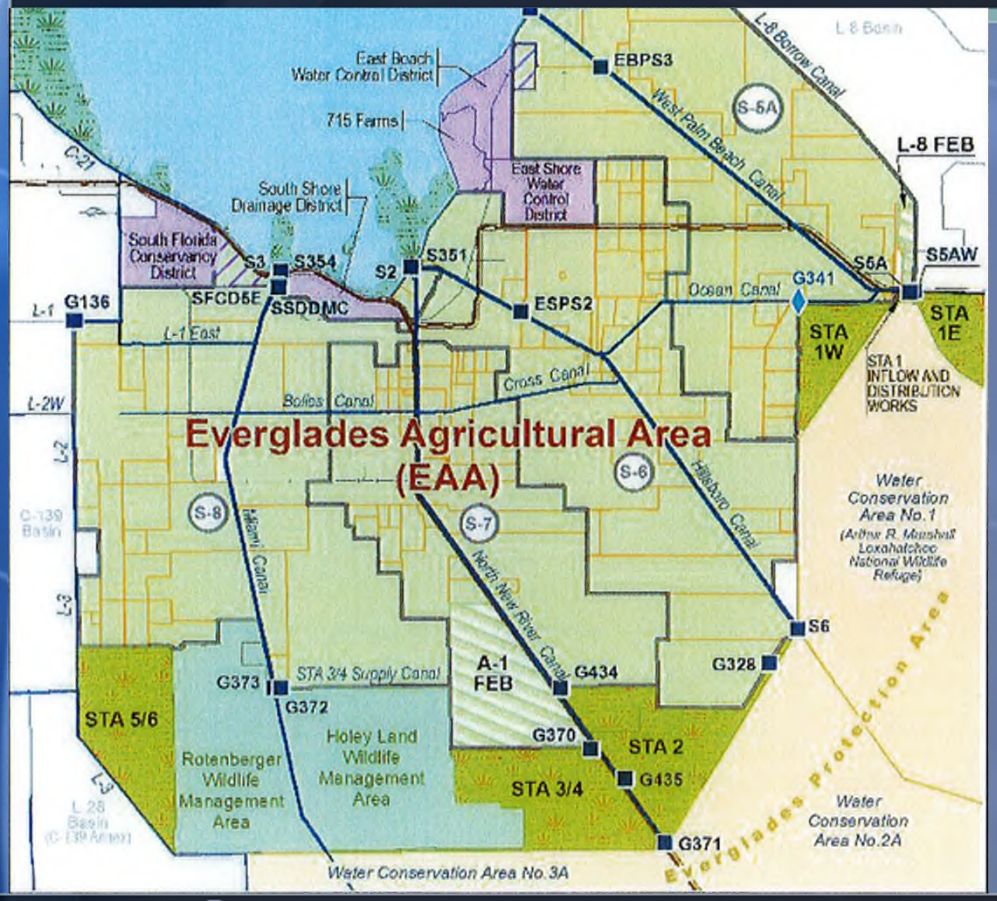
sfwmd.gov

Introduction

The Clewiston Field Station's area of responsibility for Stormwater Treatment Areas (STA) includes Palm Beach and Hendry Counties. Within these Counties, the Field Station maintains approximately:

- 6,105 acres annually of various District lands including canals and levees of STA cells.

Location Map



Clewiston Field Station Area of Responsibility includes:

- **A-1 FEB**
- **STA 3-4**
- **STA 5-6**

Mowing of the System

Canals

Levees

Services include the use of conventional high production machine mowing and trimming equipment

RFB Number: 6000001410

Title: STORMWATER TREATMENT AREA (STA) RIGHT-OF-WAY MOWING SERVICES, CLEWISTON FIELD STATION SERVICE AREAS, HENDRY AND PALM BEACH COUNTIES, FL

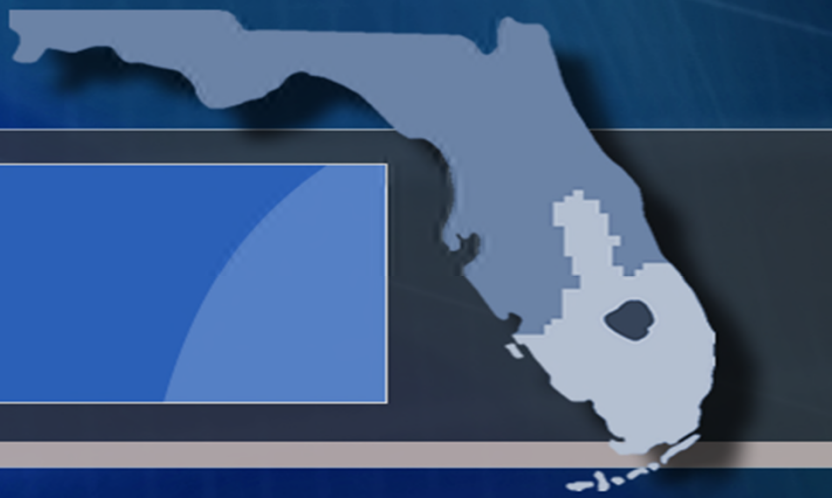
Bid Summary:

- **Release Date: February 22, 2023**
- **Mandatory Pre-Bid Meeting: March 09, 2023 – 15 Attendees**
- **Deadline for Bid Submission: March 23, 2023 – 11 Bids Received**
- **Bid Range: $21.00 per acre to $38.90 per acre**

NOTES:

- Brightview Landscape Services and COCO Tree Service submitted equal low bids. Although COCO Tree Service won the tie breaker on South Florida Water Management District (District) solicitation RFB # 6000001410 and was awarded Contract 4600004758 in accordance with Resolution No. 2023 – 0510, a decision was made that it was in the best interest of the District to terminate the COCO Tree Service contract for Clewiston Field Station STA Mowing Services, for convenience due to poor performance. Pursuant to Article 7 – Termination and Remedies, of the contract, the District provided thirty (30) calendar days written notice to COCO Tree Service, with an effective termination date of January 11, 2024. Therefore, since Brightview Landscape Services and COCO Tree Service submitted equal low bids, the District is making a Recommendation of Award to Brightview Landscape Services, Inc.
- COCO Tree Service was assigned two cycles, with the 2nd cycle WO02 in FY 24 for the period of 10/13/23 to 11/29/23, for which the attached invoice in the amount of $25,641.00 has been submitted.

Discussion



M E M O R A N D U M

TO: Governing Board Members

FROM: Rich Virgil, Field Operations Division

DATE: February 8, 2024

SUBJECT: Slope Mowing Contract, Miami Field Station Area of Responsibility, Miami-Dade County

Agenda Item Background:
Maintenance of District lands and rights of way is required to ensure that vegetation is controlled at the appropriate height to provide for optimal performance and operational efficiency of the District's flood control system. This project for the Miami Field Station area of responsibility provides for the annual right of way slope mowing of approximately 556 acres of various District lands and canal and levee rights of way in Miami-Dade County. This item awards the contract for slope mowing to Toler Enterprises, Inc., the second lowest responsive and responsible bidder. Although COCO Tree Service was the low bidder on District solicitation RFB # 6000001416 and was awarded Contract 4600004822 in accordance with Resolution No. 2023-0815 at the August 17, 2023, Governing Board meeting, a decision was made that it was in the best interest of the District to terminate the COCO Tree Service contract for convenience. Pursuant to Article 7 - Termination and Remedies of the contract, the District provided thirty (30) calendar days written notice to COCO Tree Service, with an effective termination date of January 11, 2024. Therefore, since Toler Enterprises, Inc., was the second lowest responsive and responsible bidder, the District is making a Recommendation of Award to Toler Enterprises, Inc.

Additional Item Background:
Core Mission and Strategic Priorities:
Slope mowing the District's rights of way reduces and controls vegetative growth along canal banks which can impede operations, inspections and access to the District's water control facilities.

Staff Contact and/or Presenter:
Rich Virgil, rvirgil@sfwmd.gov, 561-682-6759

ATTACHMENTS:

Resolution No. 2024-0207

Backup Presentation

A Resolution of the Governing Board of the South Florida Water Management District authorizing a 3-year contract with two 1-year renewal options with Toler Enterprises, Inc., the second lowest responsive and responsible bidder that submitted for slope mowing services of various District lands and canal and levee rights of way in the Miami Field Station area of responsibility, in Miami-Dade County, in an amount not-to-exceed $663,586.00 of which $132,717.00 is budgeted in Fiscal Year 2023-2024 and the remainder is subject to Governing Board approval of future year budgets. (Contract No. 4600004904)

WHEREAS, the Governing Board of the South Florida Water Management District, at its August 17th, 2023, meeting authorized entering into a contract with COCO Tree Service for slope mowing services of various District lands and canal and levee rights of way in the Miami Field Station area of responsibility, in Miami-Dade County; and

WHEREAS, COCO Tree Service due to poor performance was unable to perform services under the terms and conditions of the contract; and

WHEREAS, the Governing Board of the South Florida Water Management District is authorized to consider the bids submitted for the original contract award and to authorize a contract with the second lowest responsive and responsible bidder that submitted a bid; and

WHEREAS, the Governing Board of the South Florida Water Management District, deems it necessary, appropriate and in the public interest to authorize entering into a 3-year contract with two 1-year renewal options with Toler Enterprises, Inc., the second lowest responsive and responsible bidder that was submitted for slope mowing services of various District lands and canal and levee rights of way in the Miami Field Station area of responsibility, in Miami-Dade County, in an amount not-to-exceed $663,586.00 of which $132,717.00 is budgeted in Fiscal Year 2023-2024 and the remainder is subject to Governing Board approval of future year budgets.

NOW THEREFORE, BE IT RESOLVED BY THE GOVERNING BOARD OF THE SOUTH FLORIDA WATER MANAGEMENT DISTRICT:

Section 1. The Governing Board of the South Florida Water Management District hereby approves the contract with Toler Enterprises, Inc., for slope mowing services of various District lands and canal and levee rights of way in the Miami Field Station's area of responsibility. (Contract No. 4600004904)

Section 2. This resolution shall take effect immediately upon adoption.

PASSED and **ADOPTED** this 8th day of February 2024.

SOUTH FLORIDA WATER MANAGEMENT DISTRICT

Slope Mowing Services
Miami Field Station

Richard Virgil
Division Director - Field Operations
Governing Board Meeting
February 8th, 2024

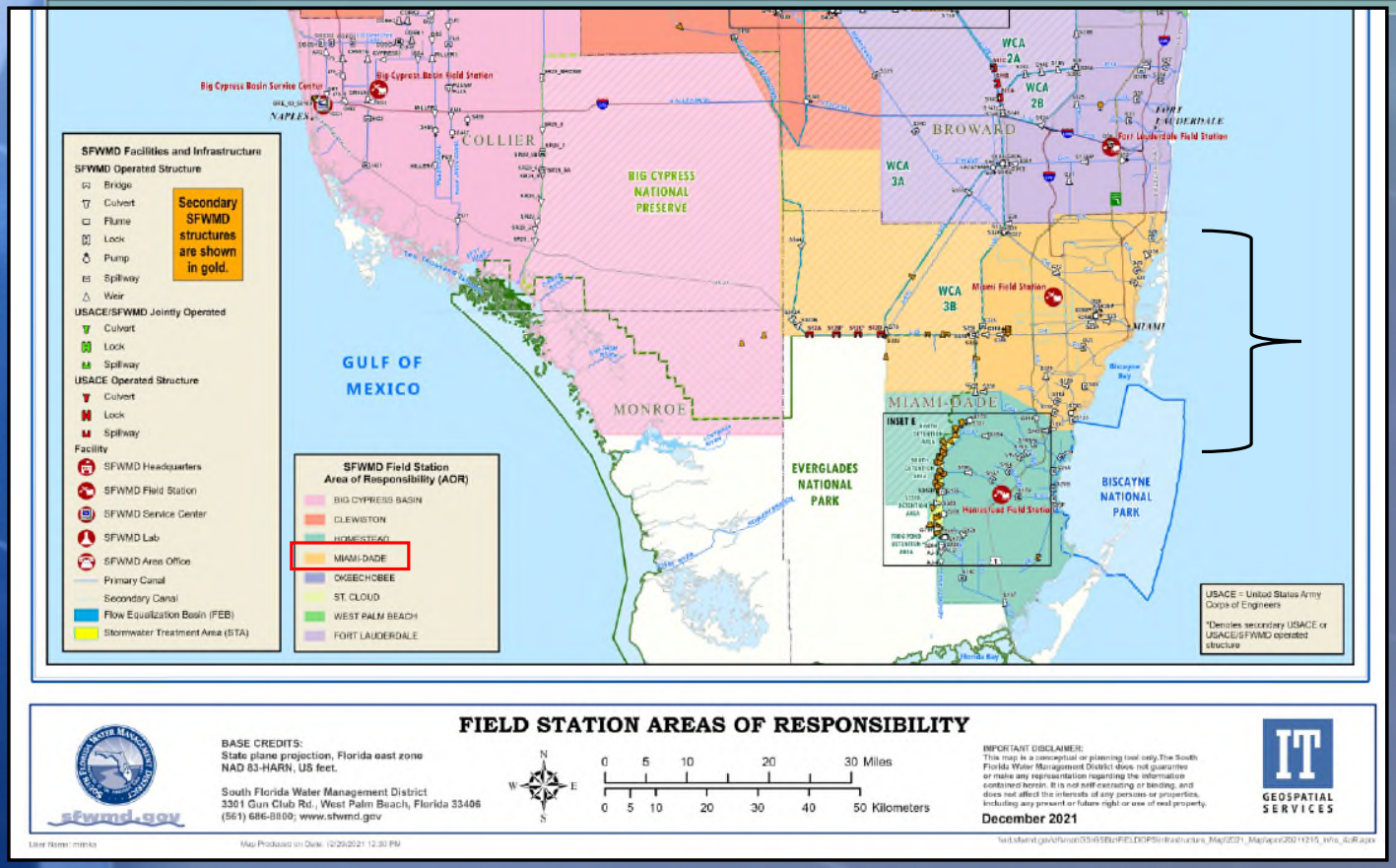
sfwmd.gov

Introduction

Miami Field Station mowing work area includes approximately:

- **556 acres of canal embankments.**
- **Grassed levees, berms, and access roads of varying widths.**
- **Hand trimming around signs, power/light poles, fences, guardrails, guy wires, boat ramps, water control structures and 346 access gates.**

MIAMI FIELD STATION AREA OF RESPONSIBILTY



Miami Field Station
Area of Responsibility
Broward & Miami Dade
Counties, Florida

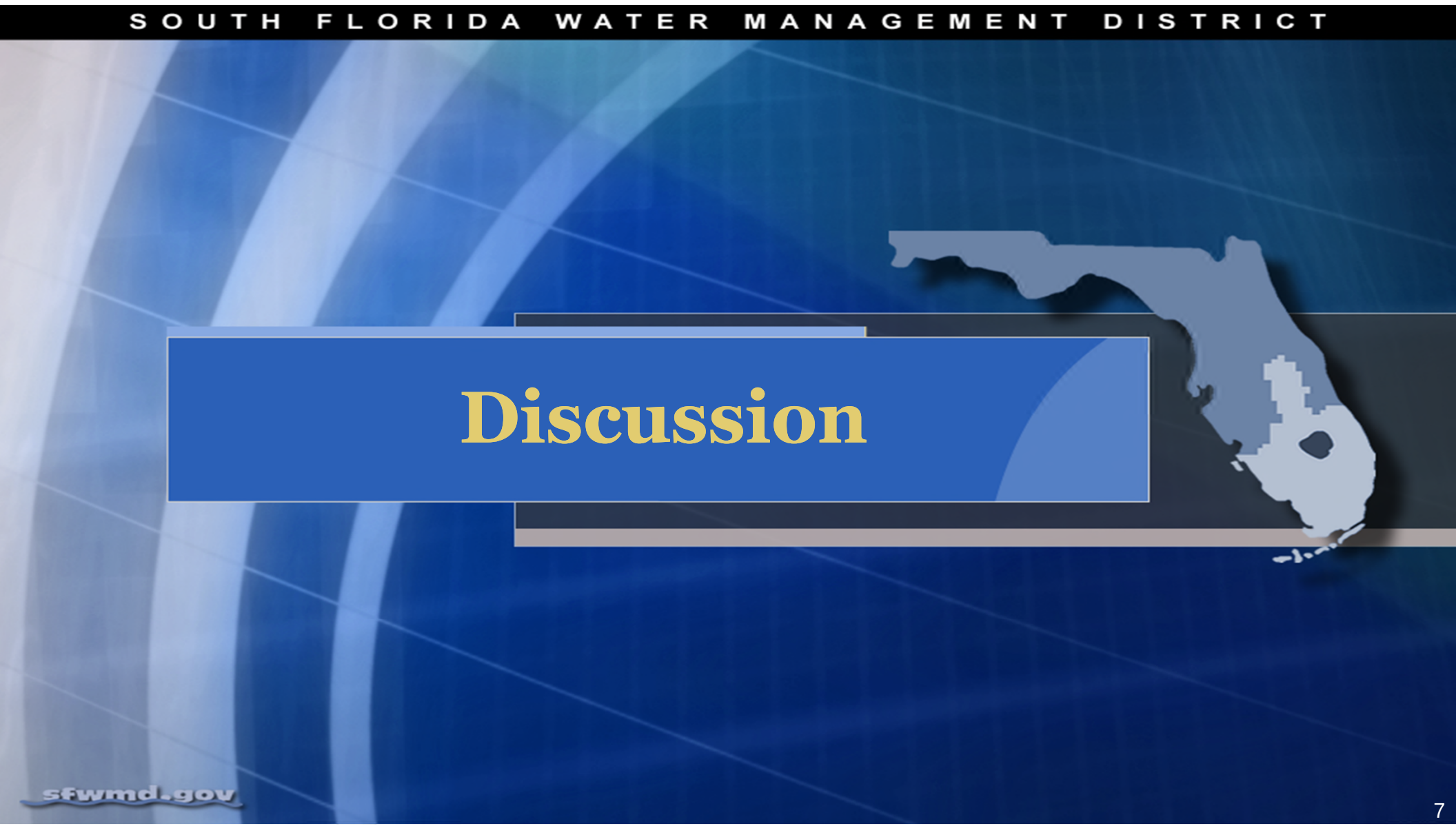
Slope Mowing of the System

RFB Number: 6000001416

- Request for Bids (RFB): 6000001416
- RFB Advertised: May 5, 2023
- Bid Opening: June 6, 2023
- Number of Bids Received: 3
- Bid Range: $168.00 per acre to $239.85 per acre

NOTES:

- **Toler Enterprises, Inc., submitted the second lowest bid. Although COCO Tree Service was the low bidder on South Florida Water Management District (District) solicitation RFB # 6000001416 and was awarded Contract 4600004822 in accordance with Resolution No. 2023 – 0815, a decision was made that it was in the best interest of the District to terminate the COCO Tree Service Contract for Miami Field Station Slope Mowing Services for convenience due to poor performance. Pursuant to Article 7 – Termination and Remedies of the contract, the District provided thirty (30) calendar days written notice to COCO Tree Service, with an effective termination date of January 11, 2024. Therefore, the District is recommending award to the second lowest bidder, Toler Enterprises, Inc.**


Discussion
sfwmd.gov

M E M O R A N D U M

TO: Governing Board Members

FROM: Duane Piper, Information Technology

DATE: February 8, 2024

SUBJECT: Pega Permitting Application Enhancement

Agenda Item Background:
Information Technology is extending the functionality of the existing Pega Permitting Application for the Works of the District (WOD) module. The WOD module high level functionality includes filling/submitting applications, receiving applications, reviewing applications, and issuing WOD permits as well as receiving and tracking related compliance information. The WOD module consists of two permit types: C-139 Basin and Everglades Agricultural Area. The system will be used by external customers to apply for permits, submit compliance information and is used by internal users to review permit applications, issue permits, review compliance data, and perform post-permit operations. Users will also have the capability to run reports against the data.

This request is to issue a purchase order to Saturn Tech LLC dba Saanvi Technologies for fixed price, deliverables based contractual services to enhance the Pega Permitting Application in the amount of $883,900, using the State of Florida Information Technology Staff Augmentation Services Contract Number 80101507-23-STC-ITSA. This contract was competed by another government agency.

Staff Contact and/or Presenter:
Duane Piper, dpiper@sfwmd.gov, 561-682-2150

ATTACHMENTS:

Resolution No. 2024-0208

SOUTH FLORIDA WATER MANAGEMENT DISTRICT

Resolution No. 2024-02XX

A Resolution of the Governing Board of the South Florida Water Management District to authorize issuing a purchase order to Saturn Tech LLC dba Saanvi Technologies for fixed cost, deliverables based contractual services to enhance the Pega Permitting Application, using State of Florida Information Technology Staff Augmentation Services Contract Number 80101507-23-STC-ITSA, in the amount of $883,900 for which Ad Valorem funds in the amount of $450,000 are budgeted in Fiscal Year 2023-2024 and the remainder is subject to Governing Board approval of future years budgets; providing an effective date. (Purchase Order No. 4500146310)

WHEREAS, The Pega Permitting Application Works of the District (WOD) module is used for filling/submitting applications, receiving applications, reviewing applications, and issuing WOD permits as well as receiving and tracking related compliance information; and

WHEREAS, the District obtained this purchase order through a special procurement using State of Florida Information Technology Staff Augmentation Services Contract Number 80101507-23-STC-ITSA; and

WHEREAS, the Governing Board of the South Florida Water Management District deems it necessary, appropriate, and in the public interest to authorize issuing a purchase order to Saturn Tech LLC dba Saanvi Technologies for information technology contractual services in the amount of $883,900.

NOW THEREFORE, BE IT RESOLVED BY THE GOVERNING BOARD OF THE SOUTH FLORIDA WATER MANAGEMENT DISTRICT:

Section 1. The Governing Board of the South Florida Water Management District hereby authorizes issuing a purchase order to Saturn Tech LLC dba Saanvi Technologies for fixed cost, deliverables based contractual services to enhance the Pega Permitting Application, using the State of Florida Information Technology Staff Augmentation Services Contract Number 80101507-23-STC-ITSA, in the amount of $883,900. (Purchase Order No. 4500146310)

Section 2. This Resolution shall take effect immediately upon adoption

PASSED and **ADOPTED** this 8th day of February, 2024.

M E M O R A N D U M

TO: Governing Board Members

FROM: Maricruz R. Fincher, Office of Counsel

DATE: February 8, 2024

SUBJECT: Authorize Publication of Notices of Proposed Rule and Adopt Amendments

Agenda Item Background:
The District included the following rules on its regulatory plan for non-substantive changes to ensure consistency with the District's statutory authority and rules. The proposed amendments include: 1) deleting obsolete language and updating rule references in Rule 40E-1.602; 2) clarifying the use of the District's ePermitting system in 40E-1.6058; 3) repealing Rule 40E-1.659 as unnecessary; 4) updating the civil penalty amount to be consistent with section 373.129, F.S., and removing the incorporated civil penalty matrices in Rule 40E-1.715; 5) including North American Vertical Datum as an alternative to National Geodetic Vertical Datum in the water use forms incorporated in Rules 40E-2.091 and 40E-2.101; and 6) clarifying delivery methods in Rules 40E-7.216 and 40E-7.217, and removing the need for certified mail/return receipt.

The District published Notices of Rule Development in the Florida Administrative Register on December 27, 2023 (Vol. 49/No. 249). No rulemaking workshops were requested or held.

Staff requests authorization to publish Notices of Proposed Rule for Rules 40E-1.602, 40E-1.6058, 40E-1.659, 40E-1.715, 40E-2.091, 40E-2.101, 40E-7.216 and 40E-7.217, F.A.C. Staff further requests the Governing Board adopt the proposed non-substantive amendments to these rules as long as the District does not receive a request for public hearing or make any substantive changes to the rules.

Additional Item Background:
Core Mission and Strategic Priorities:
The Governing Board has authority to adopt rules to administer the provisions of Chapter 373, Florida Statutes. This item supports the District's core mission and strategic goals by ensuring that District rules are consistent with the District's rulemaking authority and the laws implemented.

Funding Source:
Staff time will be used to complete this rulemaking. Office of Counsel and the respective divisions will share the publication costs of the notices.

Staff Contact and/or Presenter:
Maricruz R. Fincher, mfincher@sfwmd.gov, 561-682-6457

ATTACHMENTS:

NOTICE OF PROPOSED RULE

SOUTH FLORIDA WATER MANAGEMENT DISTRICT

RULE NO.:	RULE TITLE:
40E-1.602	Permits Required
40E-1.6058	Posting, Publication and Requests for Notification of Permit Applications or Notices of Intent.
40E-1.659	Forms and Instructions
40E-1.715	Civil Penalty Calculation

PURPOSE AND EFFECT: To delete obsolete language, update rule references and noticing options for permit applications, repeal an unnecessary rule, and update the civil penalties calculation rule to be consistent with Florida Statutes.

SUMMARY: The proposed rule amendments include: 1) deleting obsolete language and updating a rule reference in Rule 40E-1.602; 2) clarifying use of the District's ePermitting system in Rule 40E-1.6058; 3) repealing Rule 40E-1.659, which provides a list of forms and instruction incorporated by reference throughout the District's rules, because it is redundant and not necessary; 4) updating the civil penalty amount in Rule 40E-1.715 to be consistent with section 373.129, F.S., and 5) removing the incorporated civil penalty matrices in Rule 40E-1.715 as not necessary.

SUMMARY OF STATEMENT OF ESTIMATED REGULATORY COSTS AND LEGISLATIVE RATIFICATION: The agency has determined that this rule will not have an adverse impact on small business or likely increase directly or indirectly regulatory costs in excess of $200,000 in the aggregate within one year after the implementation of the rule. A SERC has not been prepared by the agency.

The Agency has determined that the proposed rule is not expected to require legislative ratification based on the statement of estimated regulatory costs or if no SERC is required, the information expressly relied upon and described herein: The District completed the Governor's Office of Fiscal Accountability and Regulatory Reform (OFARR) form "Is a SERC Required?" and prepared a summary of the proposed rule amendments, both of which are available upon request. Based on the completed "Is a SERC Required?" form and the District's summary and analysis performed to prepare and complete said documents, the proposed rule amendment does not require legislative ratification pursuant to subsection 120.541(3), F.S.

Any person who wishes to provide information regarding the statement of estimated regulatory costs, or to provide a proposal for a lower cost regulatory alternative must do so in writing within 21 days of this notice.

RULEMAKING AUTHORITY (formerly "Specific Authority"): 120.53(1), 373.044, 373.113, 373.116, 373.118, 373.171, 373.333(1), 373.4131, 373.4135, 373.4136, 373.416, FS

LAW IMPLEMENTED: 120.60, 120.60(3), 120.69, 373.085, 373.106, 373.113, 373.116, 373.118, 373.119, 373.129, 373.171, 373.209(3), 373.216, 373.309, 373.323, 373.413, 373.4135, 373.4136, 373.414, 373.416, 373.430, 373.603, 668.50, FS.

IF REQUESTED WITHIN 21 DAYS OF THE DATE OF THIS NOTICE, A HEARING WILL BE SCHEDULED AND ANNOUNCED IN THE FAR.

THE PERSON TO BE CONTACTED REGARDING THE PROPOSED RULE IS: Natalie Cole, Environmental Section Administrator, South Florida Water Management District, 3301 Gun Club Road, West Palm Beach, FL 33406, (561) 682-6033, ncole@sfwmd.gov.

THE FULL TEXT OF THE PROPOSED RULE IS:

40E-1.602 Permits Required.

Unless expressly exempt by statute or District rule, permits must be obtained from the District prior to commencement of the following activities:

(1) through (5) No Change.

(6) A proprietary authorization pursuant to Chapters 253 and 258, F.S., is required and shall be reviewed by the District for all activities which require a permit under Chapter 62-330 or 40E-4, F.A.C., or a permit under Sections 373.414(11)-(16), F.S., and which are located on submerged lands owned by the Board of Trustees of the Internal Improvement Trust Fund pursuant to Section 373.427, F.S., Chapter 18-21, F.A.C. and Rule~~s~~ 18-18.014~~ and 62-343.075~~, F.A.C.

(7) and (8) No Change.

~~(9) A Use of Works of the District within the Lake Okeechobee Basin General or Individual Permit must be obtained pursuant to Chapter 40E-61, F.A.C., by any owner of a parcel of land within the Lake Okeechobee Basin.~~

(9) ~~(10)~~ An Occupancy or Use of the C-18 Right of Way general or individual permit pursuant to Chapter 40E-6~~2~~, F.A.C., must be obtained prior to constructing, planting, maintaining, pruning, mooring boats, and placing other items on, across, under, or upon District lands and works along the C-18 canal right of way.

(10) ~~(11)~~) No Change.

Rulemaking Authority 373.044, 373.113, 373.4131, 373.4135 FS. Law Implemented 120.60, 373.085, 373.106, 373.116, 373.118,

373.119, 373.171, 373.216, 373.309, 373.323, 373.413, 373.414, 373.416 FS. History–New 9-3-81, Formerly 16K-1.06, Amended 7-26-87, 5-11-93, 10-3-95, 4-1-96, 10-1-13, 7-14-14,_____.

40E-1.6058 Posting, Publication and Requests for Notification of Permit Applications or Notices of Intent.

(1) Notice of Receipt of Permit Application or Notice of Intent. Persons who wish to be notified ~~in writing or by electronic mail~~ of any permit application or notice of intent which affects a designated geographic area shall notify the District through the District's ePermitting website at www.sfwmd.gov/ePermitting, in writing, or by electronic mail, and shall specify their area of interest by county. Requests must be renewed every 6 months. The District shall provide notice through ePermitting, in writing, or by electronic mail of receipt of application or notice of intent to all persons who have filed in the preceding 6 months a written or electronic request for notification of any application or notice of intent affecting the designated geographic area in which the proposed activity is to occur.

(2) No Change.

(3) Interested persons shall have the opportunity to view permit applications through ePermitting, or inspect a copy of the permit application at the appropriate District Service Center and submit written comments, which shall be considered by the District if received before the District issues proposed agency action concerning the application. Where appropriate, the District shall request that persons submitting comments furnish additional information reasonably necessary to ascertain the nature of the comments.

(4) Persons who wish to be advised of the proposed agency action regarding a particular permit application shall submit through ePermitting, in writing, or by electronic mail a ~~file a written or electronic~~ request for further notice within 14 days of receipt of the notice of application.

~~(5) The governing board may charge a subscription fee for information requested in accordance with this section to any person who has filed a written or electronic request for notification of any pending applications, pursuant to Rule 40E-1.125, F.A.C.~~

Rulemaking Authority 373.044, 373.113, 373.116, 373.118 FS. Law Implemented 120.60(3), 373.116, 373.118, 668.50 FS. History–New 10-3-95, Amended 7-2-98, 6-12-00, 10-1-06, 12-15-11, 1-19-14,_____.

40E-1.659 Forms and Instructions.

Rulemaking Authority 218.075, 373.044, 373.113, 373.171, 373.4136, 373.416, 695.03, 704.06 FS. Law Implemented 218.075, 373.113, 373.4135, 373.4136, 373.416, 704.06 FS. History–New 9-3-81, Amended 12-1-82, 3-9-83, Formerly 16K-1.90, Amended

7-26-87, 11-21-89, 1-4-93, Formerly 40E-1.901, Amended 5-11-93, 4-20-94, 10-3-95, 6-26-02, 8-14-02, 8-31-03, 9-16-03, 9-20-04, 2-12-06, 1-23-07, 8-7-07, 7-4-10, 12-15-11, 5-20-12, 10-23-12, 10-1-13, 7-14-14, 9-7-15, 8-7-16. Repealed _____.

40E-1.715 Civil Penalty Calculation.

~~(1) Consistency and equitable treatment are essential elements of the District's enforcement guidelines. Therefore, the District has developed two civil penalty matrices (CPM) for use in calculating appropriate civil penalties in enforcement actions. The Comsumptive Use CPM, October 2012, http://www.flrules.org/Gateway/reference/asp?No=Ref-01532, is incorporated by reference herein and utilized for violations of Chapters 40E-2, 40E-3, 40E-5, 40E-20 and 40E-21, F.A.C. The Environmental Resource CPM, October 2012, http://www.flrules.org/Gateway/reference.asp?No=Ref-01533, is incorporated by reference herein and utilized for violations of Chapters 40E-4, 40E-40, 40E-41, 40E-61, 40E-63 and 40E-400, F.A.C. Copies of the CPMs are also available at no cost by contacting the South Florida Water Management District Clerk's Office, 3301 Gun Club Road, West Palm Beach, FL 33405, 1(800) 432-2045, ext. 6436, or (561) 682-6436.~~

(1) ~~(2)~~ The District has the authority under Section 373.129, F.S. to assess ~~The CPM is the initial basis for determining the appropriate amount for a particular penalty. The CPM reflects the District's statutory authority under Section 373.129, F.S., to seek~~ civil penalties of up to $15,000 ~~$10,000~~ per day, per violation. ~~The CPM is comprised of two principle components:~~

~~(a) The actual or potential harm to the public and the environment that may occur as a result of the violation; and~~

~~(b) The extent of deviation from statutory or regulatory requirements.~~

(2) ~~(3)~~ No Change.

(3) ~~(4)~~ No Change.

(4) ~~(5)~~ No Change.

Rulemaking Authority 120.53(1), 373.044, 373.113, 373.333(1) FS. Law Implemented 120.69, 373.129, 373.209(3), 373.430, 373.603 FS. History–New 10-3-95, Amended 10-23-12,_____.

NAME OF PERSON ORIGINATING PROPOSED RULE: Jill Creech, Regulation Director

NAME OF AGENCY HEAD WHO APPROVED THE PROPOSED RULE: South Florida Water Management District Governing Board

DATE PROPOSED RULE APPROVED BY AGENCY HEAD: February 8, 2024

DATE NOTICE OF PROPOSED RULE DEVELOPMENT PUBLISHED IN FAR: December 28, 2023

NOTICE OF PROPOSED RULE

SOUTH FLORIDA WATER MANAGEMENT DISTRICT

RULE NO.: RULE TITLE:

40E-2.091 Publications Incorporated by Reference

40E-2.101 Content of Application

PURPOSE AND EFFECT: Update South Florida Water Management District's Water Use Permit forms to include North American Vertical Datum as an alternative to National Geodetic Vertical Datum.

SUMMARY: Update Form No. 1377 (Water Quality Report Form) and Form No. 1379 (Application for an Individual Water Use Permit), which are incorporated by reference in Rules 40E-2.091 and 2.101, F.A.C., to include North American Vertical Datum as an alternative to National Geodetic Vertical Datum.

SUMMARY OF STATEMENT OF ESTIMATED REGULATORY COSTS AND LEGISLATIVE RATIFICATION: The agency has determined that this rule will not have an adverse impact on small business or likely increase directly or indirectly regulatory costs in excess of $200,000 in the aggregate within one year after the implementation of the rule. A SERC has not been prepared by the agency.

The Agency has determined that the proposed rule is not expected to require legislative ratification based on the statement of estimated regulatory costs or if no SERC is required, the information expressly relied upon and described herein: The District completed the Governor's Office of Fiscal Accountability and Regulatory Reform (OFARR) form "Is a SERC Required?" and prepared a summary of the proposed rule amendments, both of which are available upon request. Based on the completed "Is a SERC Required?" form and the District's summary and analysis performed to prepare and complete said documents, the proposed rule amendment does not require legislative ratification pursuant to subsection 120.541(3), F.S.

Any person who wishes to provide information regarding the statement of estimated regulatory costs, or to provide a proposal for a lower cost regulatory alternative must do so in writing within 21 days of this notice.

RULEMAKING AUTHORITY (formerly "Specific Authority"): 373.044, 373.113, 373.118, 373.171, 373.216 FS.

LAW IMPLEMENTED: 373.042, 373.0421, 373.083, 373.103(1), 373.109, 373.116, 373.219, 373.223, 373.224, 373.229, 373.232, 373.233, 373.236, 373.239, 373.250 FS.

IF REQUESTED WITHIN 21 DAYS OF THE DATE OF THIS NOTICE, A HEARING WILL BE SCHEDULED AND ANNOUNCED IN THE FAR.

THE PERSON TO BE CONTACTED REGARDING THE PROPOSED RULE IS: Simon Sunderland, South Florida Water Management District, 3301 Gun Club Road, West Palm Beach, FL 33406, (561)-682-2705, ssunder@sfwmd.gov.

THE FULL TEXT OF THE PROPOSED RULE IS:

2.091 Publications Incorporated by Reference.

(1) No Change.

(2) The following forms and materials are referenced in the "Applicant's Handbook for Water Use Permit Applications within the South Florida Water Management District – June 13, 2022" (http://www.flrules.org/Gateway/reference.asp?No=Ref-14397) and are incorporated herein:

(a) No Change.

(b) Form 1377, Water Quality Report Form, (_____, 2024 ~~July 14, 2014~~) {insert URL} ~~http://www.flrules.org/Gateway/reference.asp?No=Ref-03856~~) referenced in Subsection 4.2.1;

(c) through (j) No Change.

(3) and (4) No Change.

Rulemaking Authority 373.044, 373.113, 373.118, 373.171, 373.216 FS. Law Implemented 373.042, 373.0421, 373.083, 373.109, 373.219, 373.223, 373.224, 373.229, 373.232, 373.233, 373.236, 373.239, 373.250 FS. History–New 9-3-81, Formerly 16K-2.035(1), Amended 2-24-85, 11-21-89, 1-4-93, 4-20-94, 11-26-95, 7-11-96, 4-9-97, 12-10-97, 9-10-01, 12-19-01, 8-1-02, 6-9-03, 8-31-03, 4-23-07, 9-13-07, 2-13-08, 10-14-08, 7-2-09, 3-15-10, 3-18-10, 9-26-12, 10-23-12, 7-21-13, 7-14-14, 7-16-14, 9-7-15, 1-31-21, 3-21-21, 6-13-22,_____.

40E-2.101 Content of Application.

(1) and (2) No Change.

(3) Application for an Individual Water Use Permit shall be made using Form No. 1379, Water Use Permit Application, (_____, 2024 ~~July 14, 2014~~), {insert URL} ~~http://www.flrules.org/Gateway/reference.asp?No=Ref-04377~~. Applicants shall also submit one or more of the following supplemental forms as appropriate for each type of water use proposed in the permit application:

(a) through (f) No Change.

(4) through (6) No Change.

Rulemaking Authority 373.044, 373.113, 373.171, 373.216 FS. Law Implemented 373.083, 373.103(1), 373.116, 373.219, 373.223,

373.229 FS. History–New 9-3-81, Amended 12-1-82, 2-24-85, 11-21-89, Repromulgated 1-4-93, Amended 4-20-94, 8-1-02, 10-23-12, 7-14-14, _____.

NAME OF PERSON ORIGINATING PROPOSED RULE: Jill Creech, Regulation Director

NAME OF AGENCY HEAD WHO APPROVED THE PROPOSED RULE: South Florida Water Management District Governing Board

DATE PROPOSED RULE APPROVED BY AGENCY HEAD: February 8, 2024

DATE NOTICE OF PROPOSED RULE DEVELOPMENT PUBLISHED IN FAR: December 28, 2023

NOTICE OF PROPOSED RULE

SOUTH FLORIDA WATER MANAGEMENT DISTRICT

RULE NO.: RULE TITLE:

40E-7.216 Cure Notice

40E-7.217 Termination for Default Notice

PURPOSE AND EFFECT: Clarify delivery options for cure notices and termination for default notices.

SUMMARY: Remove the requirement to send Cure Notices and Termination for Default Notices by certified U.S. Mail, return receipt as a delivery option, and replace it with electronic mail, U.S. mail, or overnight carrier as delivery options.

SUMMARY OF STATEMENT OF ESTIMATED REGULATORY COSTS AND LEGISLATIVE RATIFICATION: The agency has determined that this rule will not have an adverse impact on small business or likely increase directly or indirectly regulatory costs in excess of $200,000 in the aggregate within one year after the implementation of the rule. A SERC has not been prepared by the agency.

The Agency has determined that the proposed rule is not expected to require legislative ratification based on the statement of estimated regulatory costs or if no SERC is required, the information expressly relied upon and described herein: The District completed the Governor's Office of Fiscal Accountability and Regulatory Reform (OFARR) form "Is a SERC Required?" and prepared a summary of the proposed rule amendments, both of which are available upon request. Based on the completed "Is a SERC Required?" form and the District's summary and analysis performed to prepare and complete said documents, the proposed rule amendment does not require legislative ratification pursuant to subsection 120.541(3), F.S.

Any person who wishes to provide information regarding the statement of estimated regulatory costs, or to provide a proposal for a lower cost regulatory alternative must do so in writing within 21 days of this notice.

RULEMAKING AUTHORITY (formerly "Specific Authority"): 373.610, FS.

LAW IMPLEMENTED: 373.610, FS.

IF REQUESTED WITHIN 21 DAYS OF THE DATE OF THIS NOTICE, A HEARING WILL BE SCHEDULED AND ANNOUNCED IN THE FAR.

THE PERSON TO BE CONTACTED REGARDING THE PROPOSED RULE IS: Johanna Labrada, Bureau Chief-Procurement, South Florida Water Management District, 3301 Gun Club Road, West Palm Beach, FL 33406, (561)-

682-2520, jlabrad@sfwmd.gov.

THE FULL TEXT OF THE PROPOSED RULE IS:

40E-7.216 Cure Notice.

(1) No Change.

(2) The Procurement Bureau Chief shall notify the contracting entity of the material breach of its contract with the District by forwarding a Cure Notice sent by electronic mail, U.S. Mail, or overnight carrier ~~Certified U.S. Mail, return receipt requested~~.

Rulemaking Authority 373.610 FS. Law Implemented 373.610 FS. History–New 4-1-03, Amended 6-15-16,____.

40E-7.217 Termination for Default Notice.

In the event that the contracting entity fails to cure the material breach within the time specified in the Cure Notice, the District shall issue a Termination for Default Notice by electronic mail, U.S. Mail, or overnight carrier ~~Certified U.S. Mail, return receipt requested~~.

Rulemaking Authority 373.610 FS. Law Implemented 373.610 FS. History–New 4-1-03,_____.

NAME OF PERSON ORIGINATING PROPOSED RULE: Candida Heater, Division Director – Administrative Services

NAME OF AGENCY HEAD WHO APPROVED THE PROPOSED RULE: South Florida Water Management District Governing Board

DATE PROPOSED RULE APPROVED BY AGENCY HEAD: February 8, 2024

DATE NOTICE OF PROPOSED RULE DEVELOPMENT PUBLISHED IN FAR: December 28, 2023

M E M O R A N D U M

TO: Governing Board Members

FROM: Lawrence Glenn, Water Resources Division

DATE: February 8, 2024

SUBJECT: Everglades Ridge, Slough & Constructed Forested Wetland Research Contract

Agenda Item Background:
The Comprehensive Everglades Restoration Plan (CERP), the Everglades Forever Act, and the Central Everglades Planning Process (CEPP) depend on ecological and hydrological studies to support decision-making for water management and restoration. This scientific research, a cost-sharing component of CERP, will help to define the hydrology that will sustain a healthy Everglades Ridge and Slough ecosystem and reduce uncertainty in predicting ecosystem responses to water management and climate patterns.

This three-year contract provides for a series of experimental and monitoring studies at the District's 80-acre "living laboratory," the Loxahatchee Impoundment Landscape Assessment (LILA) facility. The work conducted in this study will investigate: (1) the role of water depth in maintaining the natural landscape; (2) the long-term flooding tolerance of constructed forested wetlands; and (3) how constructed forested wetland creation techniques, fine-tuned at LILA, can be used in upcoming CERP restoration activities (CEPP-North). This contract will create a series of maps illustrating how LILA vegetation patterns have changed in response to hydrology over time.

Additional Item Background:
Core Mission and Strategic Priorities:
The research conducted at LILA supports the goals within the District Everglades Strategic Plan to develop operational criteria and recovery strategies for the ridge and slough ecosystem, to guide the CERP program, and to achieve sustainable targets for wading bird populations by providing a better understanding of the role of hydroperiod and depth for the restoration, growth, and reproduction ecology of constructed forested wetlands, ridges, and sloughs, which will significantly improve the District's ability to support the Everglades Forever Act, Minimum Flows and Levels, Regulatory Operations, Combined Operating Procedures, and CEPP.

Funding Source:
This is a not-to-exceed $279,000 contract, of which $93,000 in dedicated funds (Land Acquisition Trust Fund and Everglades License Tag Revenue) and Ad Valorem funds are budgeted in Fiscal Year 2023-2024, and the remainder is subject to Governing Board approval of future years budgets.

Staff Contact and/or Presenter:
Fred Sklar, fsklar@sfwmd.gov, 561-682-6504

ATTACHMENTS:

Resolution No. 2024-0209

SOUTH FLORIDA WATER MANAGEMENT DISTRICT

Resolution No. 2024-02XX

A Resolution of the Governing Board of the South Florida Water Management District to authorize entering into a three-year contract with Florida International University to conduct field monitoring for Everglades Ridge, Slough and Constructed Forested Wetland Research in an amount not to exceed $279,000, of which $93,000 in dedicated funds (Land Acquisition Trust Fund and Everglades License Tag Revenue) and Ad Valorem funds are budgeted in Fiscal Year 2023-2024, and the remainder is subject to Governing Board approval of future year budgets; providing an effective date. (Contract No. 4600004898)

WHEREAS, the Governing Board of the South Florida Water Management District deems it necessary, appropriate and in the public interest to authorize the execution of a three-year contract with Florida International University to measure the restoration and development of constructed forested wetlands, ridges and sloughs within the LILA project, in an amount not to exceed $279,000, of which $93,000 in dedicated funds (Land Acquisition Trust Fund and Everglades License Tag Revenue) and Ad Valorem funds are budgeted in Fiscal Year 2023-2024, and the remainder is subject to Governing Board approval of future years budgets.

NOW THEREFORE, BE IT RESOLVED BY THE GOVERNING BOARD OF THE SOUTH FLORIDA WATER MANAGEMENT DISTRICT:

Section 1. The Governing Board of the South Florida Water Management District hereby authorizes the execution of a three-year contract with Florida International University to measure constructed forested wetlands and ridge and slough restoration and development within the LILA project. (Contract No. 4600004898)

Section 2. This resolution shall take effect immediately upon adoption.

PASSED and **ADOPTED** this 8th day of February, 2024.

M E M O R A N D U M

TO: Governing Board Members

FROM: Lucine Dadrian, P.E., Engineering, Construction & Modeling

DATE: February 8, 2024

SUBJECT: Professional Engineering Services Contracts

Agenda Item Background:
As part of the District's Restoration and Capital Improvement Programs, the District has maintained a series of continuing professional engineering services contracts for several years now. This agenda item addresses the need to contract external professional engineering services to facilitate the delivery of the District's capital improvement and restoration projects. The purpose of this Request for Proposals was to solicit technical proposals from qualified firms to provide professional engineering services for the District's Restoration and Operations, Maintenance, Repair, Rehabilitation, and Replacement Projects. Multiple contract awards are anticipated for a contract duration of a 3-year period with two 1-year options to renew. Assignments under each contract will be handled through various work orders under the contract. Approval of this agenda item will allow the District to continue or commence new design and construction support efforts for projects such as the EAA Reservoir, C-23/C-24 South Reservoir, C-25 Reservoir and STA, CEPP North, South, and EAA features, Northern Everglades, Capital Refurbishment and other District initiatives.

The seventeen firms selected for these contracts include J-Tech; Black & Veatch Corporation; Hazen & Sawyer DPC; AECOM Technical Services, Inc.; Brown & Caldwell Corporation; Stantec Consulting Services, Inc.; HDR Engineering, Inc.; Parsons Environmental & Infrastructure Group, Inc.; WGI, Inc; Northstar Contracting Group, Inc.; Carollo Engineers, Inc.; Geosyntec Corporation, Inc.; Erdman Anthony of Florida, Inc.; CDM Smith, Inc.; WSP USA, Inc.; Hatch Associates Consultants, Inc.; Arcadis US, Inc.

Additional Item Background:
Core Mission and Strategic Priorities:
The selection of these firms to provide professional engineering services supports the District's core mission of ecosystem restoration, resiliency, water quality, water supply and flood control.

Funding Source:
The Professional Engineering Services Contracts will be funded through dedicated funds (Land Acquisition Trust Fund and Everglades Trust Fund) and Ad Valorem funds.

Staff Contact and/or Presenter:
Lucine Dadrian, P.E., ldadrian@sfwmd.gov, 561-682-2685

ATTACHMENTS:

SOUTH FLORIDA WATER MANAGEMENT DISTRICT

Resolution No. 2024 – 02XX

A Resolution of the Governing Board of the South Florida Water Management District authorizing the official ranking of firms and entering into a 3-year contract, with two 1-year extensions, with J-Tech; Black & Veatch Corporation; Hazen & Sawyer DPC; AECOM Technical Services, Inc.; Brown & Caldwell Corporation; Stantec Consulting Services, Inc.; HDR Engineering, Inc.; Parsons Environmental & Infrastructure Group, Inc.; WGI, Inc; Northstar Contracting Group, Inc.; Carollo Engineers, Inc.; Geosyntec Corporation, Inc.; Erdman Anthony of Florida, Inc.; CDM Smith, Inc.; WSP USA, Inc.; Hatch Associates Consultants, Inc.; Arcadis US, Inc., subject to successful negotiations to provide professional engineering services for the District's Restoration and Operations, Maintenance, Repair, Rehabilitation, and Replacement Projects, in an amount not-to-exceed $500,000,000 for all 17 contracts, for which the Fiscal Year 2023-2024 budget includes approved Ad Valorem and dedicated funds and the remainder is subject to the Governing Board approval of the future years budgets; if negotiations are unsuccessful with any of the firms, the District may proceed with negotiations in ranked order until a contract is successfully negotiated; providing an effective date.

Contract Number	Consulting Firm
4600004909	J-Tech
4600004910	Black & Veatch Corporation
4600004911	Hazen & Sawyer DPC
4600004912	AECOM Technical Services, Inc.
4600004913	Brown & Caldwell Corporation
4600004914	Stantec Consulting Services, Inc.
4600004915	HDR Engineering, Inc.
4600004916	Parsons Environmental & Infrastructure Group, Inc.
4600004917	WGI, Inc
4600004918	Northstar Contracting Group, Inc.
4600004919	Carollo Engineers, Inc.
4600004926	Geosyntec Corporation, Inc.
4600004920	Erdman Anthony of Florida, Inc.
4600004921	CDM Smith, Inc.
4600004922	WSP USA, Inc.
4600004927	Hatch Associates Consultants, Inc.
4600004923	Arcadis US, Inc.

WHEREAS, the Governing Board of the South Florida Water Management District deems it necessary, appropriate and in the public interest to authorize the official ranking of firms and entering into a three-year contract, with two (2) one-year extensions, with J-Tech; Black & Veatch Corporation; Hazen & Sawyer DPC; AECOM Technical Services, Inc.; Brown & Caldwell Corporation; Stantec Consulting Services, Inc.; HDR Engineering,

Inc.; Parsons Environmental & Infrastructure Group, Inc.; WGI, Inc; Northstar Contracting Group, Inc.; Carollo Engineers, Inc.; Geosyntec Corporation, Inc.; Erdman Anthony of Florida, Inc.; CDM Smith, Inc.; WSP USA, Inc.; Hatch Associates Consultants, Inc.; Arcadis US, Inc., subject to successful negotiations to provide professional engineering services for the District's Restoration and Operations, Maintenance, Repair, Rehabilitation, and Replacement Projects, in an amount not-to-exceed $500,000,000 for all 17 contracts, for which the Fiscal Year 2023-2024 budget includes approved Ad Valorem and dedicated funds and the remainder is subject to the Governing Board approval of the future years budgets; if negotiations are unsuccessful with any of the firms, the District may proceed with negotiations in ranked order until a contract is successfully negotiated.

NOW THEREFORE, BE IT RESOLVED BY THE GOVERNING BOARD OF THE SOUTH FLORIDA WATER MANAGEMENT DISTRICT:

Section 1. The Governing Board of the South Florida Water Management District hereby approves entering into a contract with the following firms subject to successful negotiations to provide professional engineering services for the District's Restoration and Operations, Maintenance, Repair, Rehabilitation, and Replacement Projects, in an amount not-to- exceed $500,000,000 for all 17 contracts; if negotiations are unsuccessful with any of the firms, the District may proceed with negotiations in ranked order until a contract is successfully.

Section 2. This Resolution shall take effect immediately upon adoption.

PASSED and **ADOPTED** this 8th day of February, 2024.

M E M O R A N D U M

TO: Governing Board Members

FROM: , Office of Communications & Public Engagement

DATE: February 8, 2024

SUBJECT: Draft Presentations for Agenda Items 23 and 24, CERP Project Update, NEEPP Project Update

Agenda Item Background:

Staff Contact and/or Presenter:

ATTACHMENTS:

23 Dadrian Professional Engineering Services

24 Mitnik Glenn Water and Ecological Conditions Report

26 Tuttle General Public Comment

CERP Progress Report

NEEPP Project Update

Professional Engineering Services Contracts

Lucine Dadrian, P.E.
Division Director, Engineering, Construction & Modeling
South Florida Water Management District

Governing Board
February 8, 2024

Full Services Engineering Contracts


C43 Reservoir Pump Station


EAA STA Inflow Spillway


C44 Reservoir Pump Station

- Types of Projects
  - Reservoirs and Dams
  - Flow Equalization Basins
  - Stormwater Treatment Areas
  - Pump Station Refurbishments
  - Gated Structure Rehabilitations
  - Canal & Levee Rehabilitations
  - Level of Service / Resiliency

Full Services Engineering Contracts

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EAA Stormwater Treatment Area

- **Full Engineering Services for Planning, Design and Construction Phases**
  - **Survey**
  - **Geotechnical**
  - **Environmental Permitting**
  - **H&H Modeling**
  - **Engineering Design**
  - **Cost Estimating & Scheduling**
  - **Engineering During Construction**
  - **Construction Management Services**
  - **Staff Augmentation**

Request for Proposals Process

Request for Proposals

Prepare Request for Proposal and select Evaluation Committee Members

Advertise Request for Proposals (Procurement single point of contact through entire process)

Publicly Noticed Pre-Proposal Meeting held with Consultants to answer questions & discuss the process

Consultant Inquiry Period (Questions submitted to Procurement)

Issue an Addendum with any questions arising from the Inquiry Period

Consultants submit their proposals on specified date

1st Evaluation Period

Evaluation Committee Kick-Off Meeting held to define committee rules of conduct, evaluation process, and compliance with Sunshine Law

Evaluation Committee reviews Consultant proposals and scores them online based on criteria set forth in RFP

Publicly Noticed Meeting held with Evaluation Committee to review summation of written scores to determine Shortlist of Firms for Oral Presentations

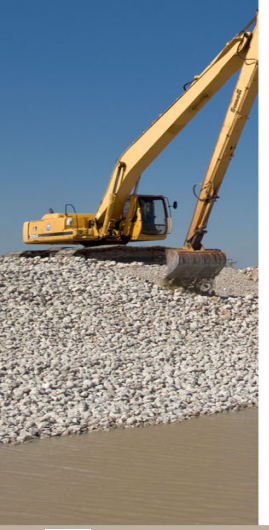
2nd Evaluation Period

Oral Presentations (audio recorded) from Shortlisted Firms are presented to Evaluation Committee

Evaluation Committee completes their online scoring of Presentations

Publicly Noticed Meeting held with Evaluation Committee to review summation of written and oral scores as ranked by each evaluator for determining final ranking and selection of firms recommended to Governing Board for award consideration

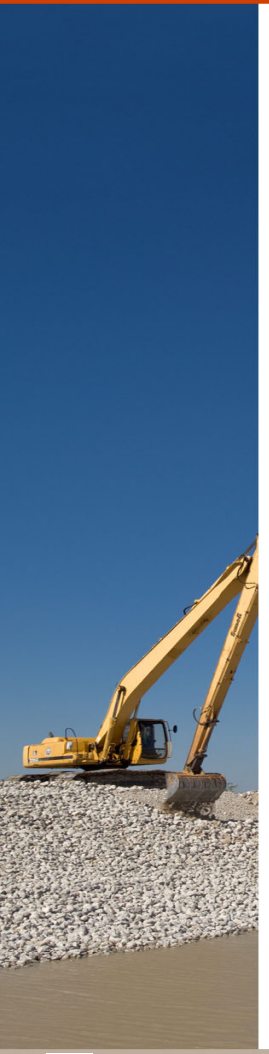
Request for Proposals Process



- Request for Proposals was issued September 13, 2023
- 27 Firms responded by the due date of October 13, 2023

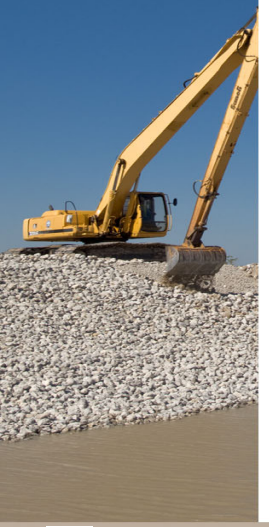
- AECOM Technical Services, Inc.
- Arcadis US, Inc.
- Ardurra Grp, Inc. DBA King Engineering Associates
- Atkins North America, Inc.
- Black & Veatch Corporation
- Brown & Caldwell Corporation
- Burns & McDonnell Eng Co, Inc.
- Carollo Engineers, Inc.
- CDM Smith, Inc.
- CSA Central, Inc.
- Erdman Anthony of Florida, Inc.
- Geosyntec Consultants, Inc
- GF-D South Florida JV
- Hatch Associates Consultants, Inc.
- HDR Engineering, Inc.
- Hazen & Sawyer DPC
- J Tech
- Keith & Associates, Inc.
- Kimley-Horn & Associates, Inc.
- Northstar Contracting Group, Inc.
- Johnson Mirmiran & Thompson, Inc.
- Parsons Environmental & Infrastructure Grp, Inc.
- Radise International, Inc.
- Stantec Consulting Services, Inc.
- TY Lin International
- WGI, Inc.
- WSP USA, Inc.

Request for Proposals Process



- The 27 firms were evaluated based on the following criteria:
  - Proposed Project Team/Staffing Availability and Workload Distribution
  - Qualifications/experience of firm and subconsultants with similar projects
  - Proposed Approach and Methodology
  - Quality Assurance/Quality Control
  - Management Capabilities and Office Locations
  - Volume of District Work for past 3 years (Pursuant to CCNA)
- Evaluation Committee shortlisted 24 firms based on proposal scoring and ranking during a Publicly Noticed Meeting on November 15, 2023
- Oral Presentations were held, and audio recorded on December 6-7, 2023
- Evaluation Committee recommended 17 firms based on overall scoring and ranking during a Publicly Noticed Meeting on December 11, 2023

Request for Proposals Process



- Based on Written and Oral Information on the 24 Firms, Evaluation Committee Recommends Final Ranking and Selection of the following 17 Firms:

1. **J-Tech**
2. **Black & Veatch Corporation**
3. **Hazen & Sawyer DPC**
4. **AECOM Technical Services, Inc.**
5. **Brown & Caldwell Corporation**
6. **Stantec Consulting Services, Inc.**
7. **HDR Engineering, Inc.**
8. **Parsons Environmental & Infrastructure Group, Inc.**
9. **WGI, Inc**
10. **Northstar Contracting Group, Inc.**
11. **Carollo Engineers, Inc.**
12. **Geosyntec Corporation, Inc.**
13. **Erdman Anthony of Florida, Inc.**
14. **CDM Smith, Inc.**
15. **WSP USA, Inc.**
16. **Hatch Associates Consultants, Inc.**
17. **Arcadis US, Inc.**

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18. Ardurra Group Inc. DBA King Engineering Associates
19. GF-D South Florida JV
20. Kimley-Horn & Associates, Inc.
21. Keith & Associates, Inc.
22. AtkinsRealis USA, Inc.
23. Burns & McDonnell Eng Co, Inc.
24. Johnson, Mirmiran & Thompson, Inc.

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25. TY Lin International
26. Radise International, LC
27. CSA Central, Inc.

Resolution No. 2024-0210

Authorize the official ranking of firms and entering into a 3-year contract, with two 1-year extensions, with J-Tech; Black & Veatch Corporation; Hazen & Sawyer DPC; AECOM Technical Services, Inc.; Brown & Caldwell Corporation; Stantec Consulting Services, Inc.; HDR Engineering, Inc.; Parsons Environmental & Infrastructure Group, Inc.; WGI, Inc; Northstar Contracting Group, Inc.; Carollo Engineers, Inc.; Geosyntec Corporation, Inc.; Erdman Anthony of Florida, Inc.; CDM Smith, Inc.; WSP USA, Inc.; Hatch Associates Consultants, Inc.; Arcadis US, Inc., subject to successful negotiations to provide professional engineering services for the District's Restoration and Operations, Maintenance, Repair, Rehabilitation, and Replacement Projects, in an amount not-to-exceed $500,000,000 for all 17 contracts, for which the Fiscal Year 2023-2024 budget includes approved Ad Valorem and dedicated funds and the remainder is subject to the Governing Board approval of the future years budgets; if negotiations are unsuccessful with any of the firms, the District may proceed with negotiations in ranked order until a contract is successfully negotiated.

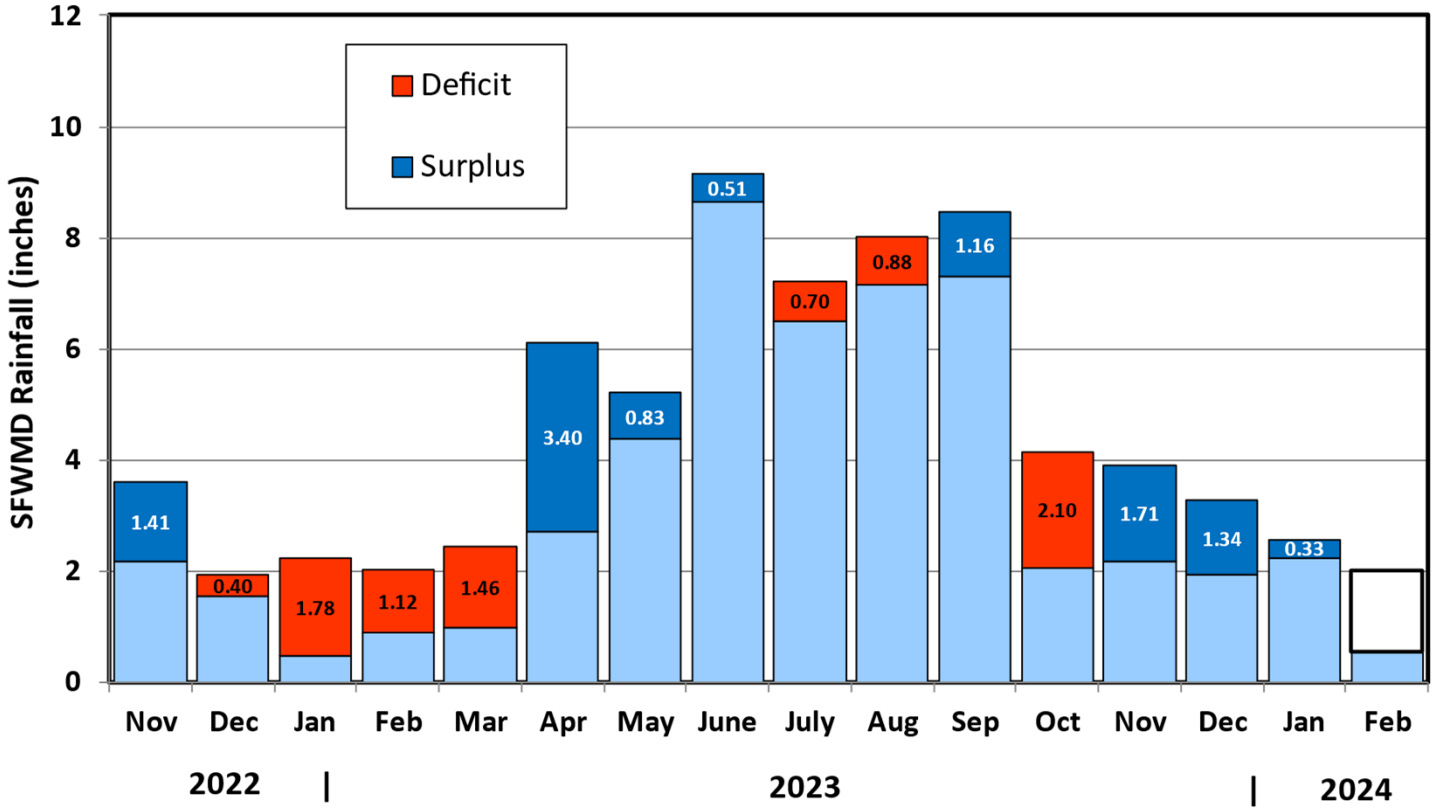
Water Conditions Summary

South Florida Water Management District
Governing Board Meeting
February 8, 2024

John P. Mitnik, PE
Chief District Engineer
Assistant Executive Director

Lawrence Glenn
Division Director
Water Resources

SFWMD Rainfall Distribution Comparison
(November 2022 - February 2024)



Wet-Season Rainfall

Total rainfall 108% of normal since the start of the 2023 wet season (*14 May*)

- **May (*119% normal*)**
- **June (*106% normal*)**
- **July was dry (*90% normal*),**
- **August (89% normal)**
- **September (116% normal)**

District Wide Average Rainfall

Month	Average (inches)
Jan	2.24
Feb	2.01
Mar	2.43
Apr	2.71
May	4.37
Jun	8.65
Jul	7.20
Aug	8.03
Sep	7.31
Oct	4.15
Nov	2.18
Dec	1.94

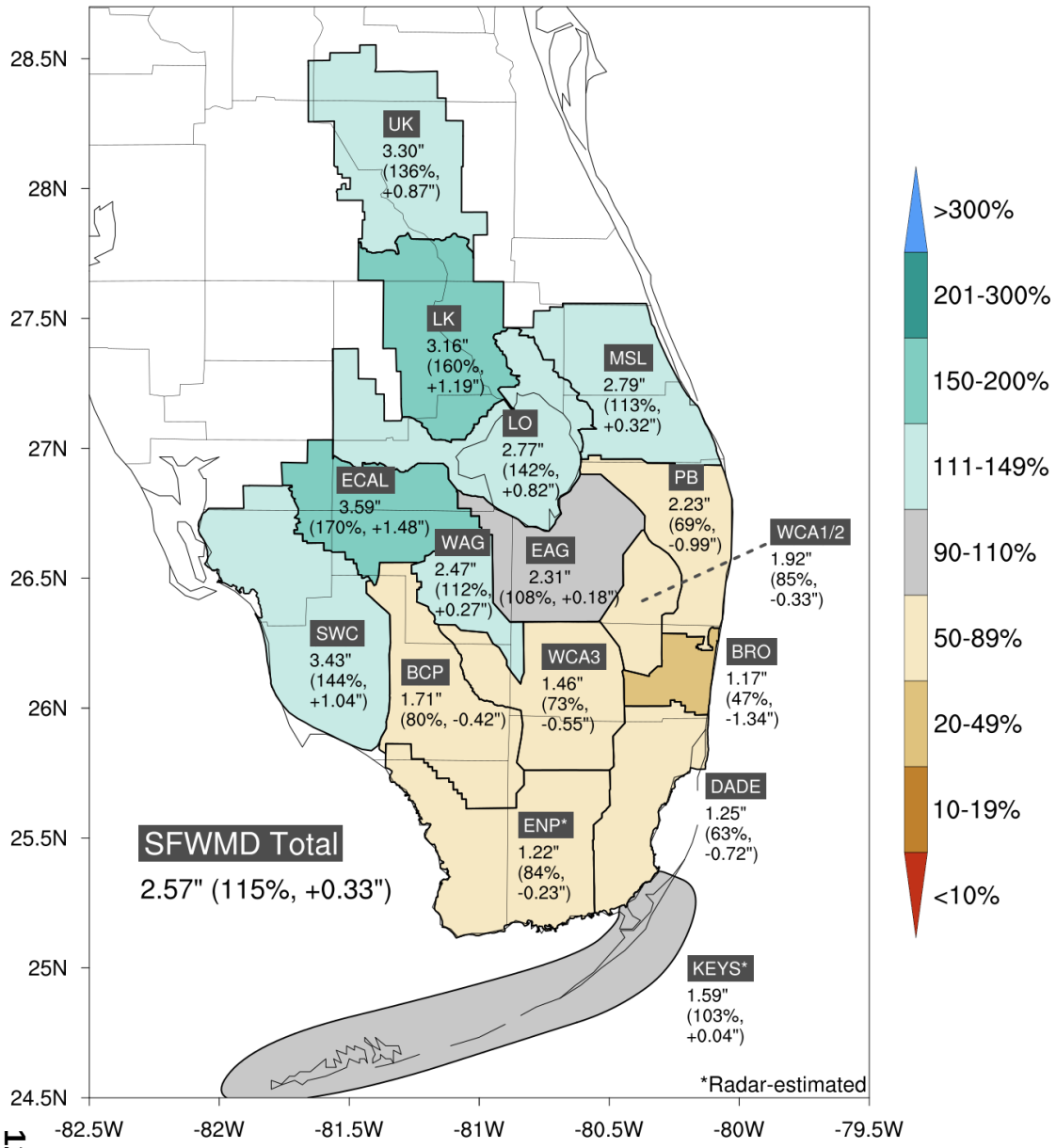
Wet Season

2022-2023 DRY SEASON
- Started 9/29/2022 and ended 5/13/2023
- Including Oct. 2022, 5/6 months are below Normal
- 4/6 full months are more than 50% below Normal
- April was ~ 225% Normal

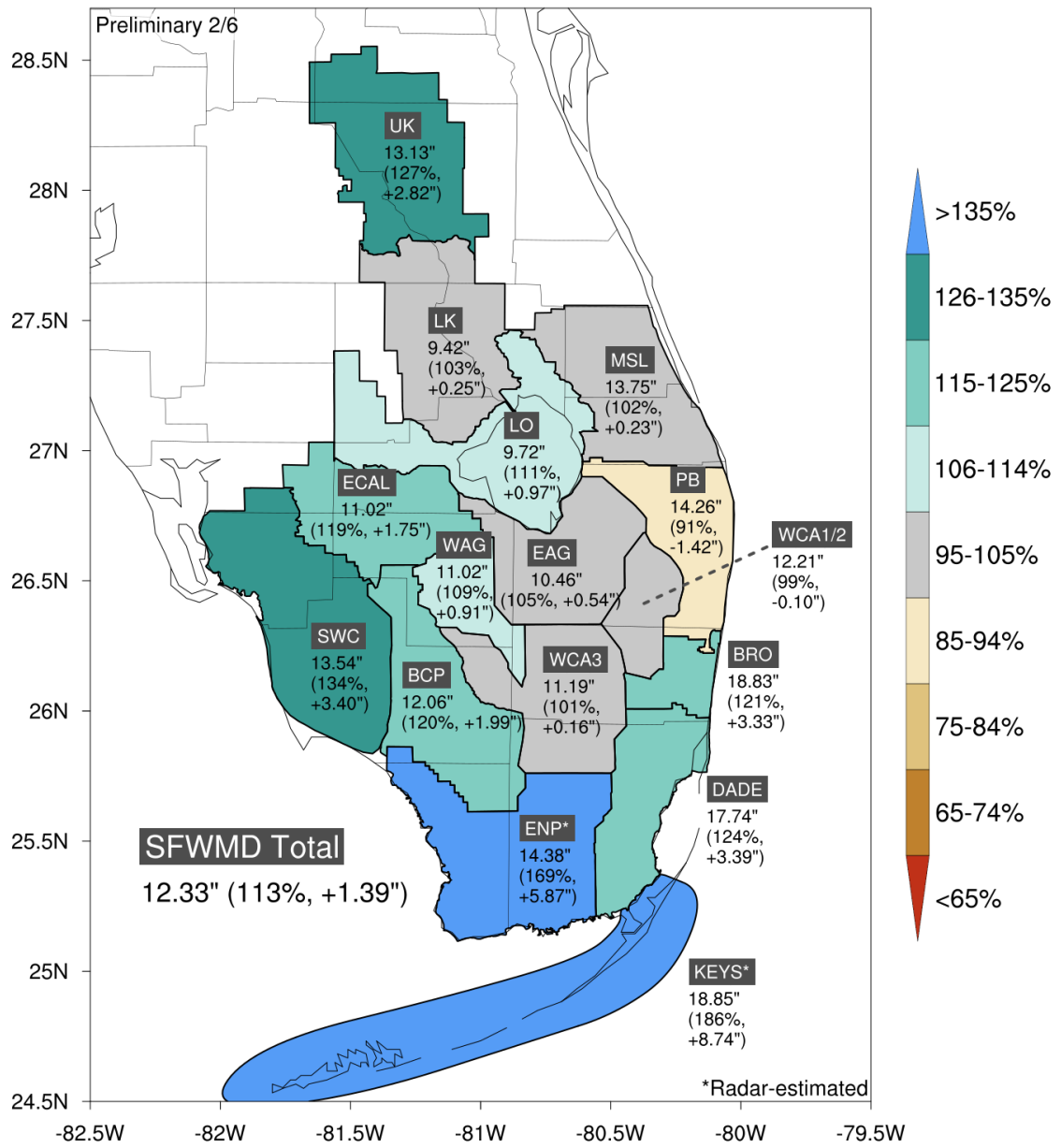
2023 WET SEASON
- Started 5/14/2023 ended 9/30/2023
- May, June and September were above Normal
- July and August were below Normal
- 8% above Normal overall

2023-2024 DRY SEASON
- Started 10/01/2023
- October was extremely dry (49% normal)
- November, December and January above normal
- Large isolated rainfall events November/December

January 2024
Rainfall, Percent of Normal, and Departures



2023-2024 Dynamic Dry Season (10/1/23 to 2/6/24)
Rainfall, Percent of Normal, and Departures



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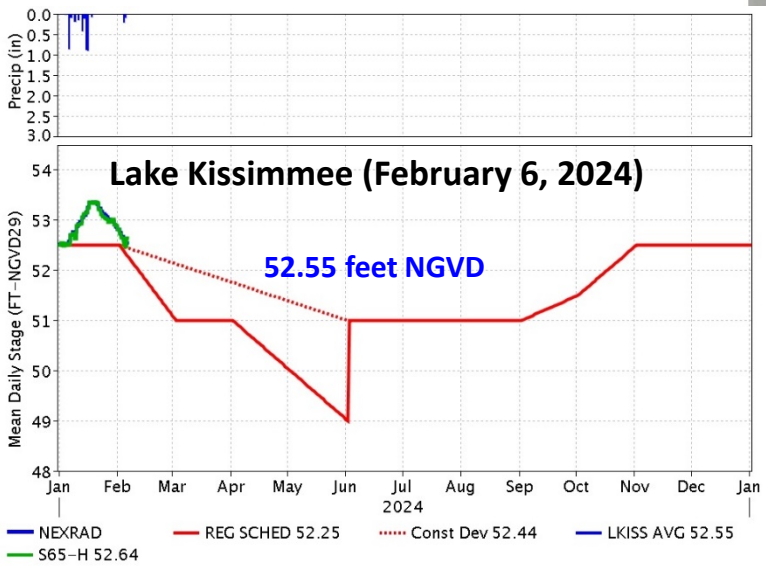
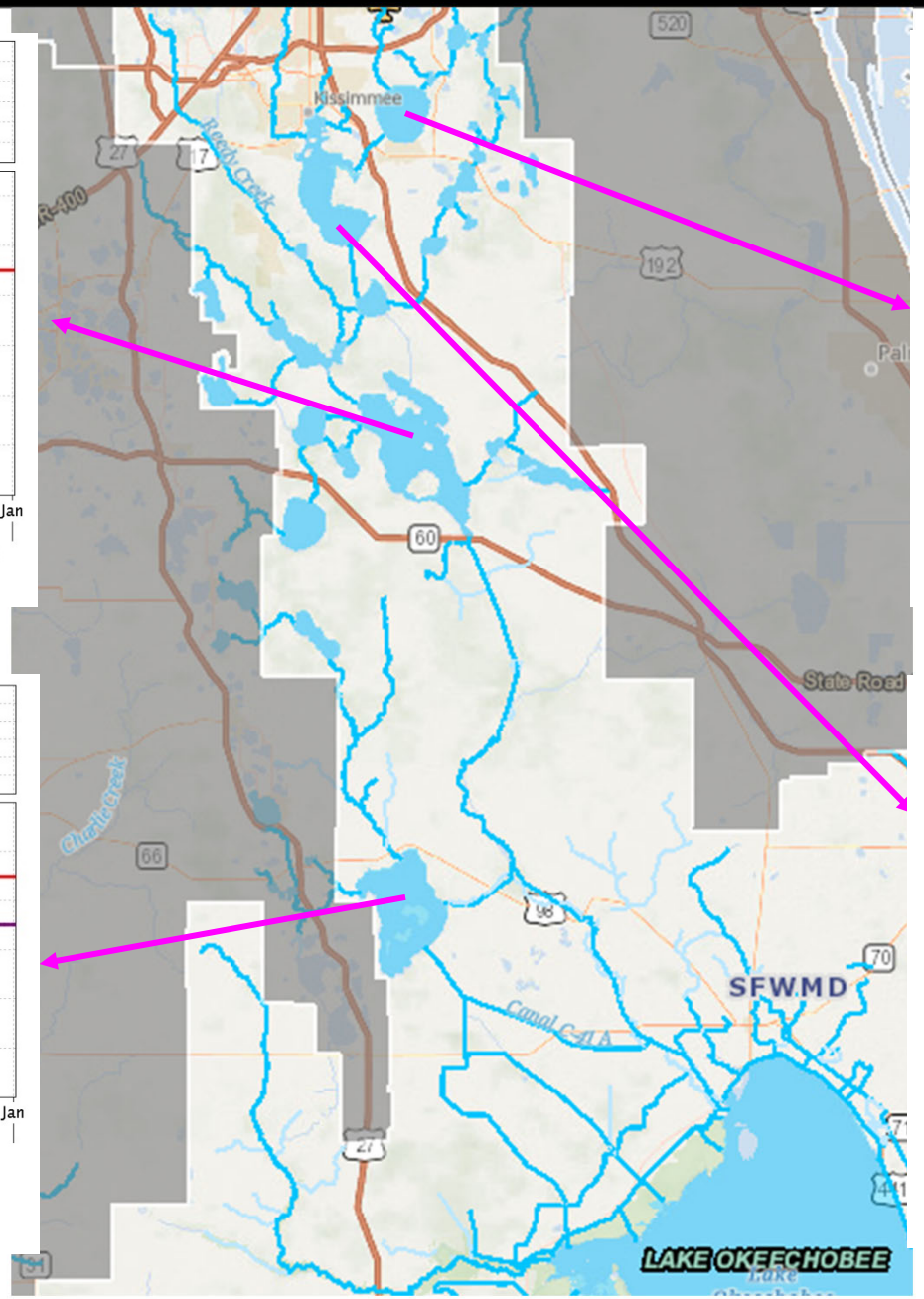
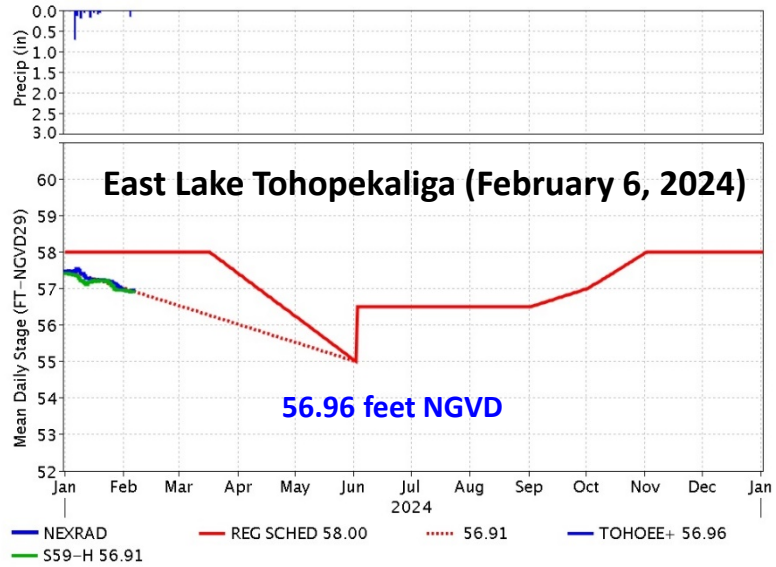
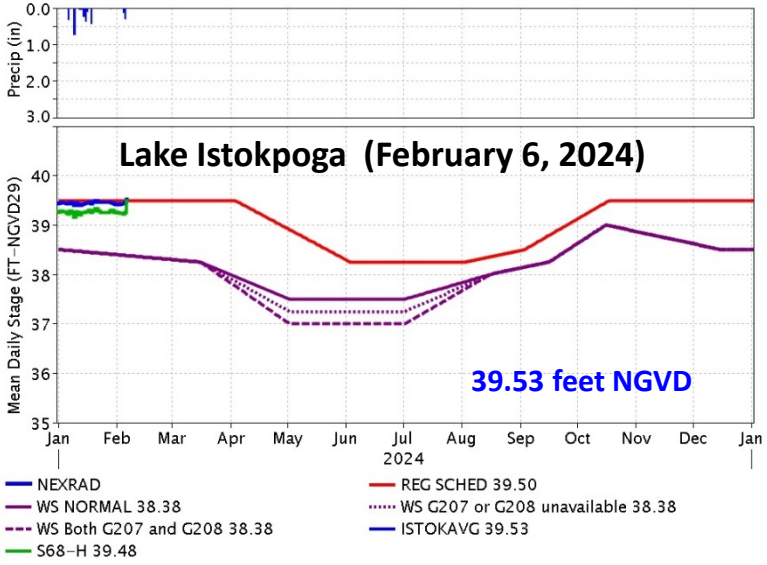
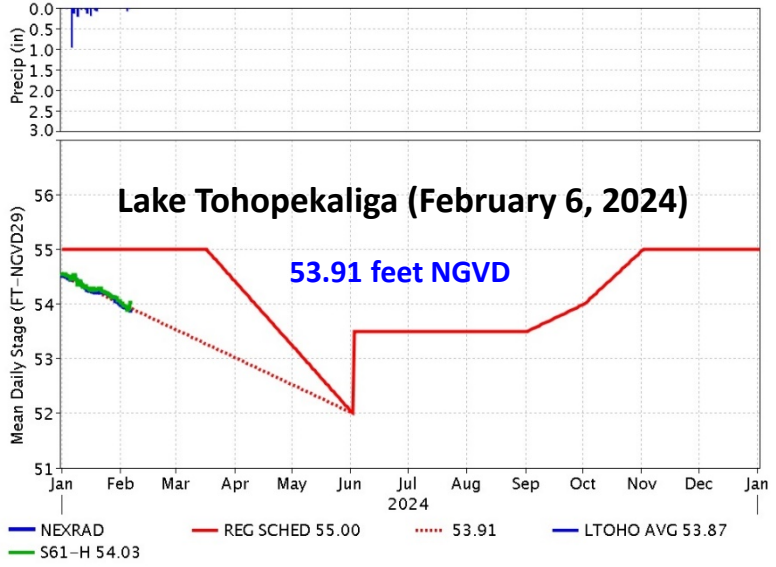
Presenter: John Mitnik





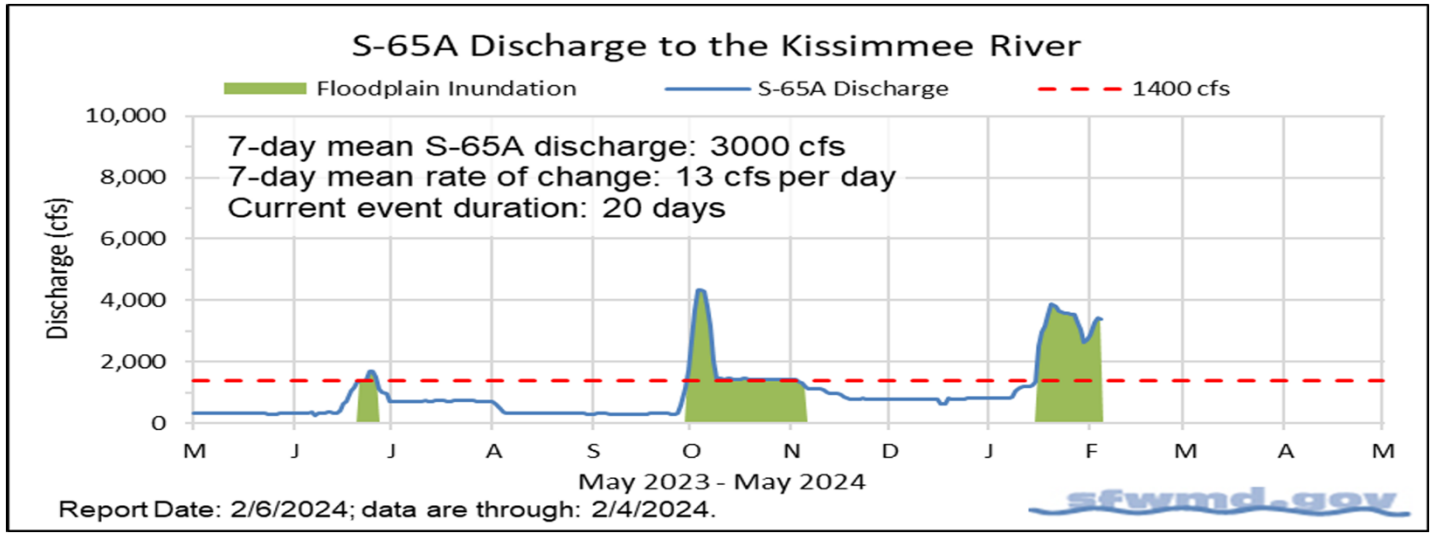


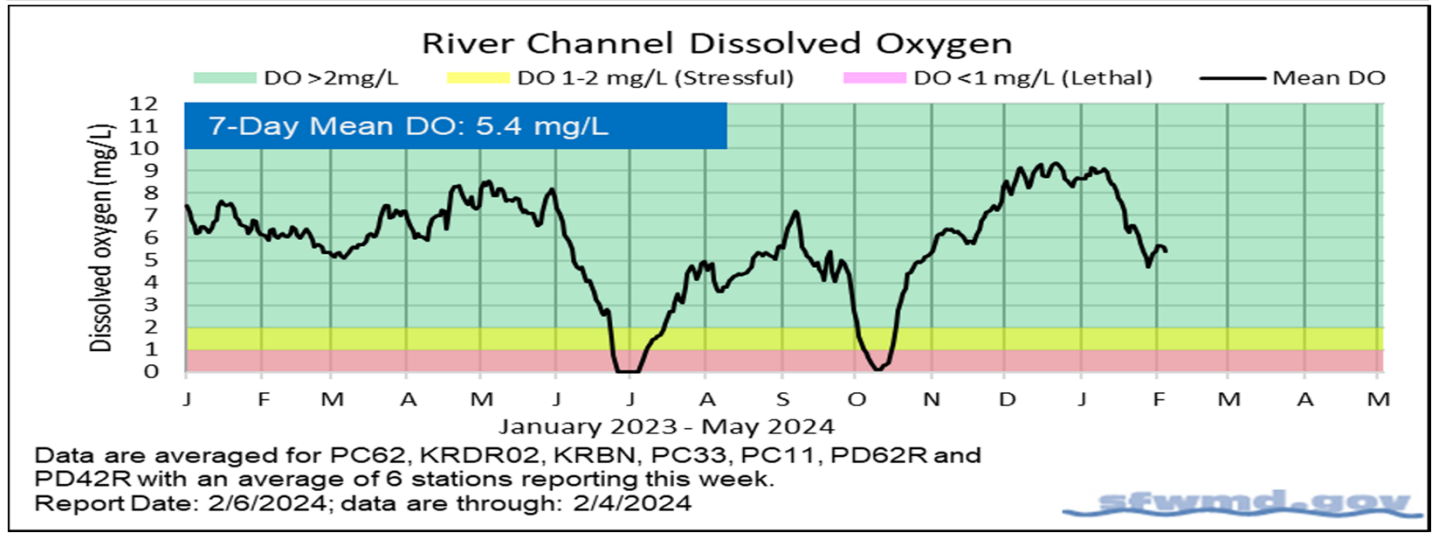




Presenter: John Mitnik

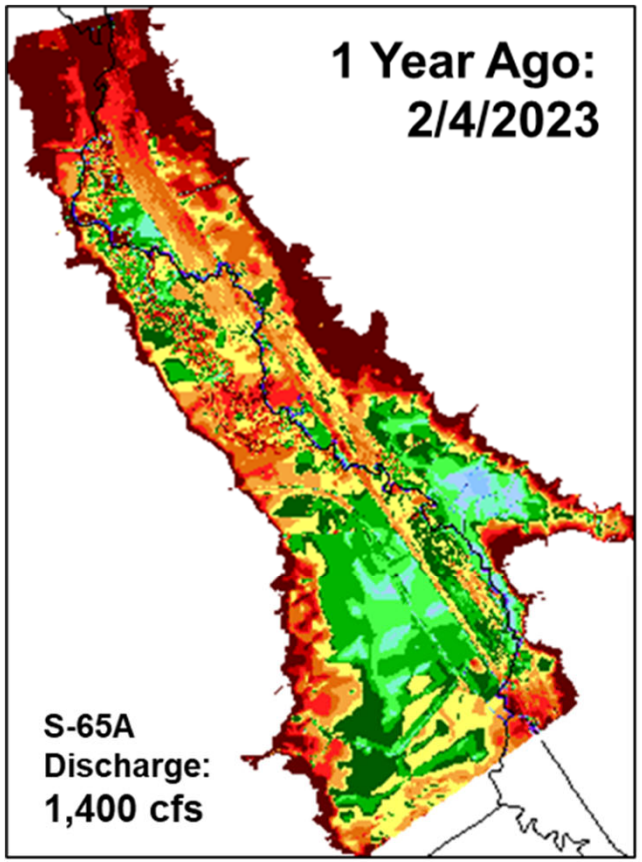
Kissimmee River Discharge and Dissolved Oxygen

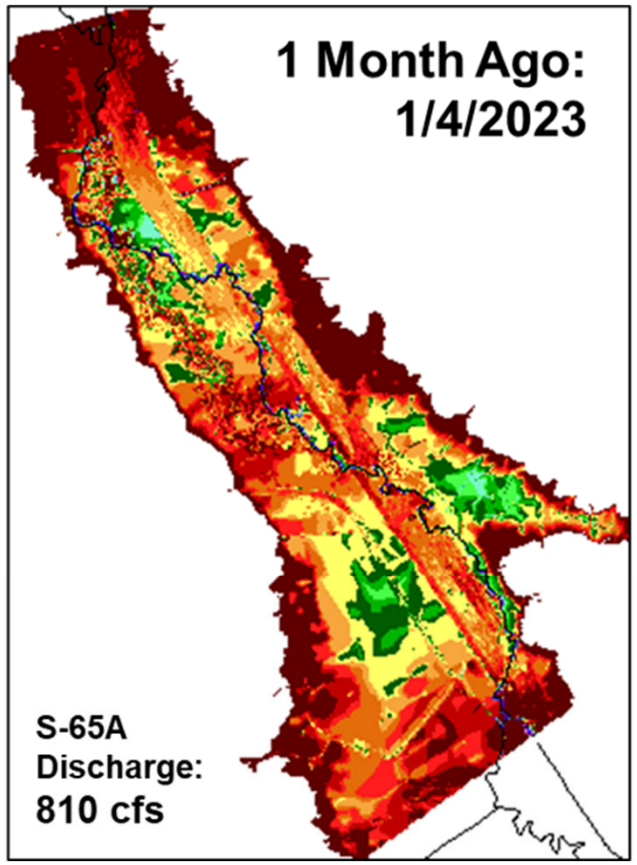


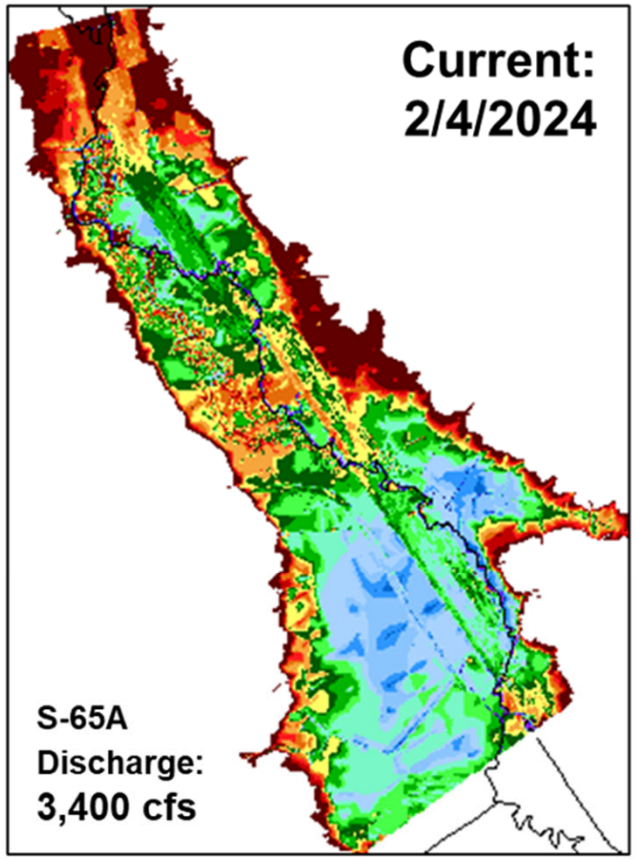


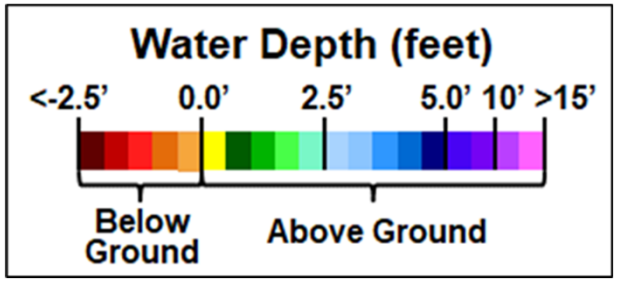
5 Presenter: Lawrence Glenn

Kissimmee River Floodplain Inundation

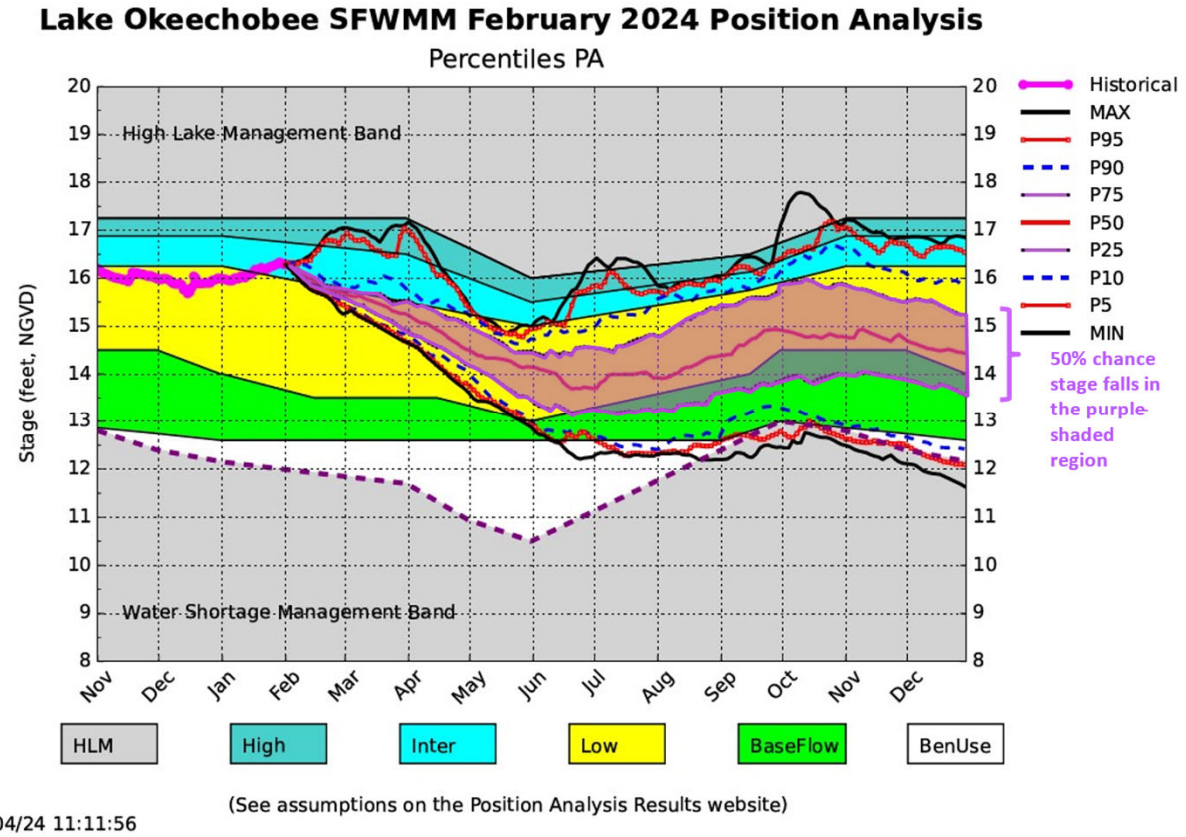






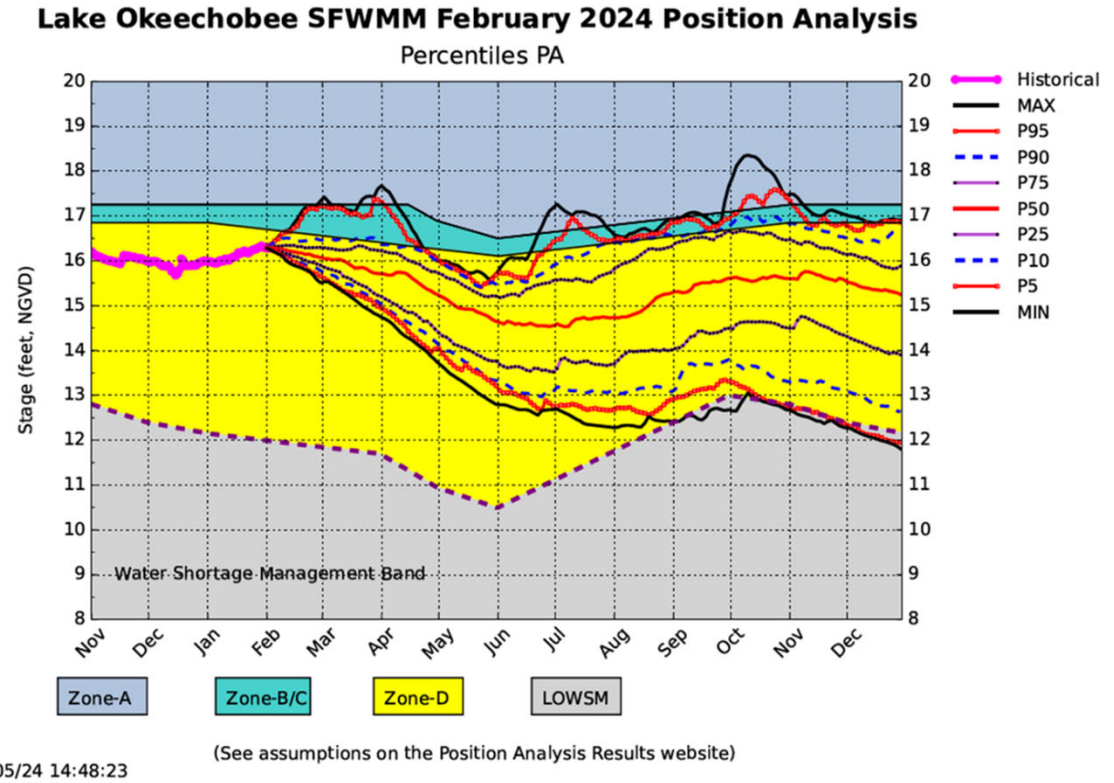


 Presenter: Lawrence Glenn



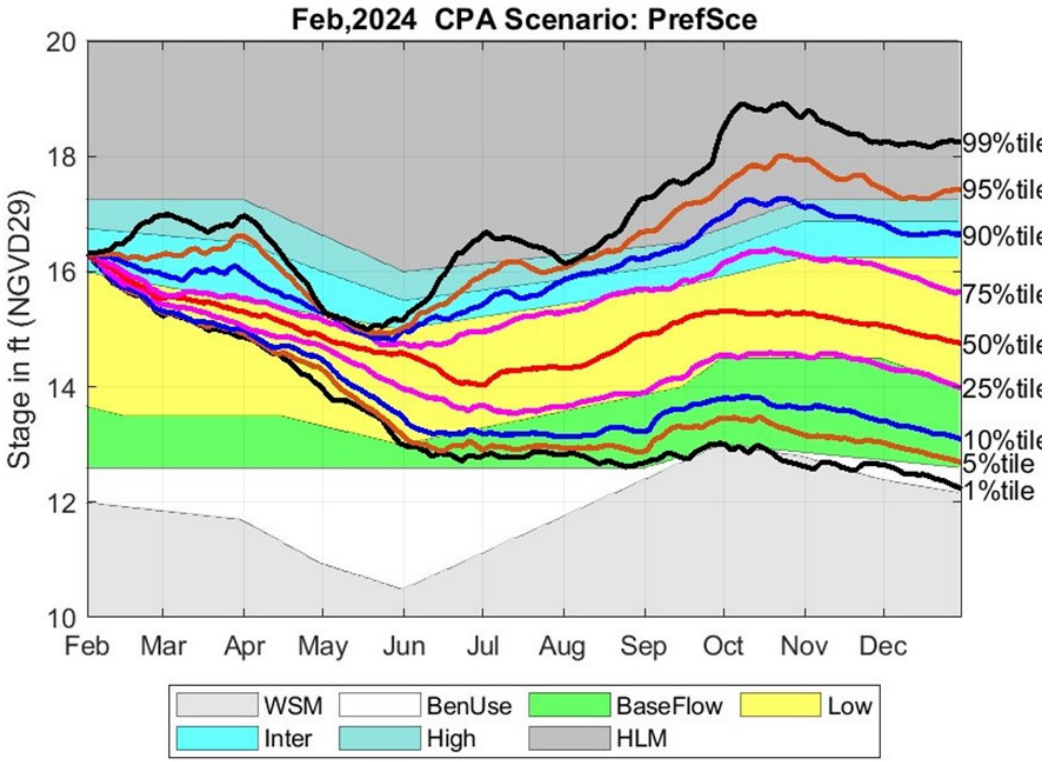
Current Lake Okeechobee Regulation Schedule (LORS2008)

Provisional Tool Under Development for the Proposed July 2023 Water Control Plan (LOSOM PA25)

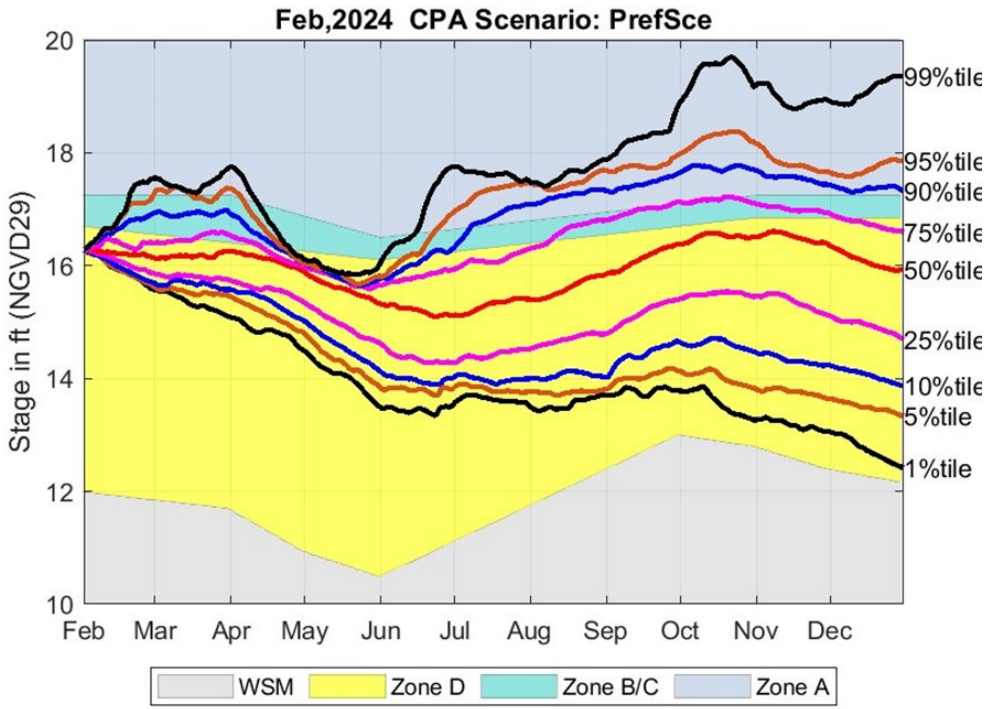


Presenter: John Mitnik

Conditional Position Analysis (CPA)



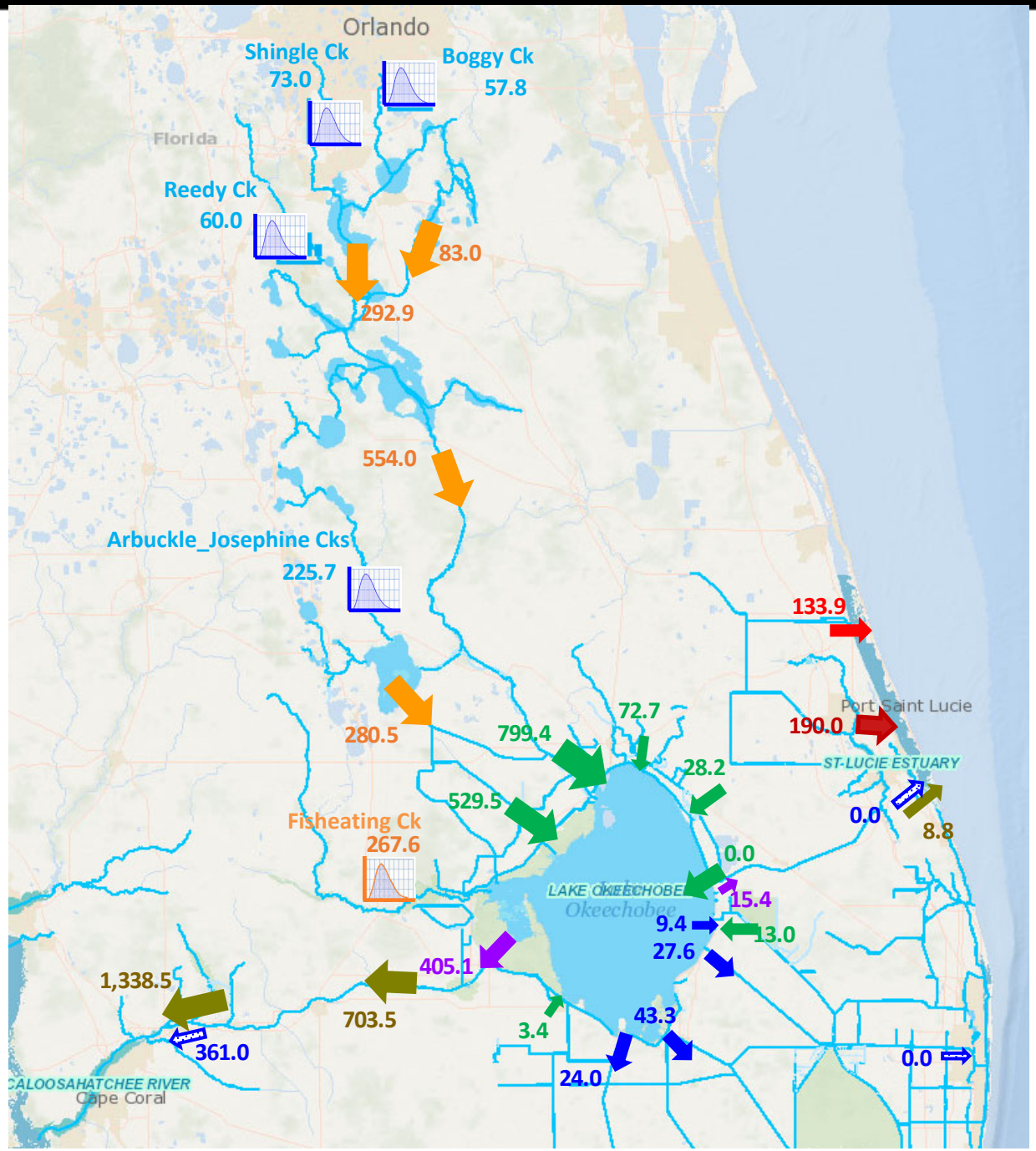
Current Lake Okeechobee Regulation Schedule (LORS2008)



Provisional Tool Under Development for the Proposed July 2023 Water Control Plan (LOSOM PA25)

- Dynamic Position Analysis (DPA) forecasts stages in the system based on current operational protocols and historical rainfall.
- Conditional Position Analysis (CPA) improves DPA predicted stages by taking into account the anticipated rainfall conditions.
- Conditional Position Analysis (CPA) is a stochastic technique that utilizes robust and well-established approaches, such as Monte Carlo simulation and NonLinear Programming, to correctly apply the rainfall to stage Transition Probability Matrix and recognize non-unique solutions.

Presenter: John Mitnik



SFWMD – Selected Release Volumes for the Period May 1, 2023 to February 6, 2024

(volumes in 1,000 acre-feet)

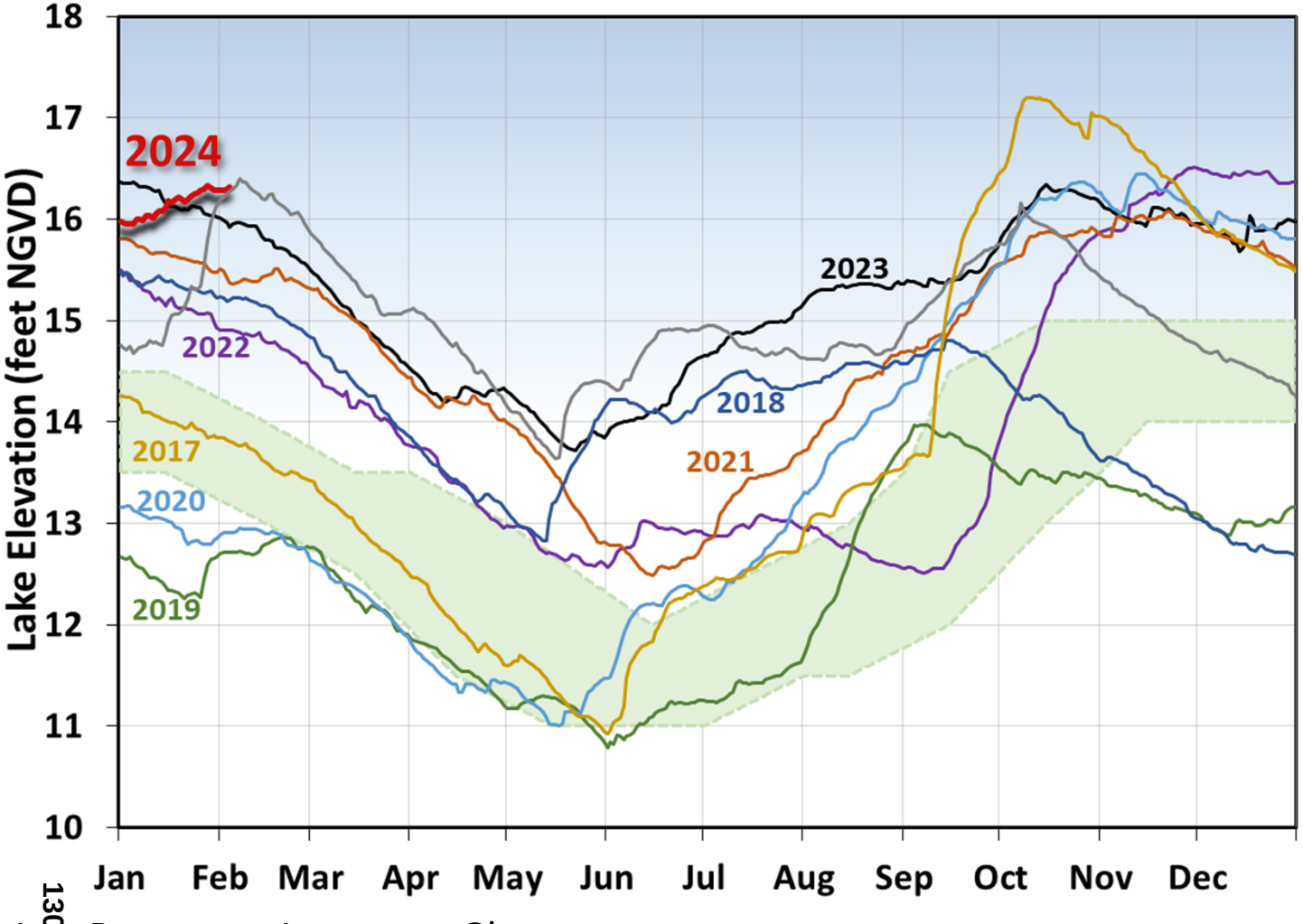
Symbol	Description	Volume (1,000 acre- feet)	
		WYR2024	Last Month
	Upper Kissimmee to Lower Kissimmee	554.0	163.7
	Inflows to Lake Okeechobee (including Fisheating Creek)	1,713.9	221.1
	Lake Releases and Basin Runoff	1,347.3	136.0
	Lake Releases East and West	420.5	41.3
	Lake Flood Control to Estuaries	361.0	42.7
	Total Lake Releases South	104.2	7.0
	Releases to Indian River Lagoon	133.9	14.3
	Upper East Coast discharges to St. Lucie Estuary	190.0	26.8
	Uncontrolled flows - Creeks (does not include Fisheating Creek)	416.5	45.1

1,000 acre-feet = 325.9 Million Gallons

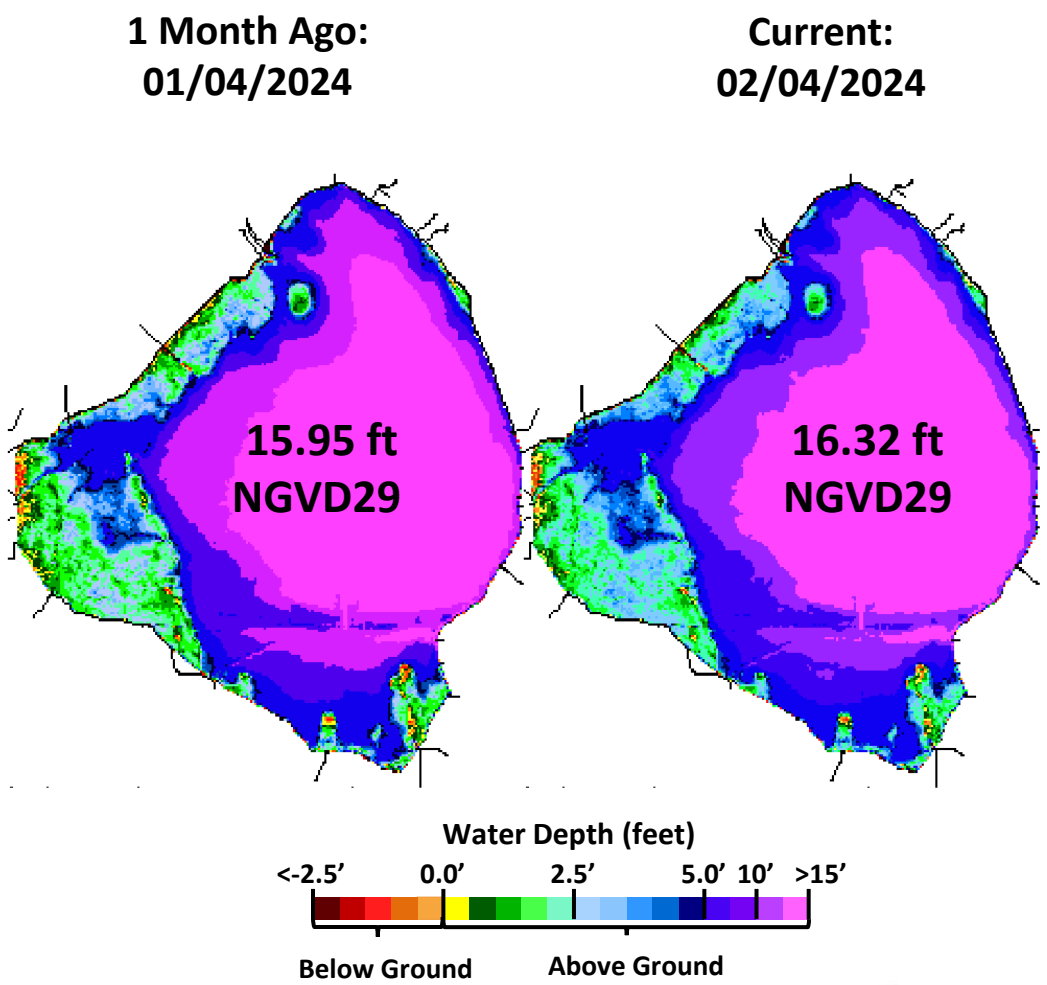
Presenter: John Mitnik

Ecological Envelope and Water Depths

Lake Okeechobee Stage vs Recovery Envelope



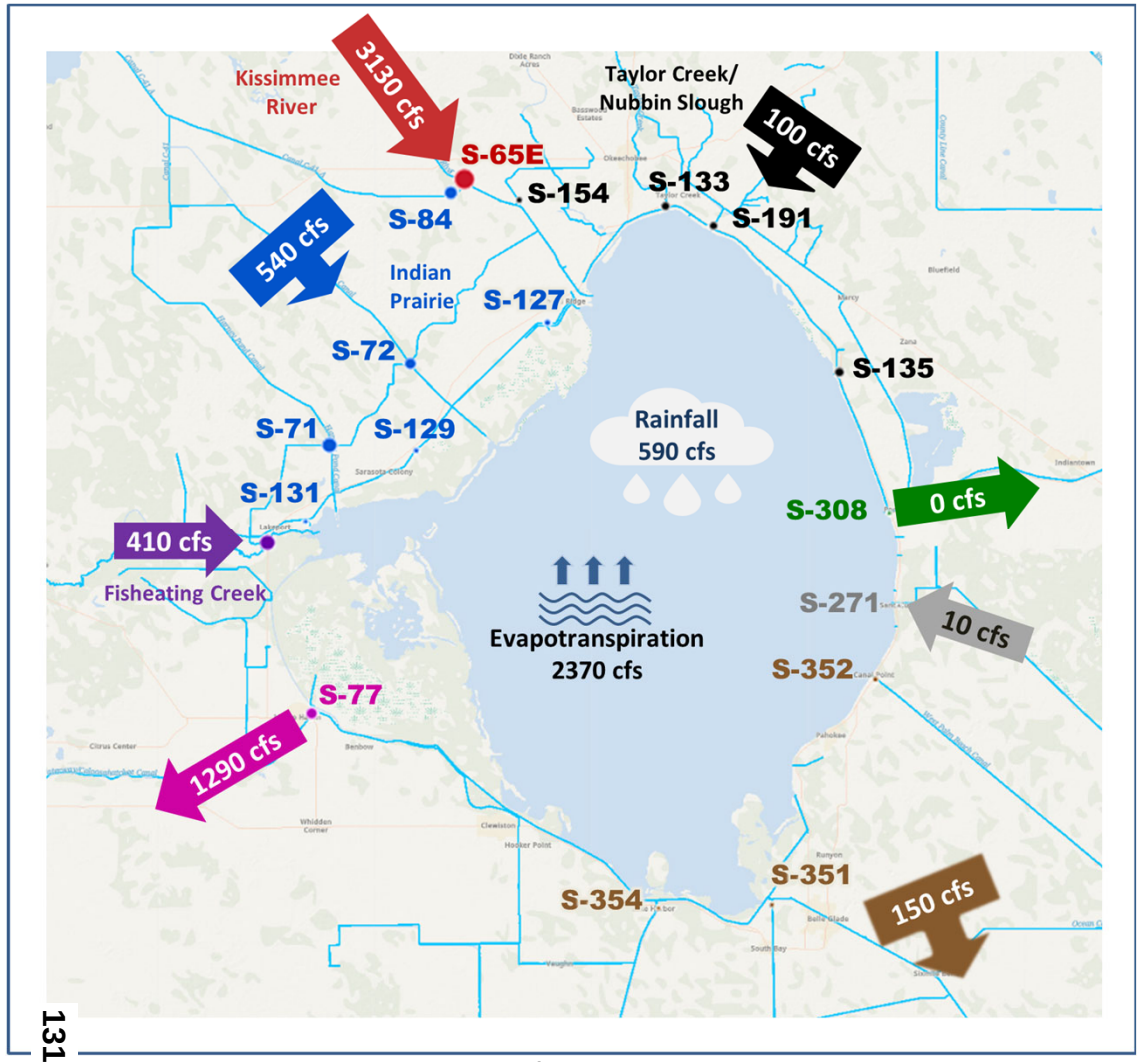
Changes in Water Depth



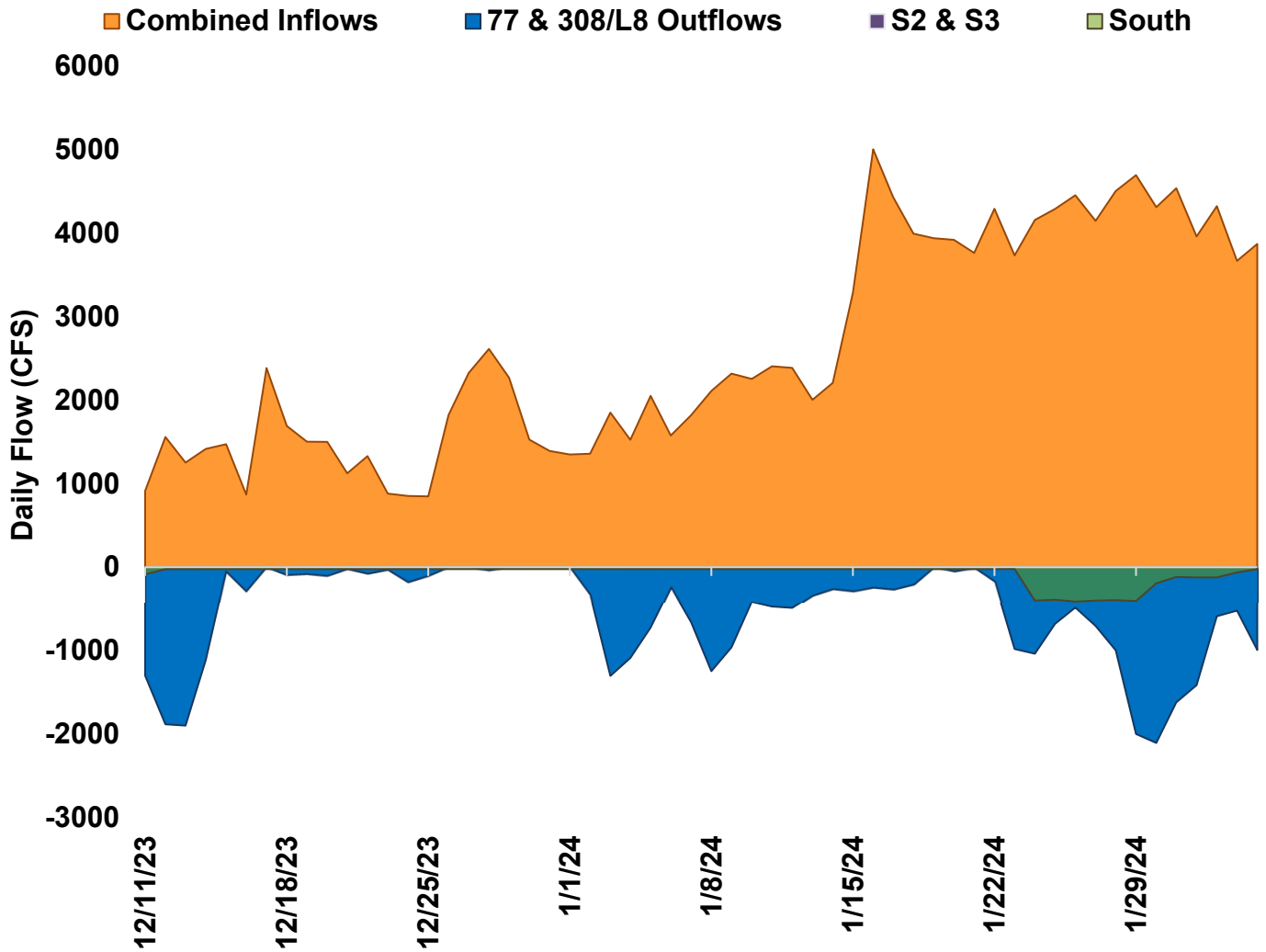
Presenter: Lawrence Glenn

Lake Okeechobee Hydrology
(*Provisional Data)

Jan 29 – Feb 04, 2024 Inflows and Outflows

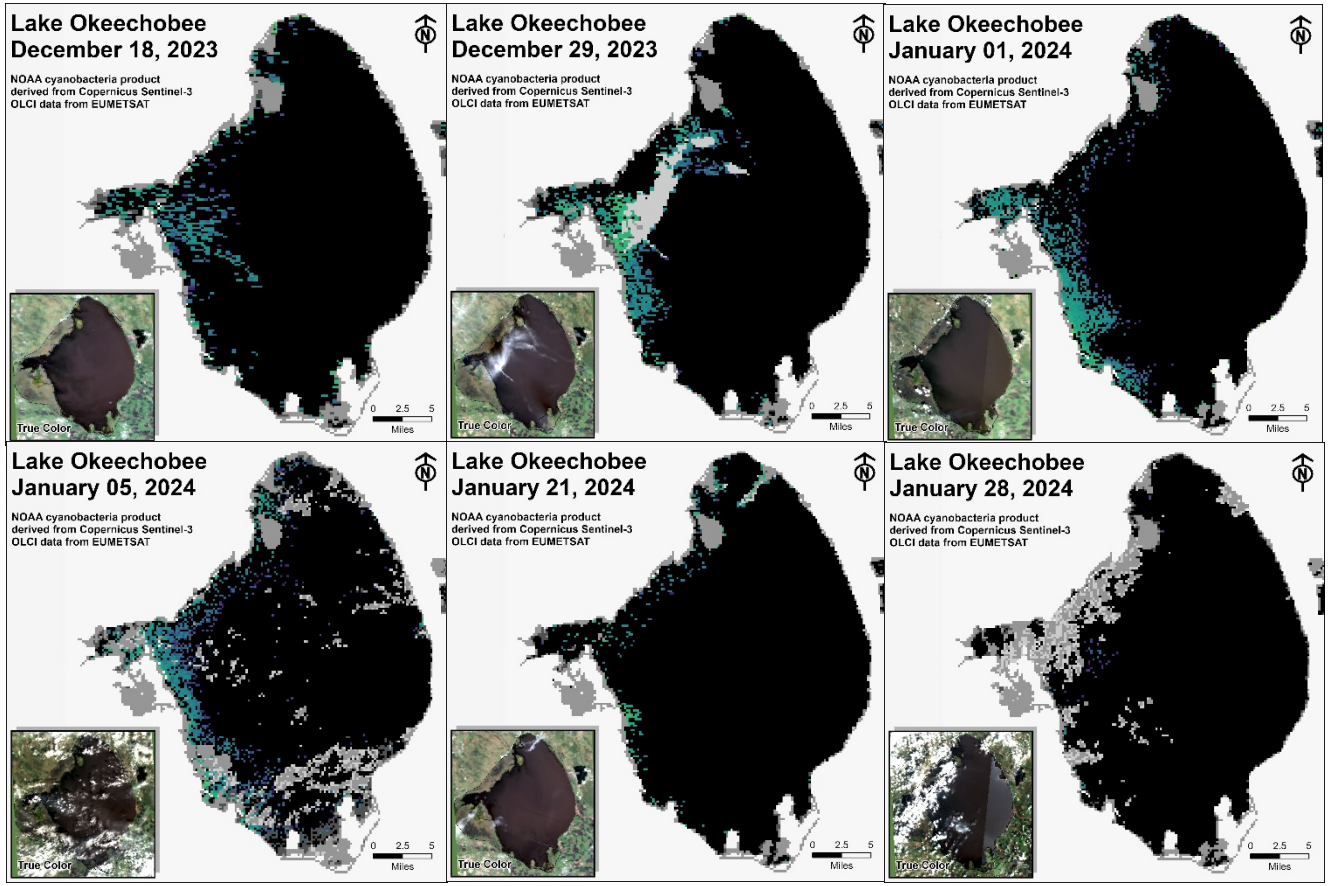


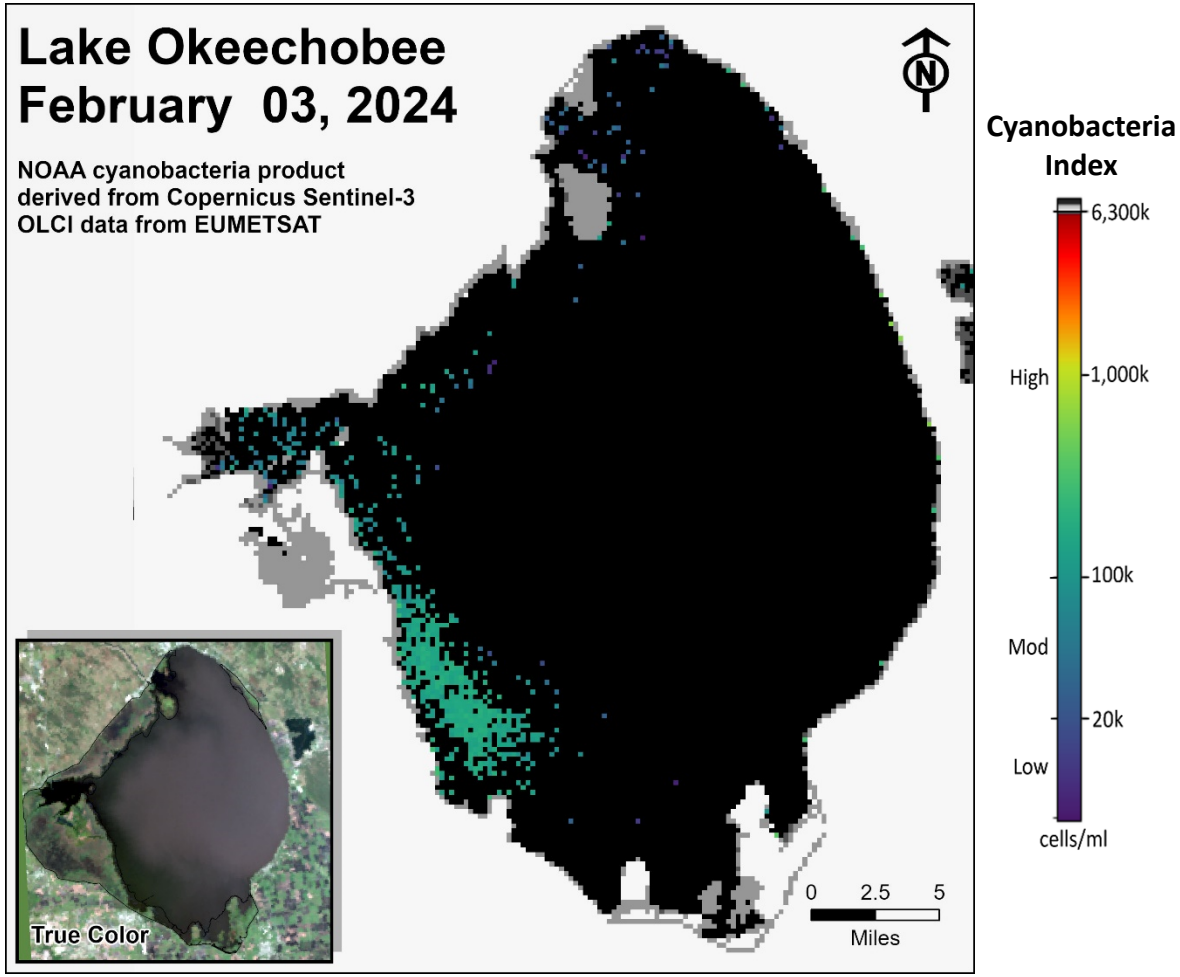
Prior 8 Weeks Inflows and Outflows



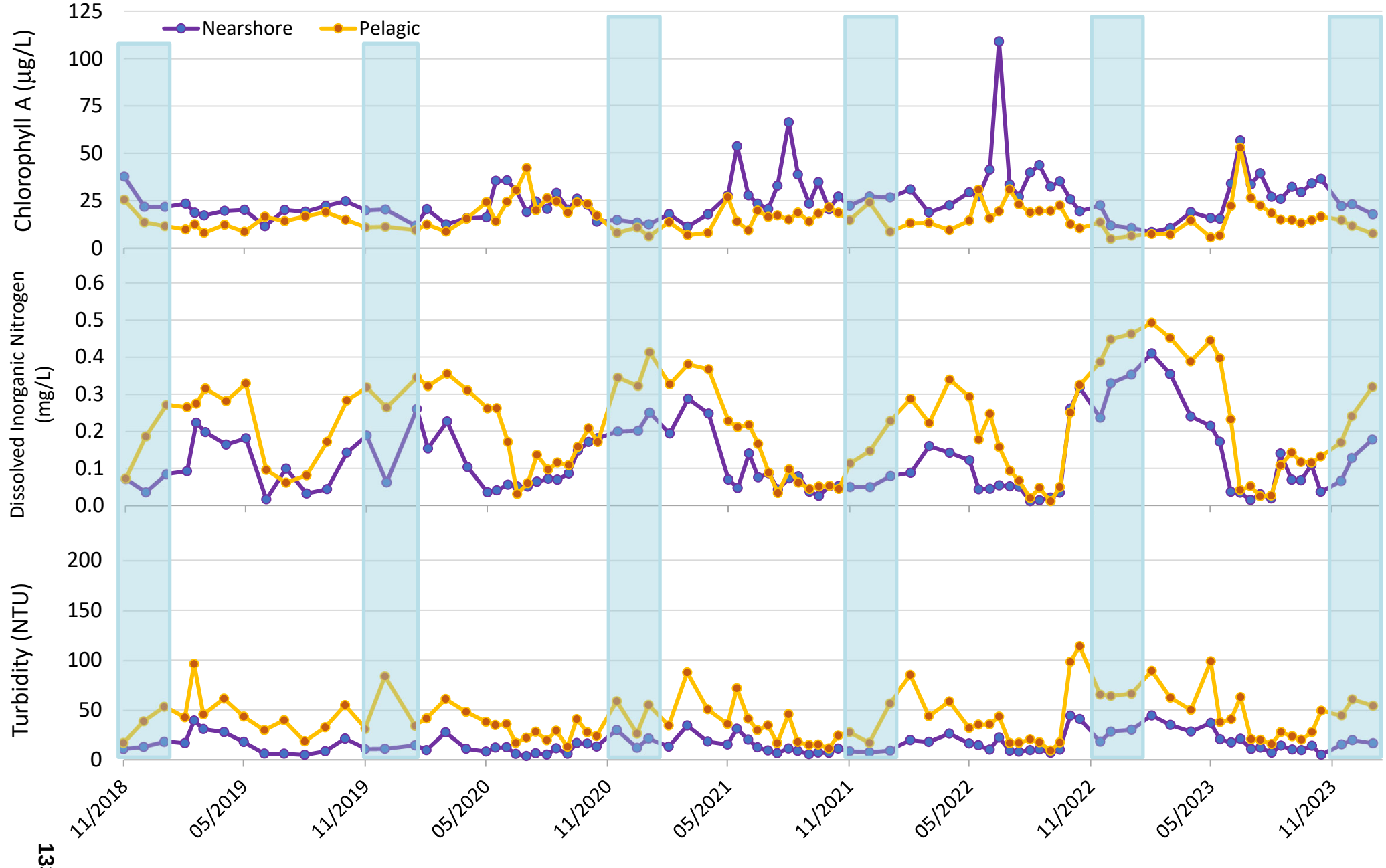
Lake Okeechobee

Cyanobacteria Bloom Distribution and Intensity





NOAA cyanobacteria product derived from Copernicus Sentinel-3 OLCI data from EUMETSAT



Lake Okeechobee Water Quality Time Series 2019-Present

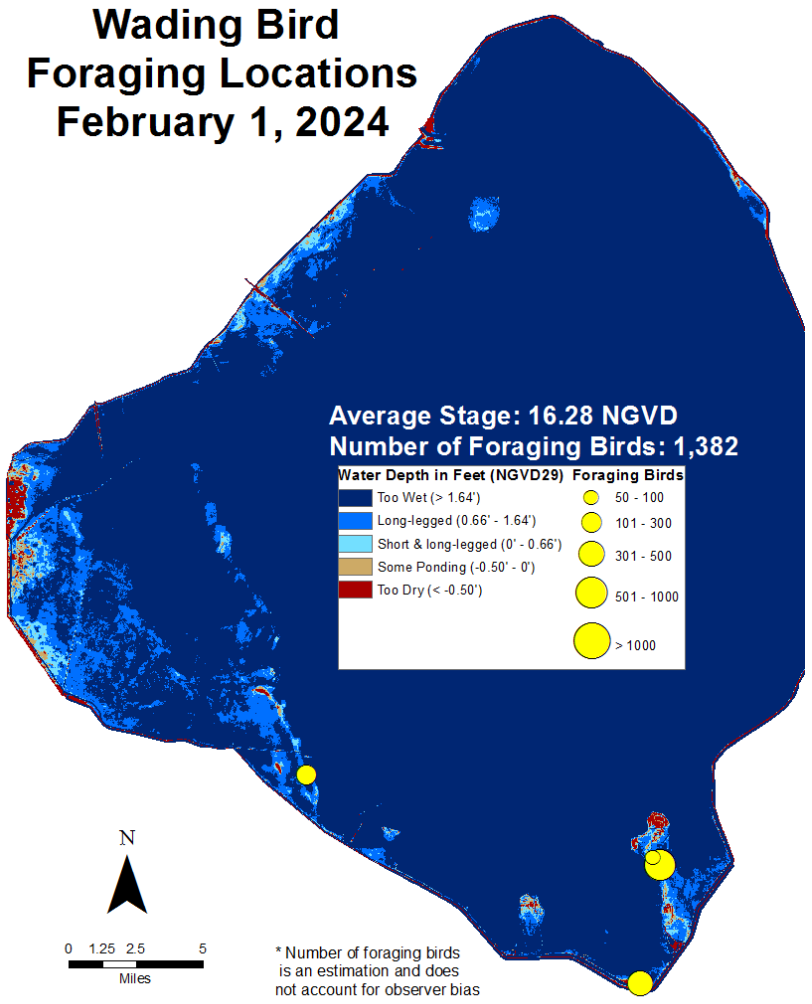
(Provisional Data)

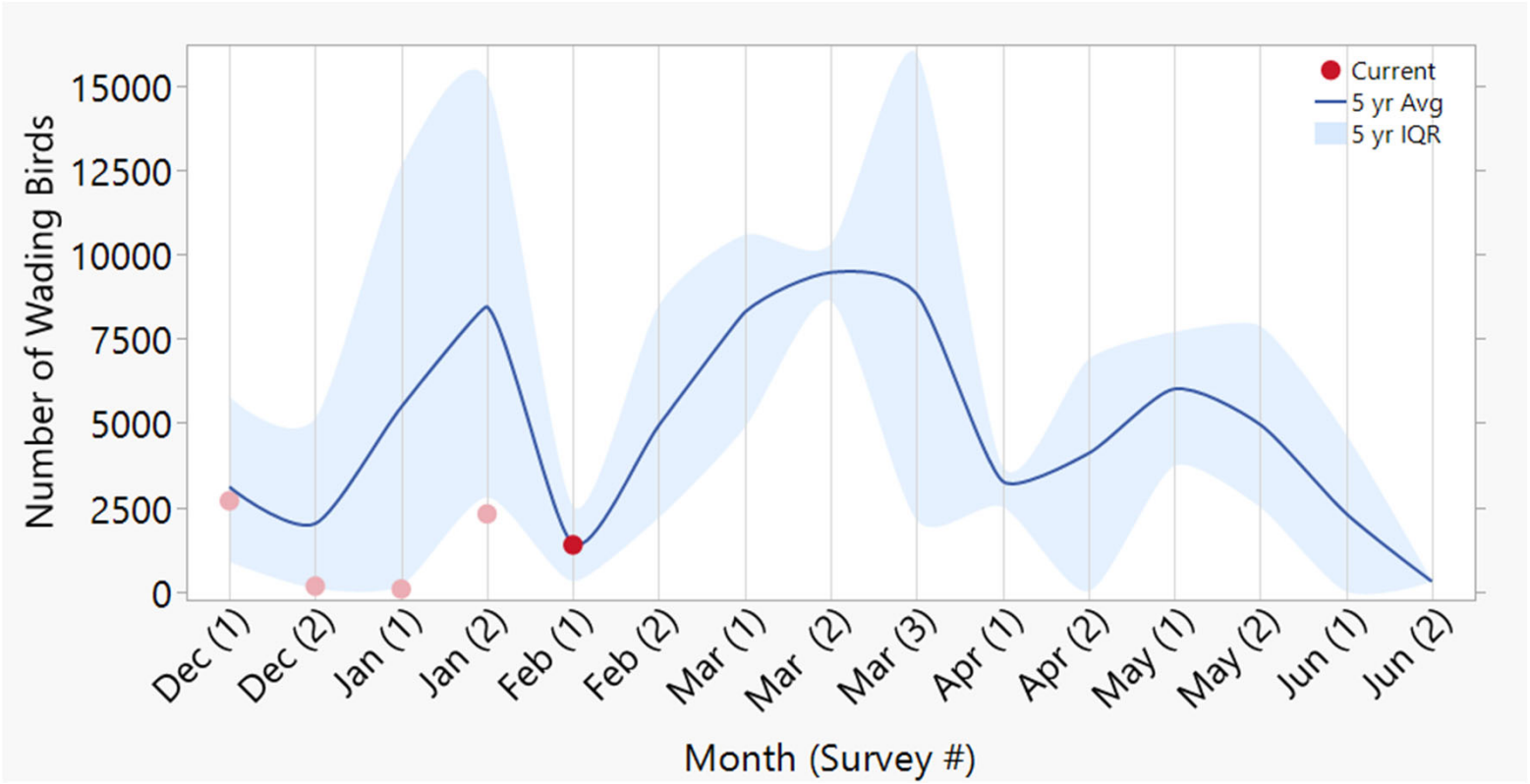
Current time period (Nov - Jan)

Presenter: Lawrence Glenn

Lake Okeechobee

Foraging Wading Birds

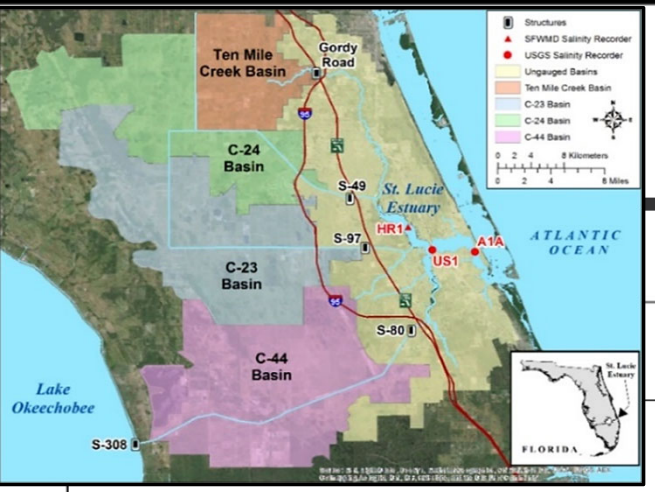




Presenter: Lawrence Glenn

Presenter: Lawrence Glenn

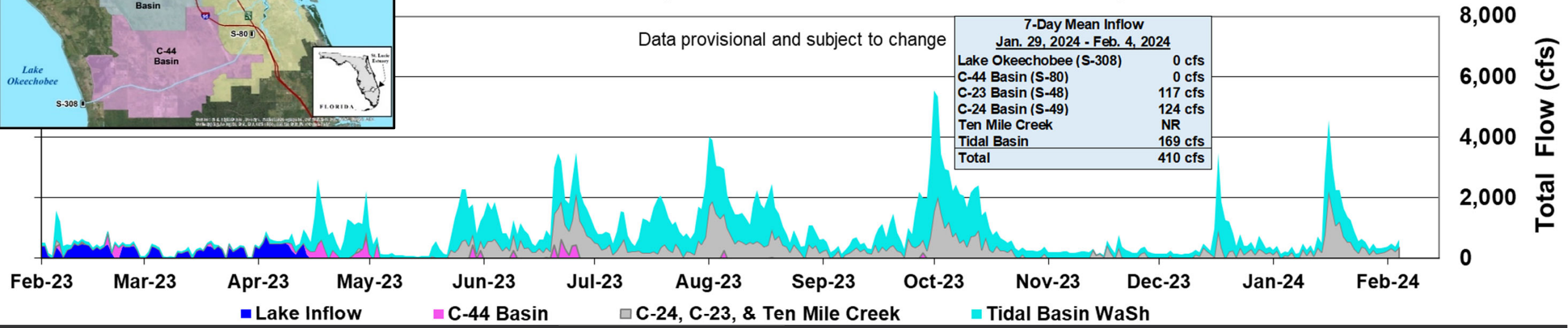
St. Lucie Inflows and Salinity Conditions

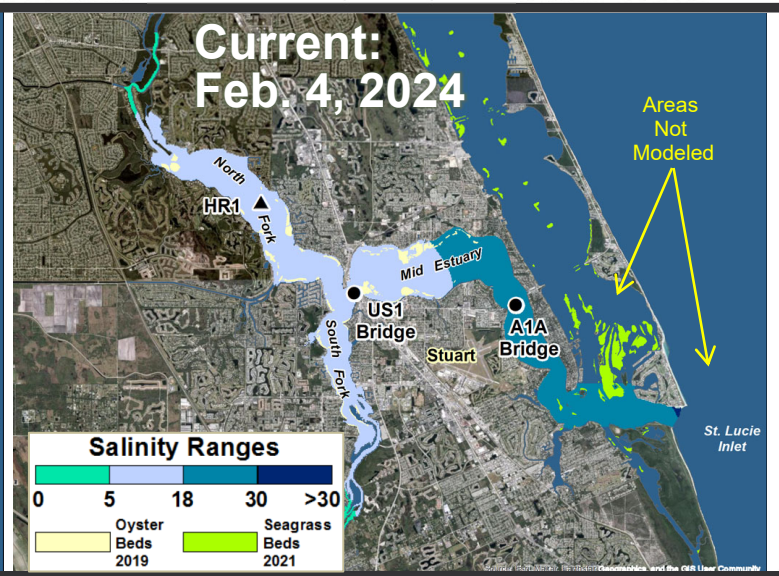


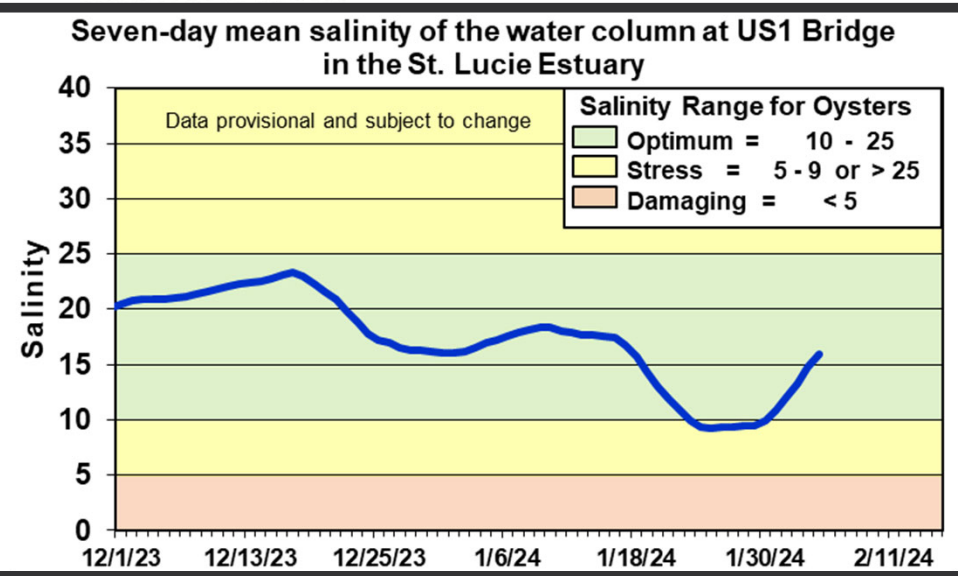
Total Daily Inflow into the St. Lucie Estuary

Data provisional and subject to change

7-Day Mean Inflow Jan. 29, 2024 - Feb. 4, 2024	
Lake Okeechobee (S-308)	0 cfs
C-44 Basin (S-80)	0 cfs
C-23 Basin (S-48)	117 cfs
C-24 Basin (S-49)	124 cfs
Ten Mile Creek	NR
Tidal Basin	169 cfs
Total	410 cfs







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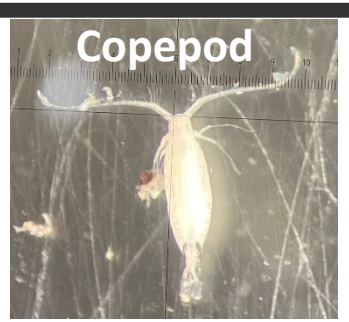
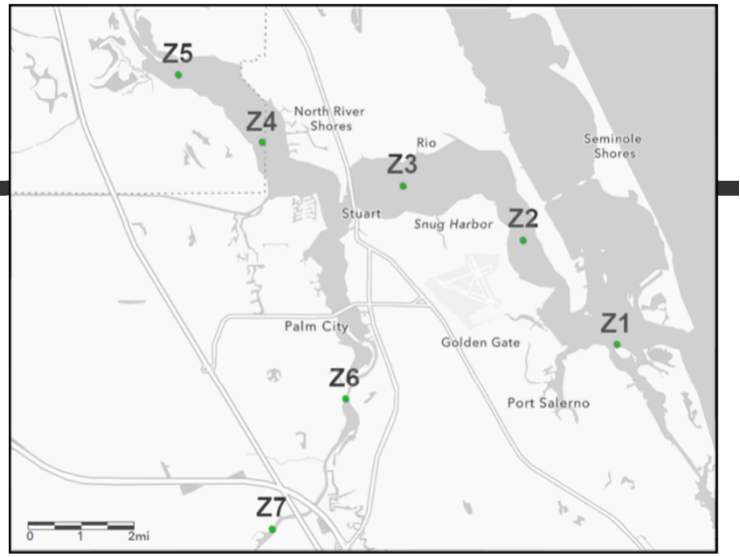
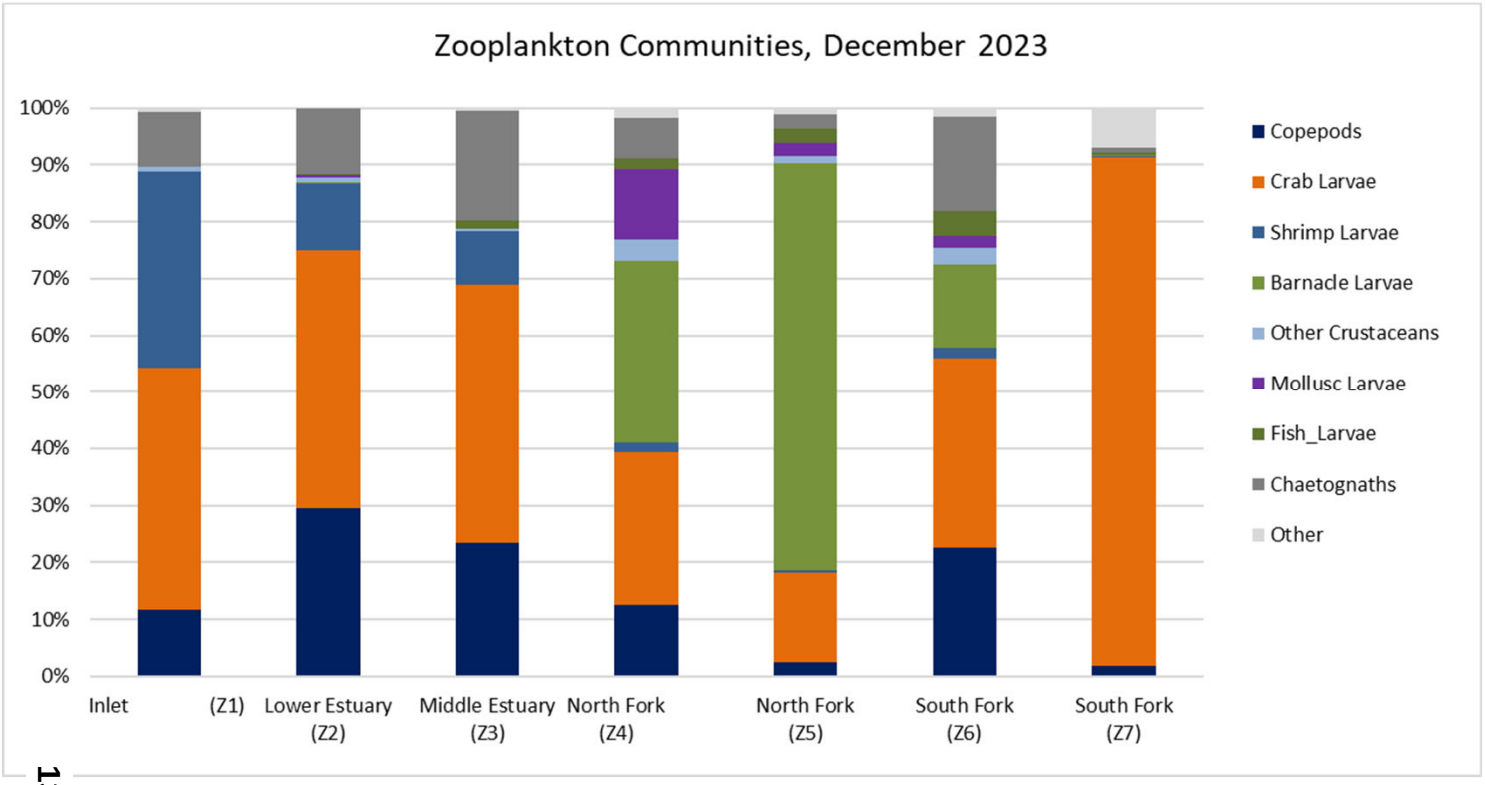
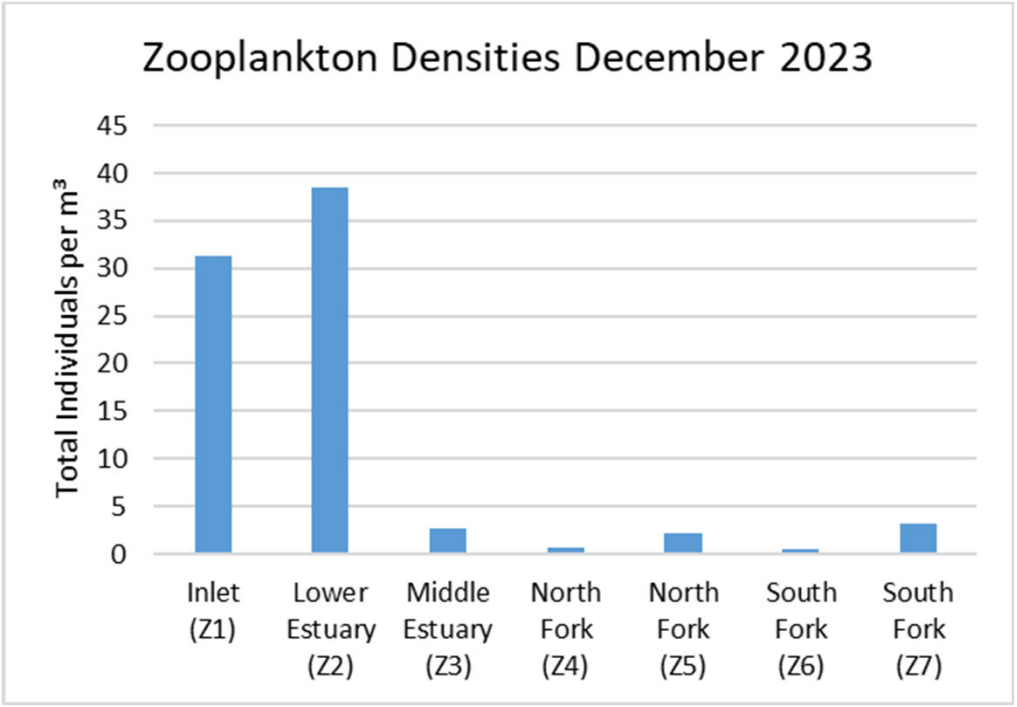
Presenter: Lawrence Glenn

St. Lucie Estuary – Zooplankton Monitoring



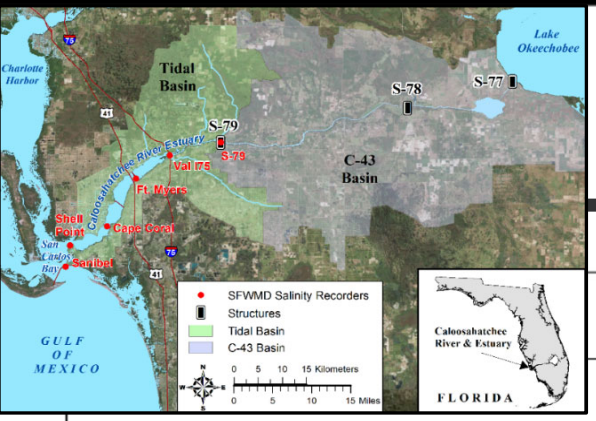






Presenter: Lawrence Glenn

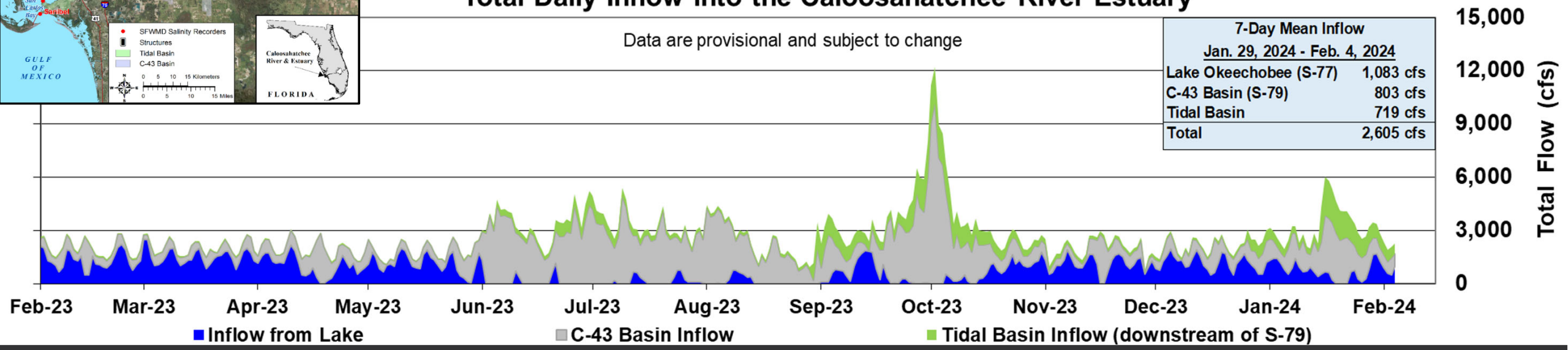
Caloosahatchee Inflows and Salinity Conditions

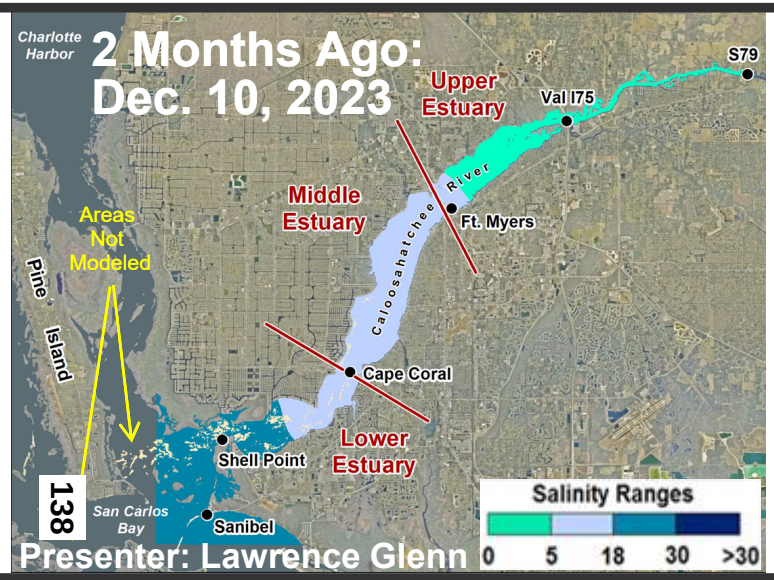


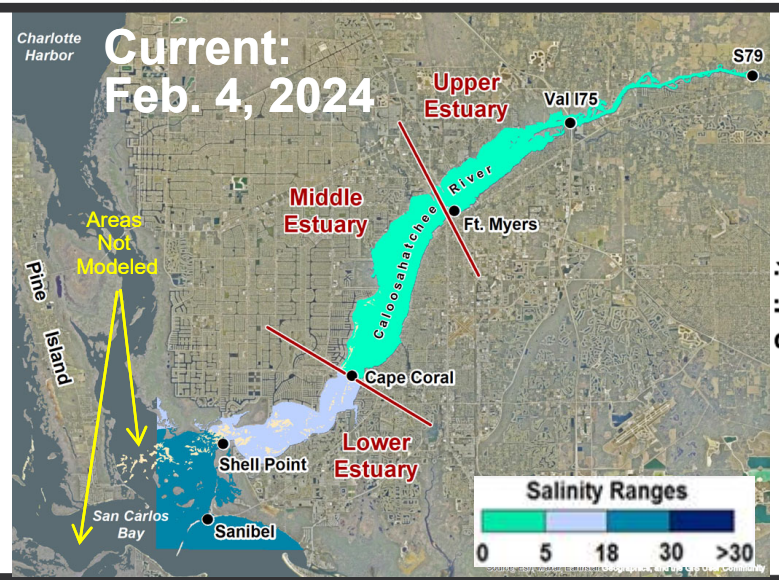
Total Daily Inflow into the Caloosahatchee River Estuary

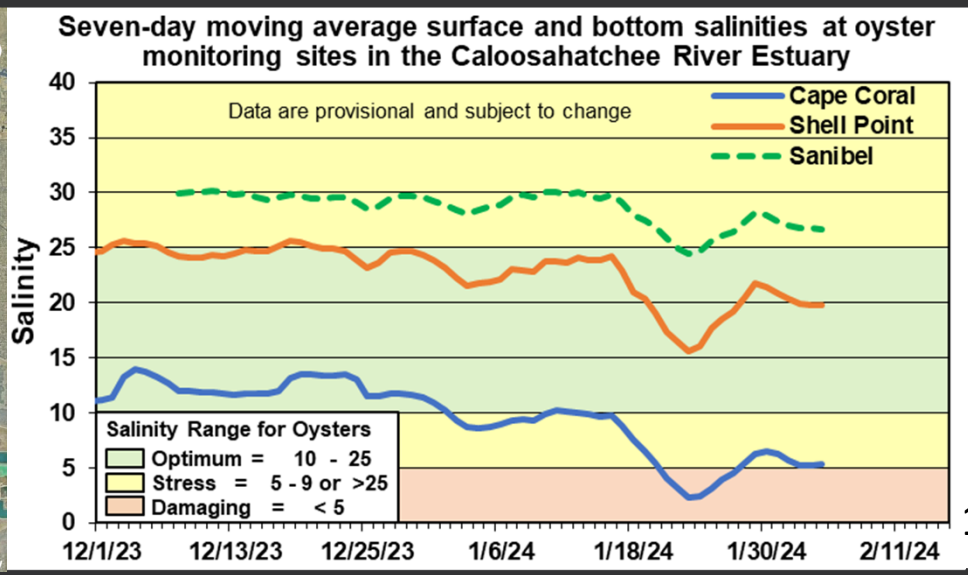
Data are provisional and subject to change

7-Day Mean Inflow Jan. 29, 2024 - Feb. 4, 2024	
Lake Okeechobee (S-77)	1,083 cfs
C-43 Basin (S-79)	803 cfs
Tidal Basin	719 cfs
Total	2,605 cfs

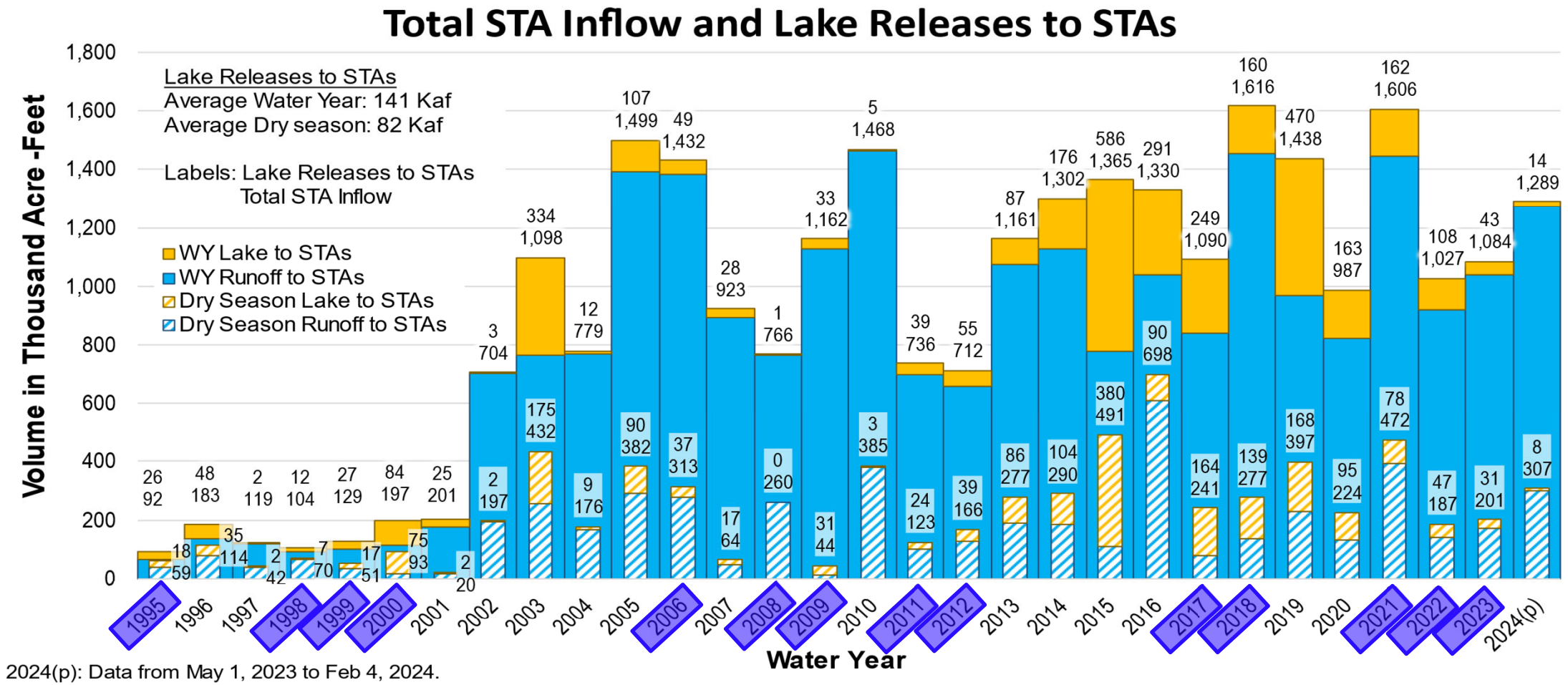








Presenter: Lawrence Glenn

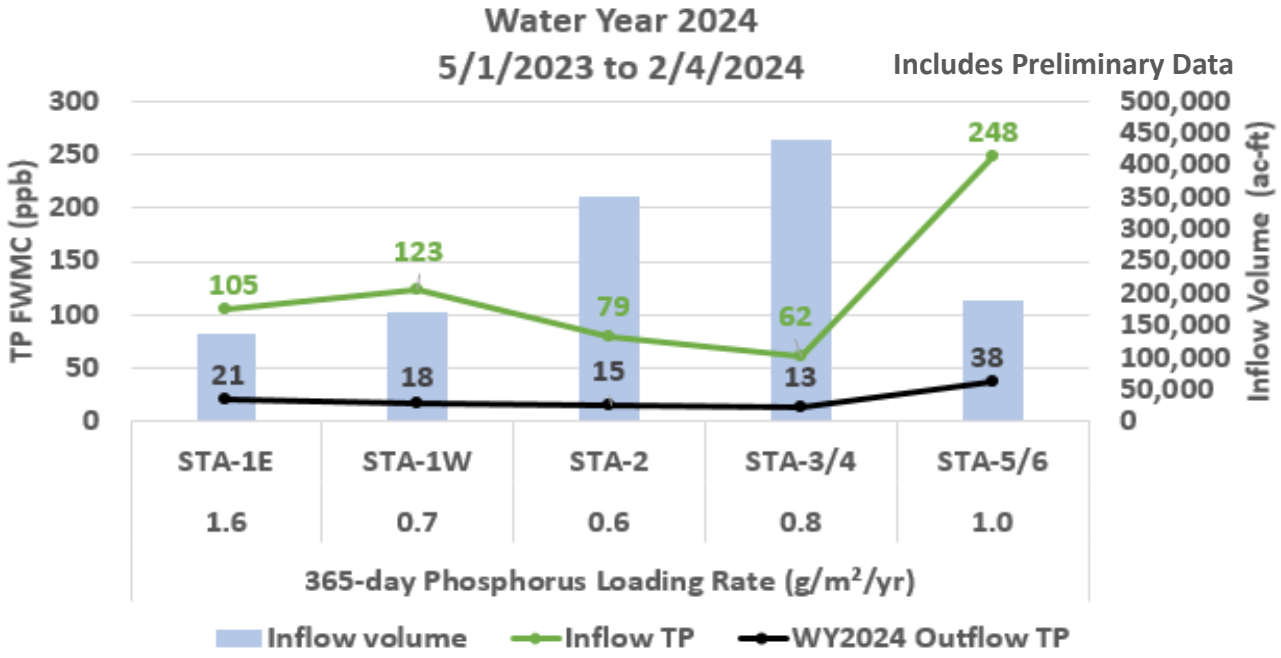


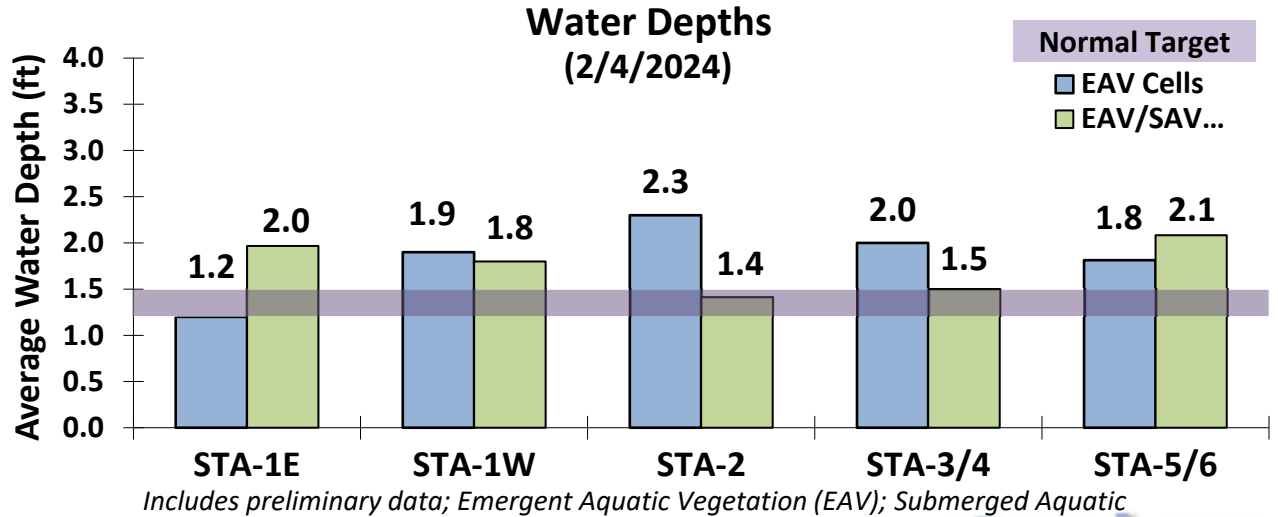
La Niña Water Years

Presenter: John Mitnik

Everglades Stormwater Treatment Areas - STAs

- STAs treated basin runoff and Lake Okeechobee releases in January
  - Total WY2024 inflows to STAs (5/1/2023 to 2/4/2024): ~1,289,000 ac-ft
  - Lake Okeechobee releases to FEBs/STAs in WY2024: ~14,100 ac-ft
- Extensive vegetation management activities underway to address stressed and highly stressed vegetation in EAV cells
- Most treatment cells are at or above target water depth

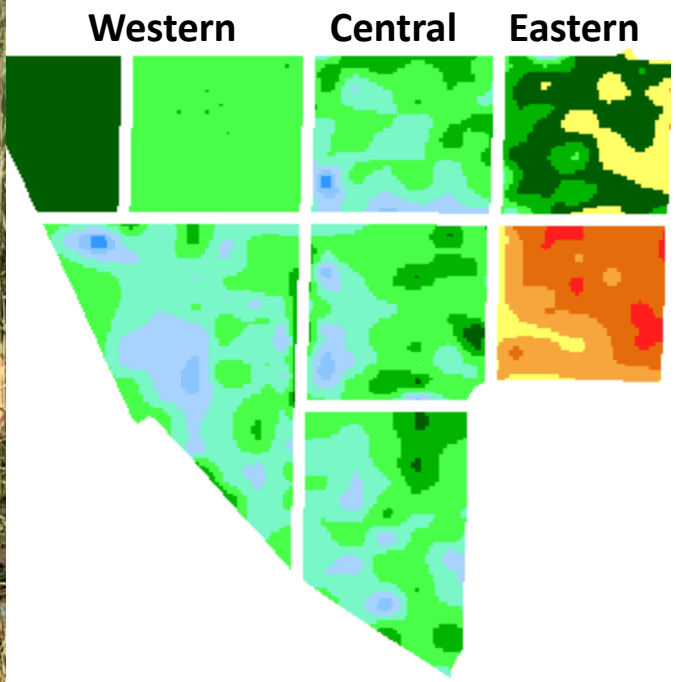




Includes preliminary data; Emergent Aquatic Vegetation (EAV); Submerged Aquatic

Presenter: Lawrence Glenn

Stormwater Treatment Areas Water Depths

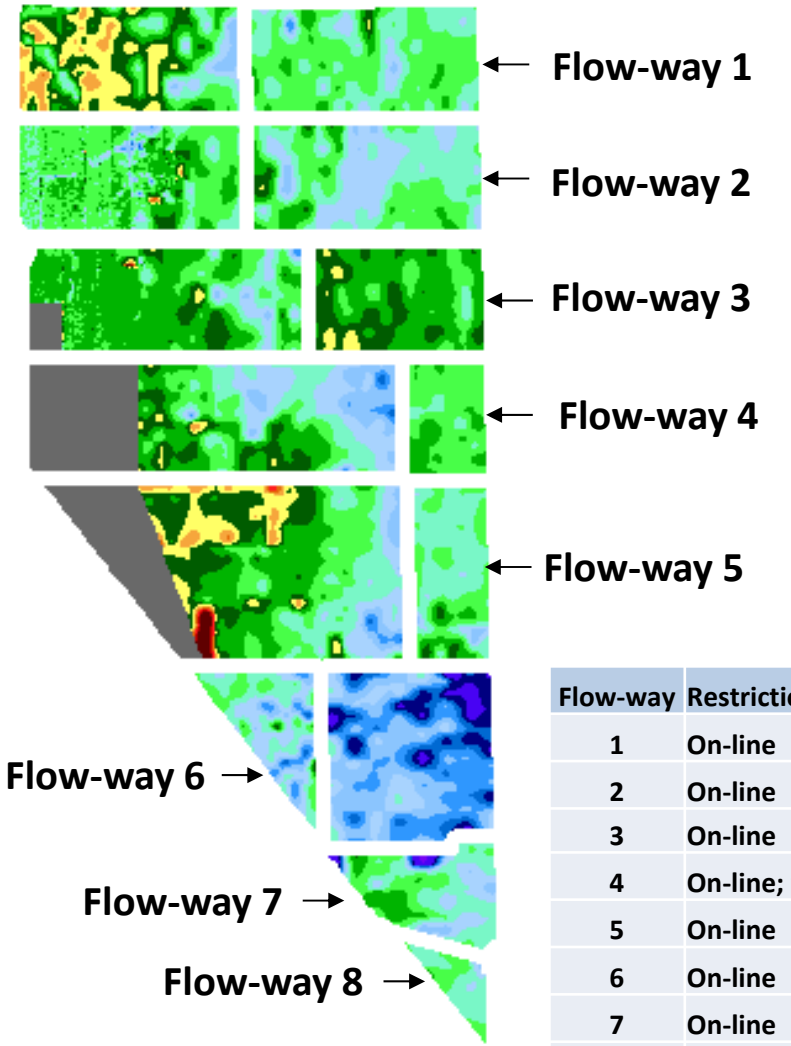


Restrictions	Back on-line
On-line; post-construction grow in	
On-line	
Off-line; Cell 2 erosion repair	Fall 2024

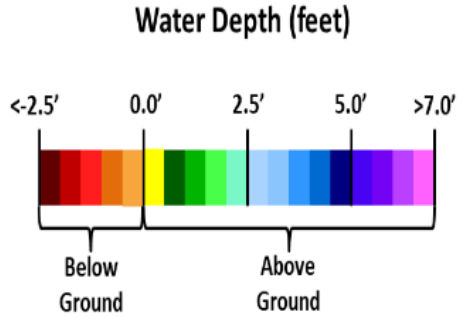
STA-1E

Presenter: Lawrence Glenn

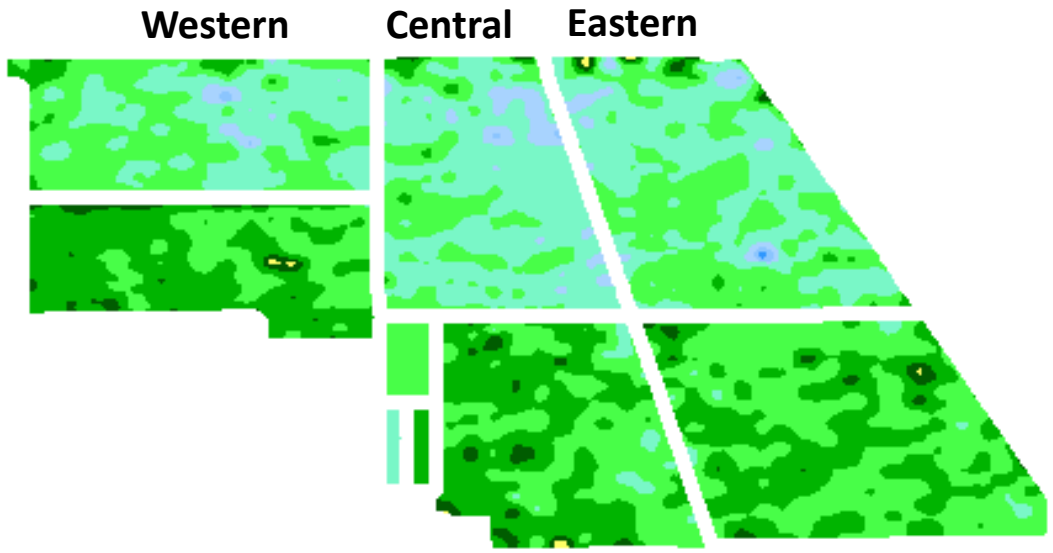
Stormwater Treatment Areas Water Depths



STA-5/6



Flow-way	Restrictions
1	On-line
2	On-line
3	On-line
4	On-line; vegetation management
5	On-line
6	On-line
7	On-line
8	On-line



Flow-way	Restrictions
Western	On-line
Central	On-line
Eastern	On-line; post-drawdown vegetation grow-in

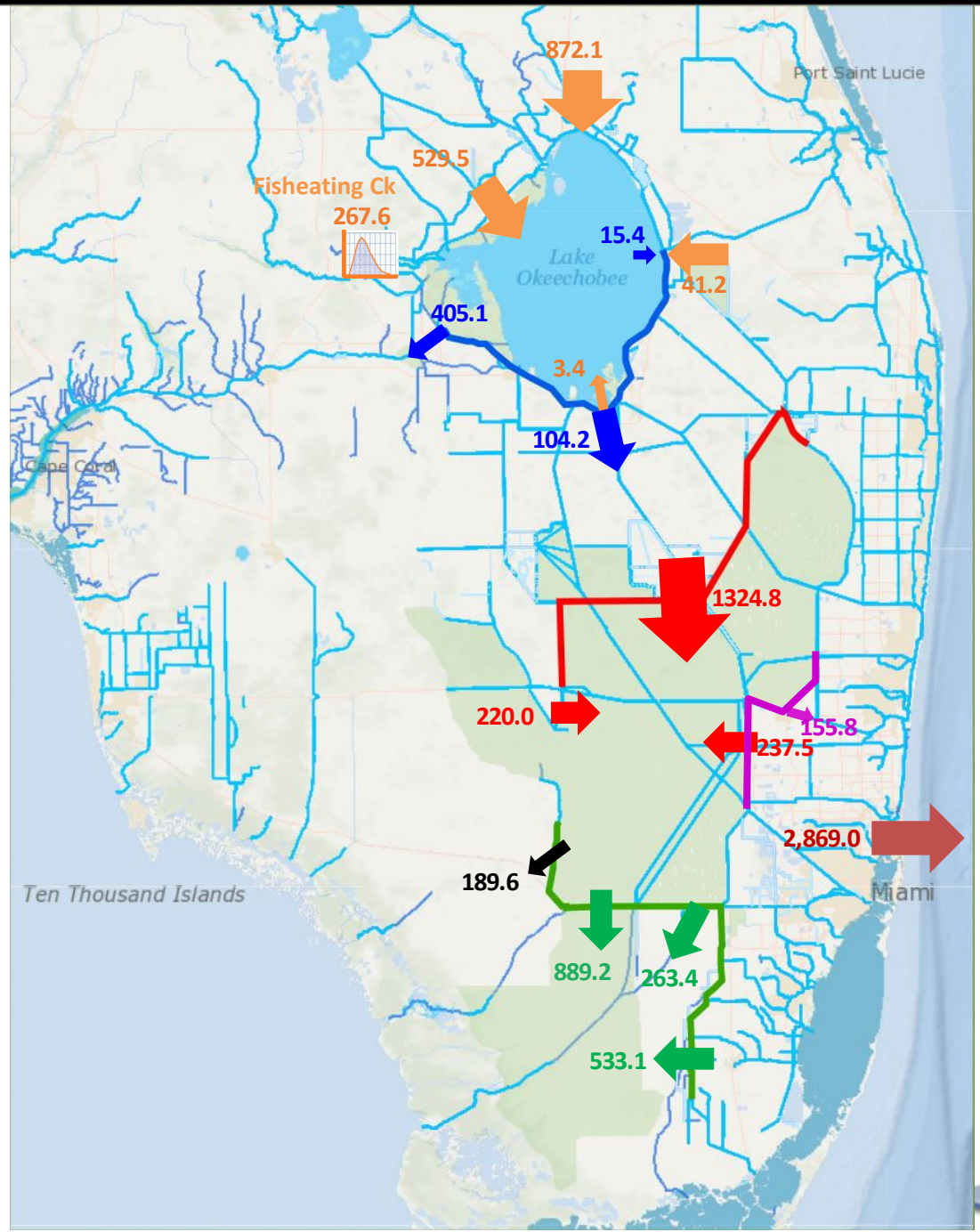
STA-3/4

Presenter: Lawrence Glenn

SFWMD –Volumes Flowing Down the System for the Period May 1, 2023 to February 6, 2024
(volumes in 1,000 acre-feet)

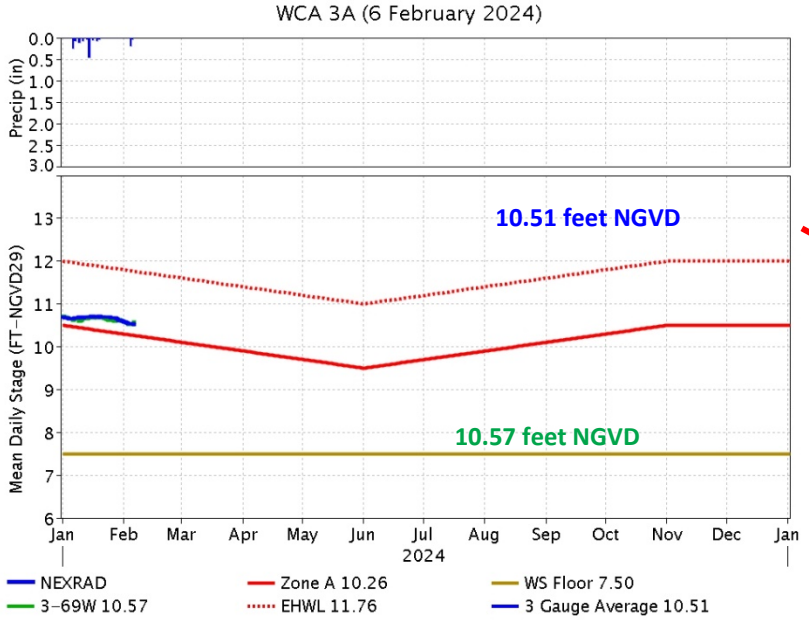
Symbol	Description	Volume (1,000 acre- feet)	
		WYR 2023	Last Month
→	Lake Okeechobee Inflows	1713.9	221.1
→	Lake Okeechobee Outflows	524.7	48.3
→	WCAs Inflows	1782.4	141.2
→	ENP / Detention Cell Inflows	1685.7	154.3
→	WCAs to East	155.8	72.2
→	Flows to Intracoastal	2869.0	218.6

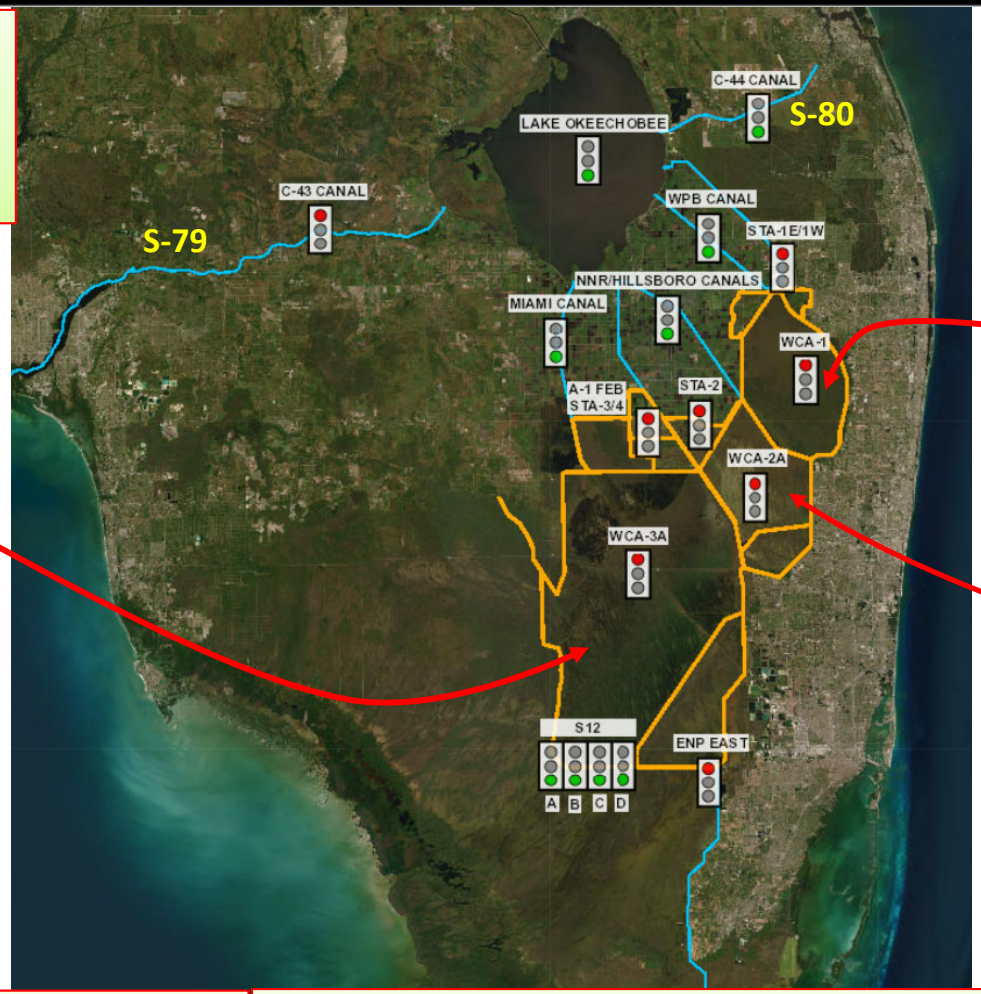
1,000 acre-feet = 325.9 Million Gallons

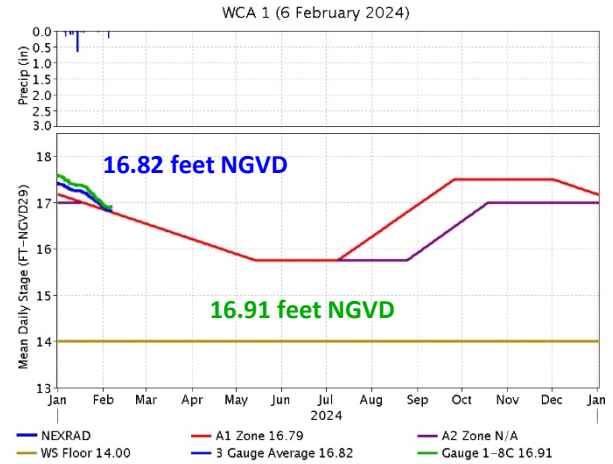


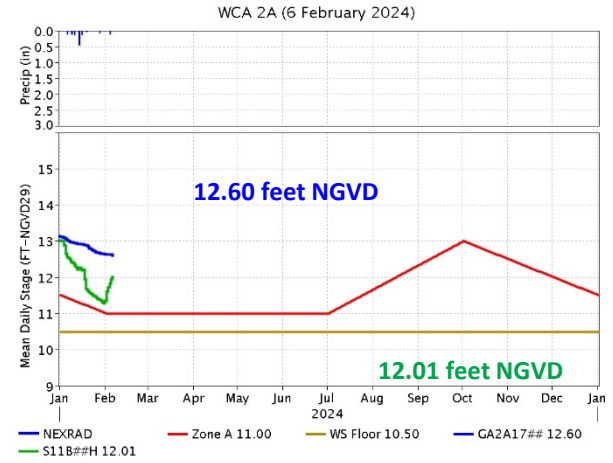
Presenter: John Mitnik

Lake Okeechobee stage is in the Intermediate Sub-band of the LORS-2008 Regulation schedule. LORS release guidance suggests up to Maximum Practicable to the WCAs if all downstream WCAs below max of schedule + 0.25 ft.; otherwise, no releases to WCAs. S-77 up to 4,000 cfs and S-80 up to 1,800 cfs.







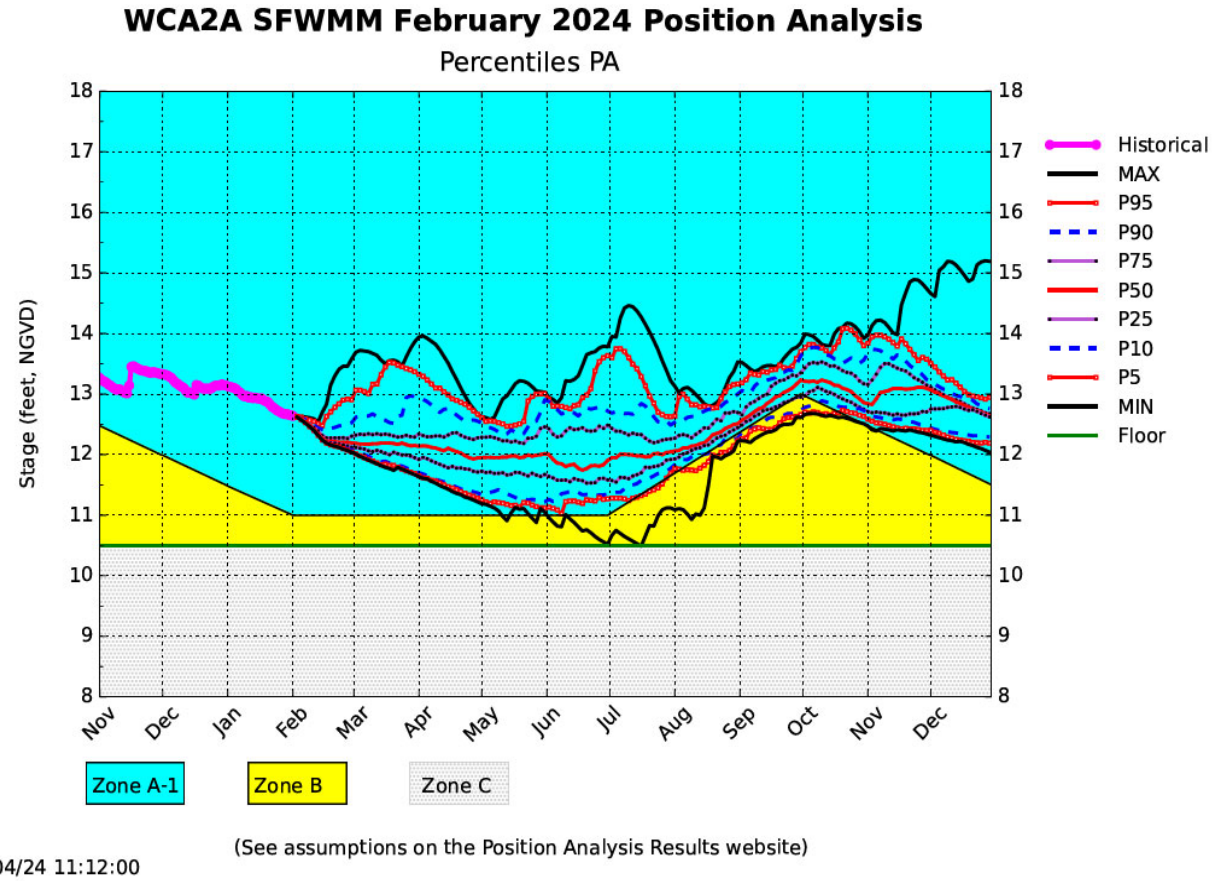


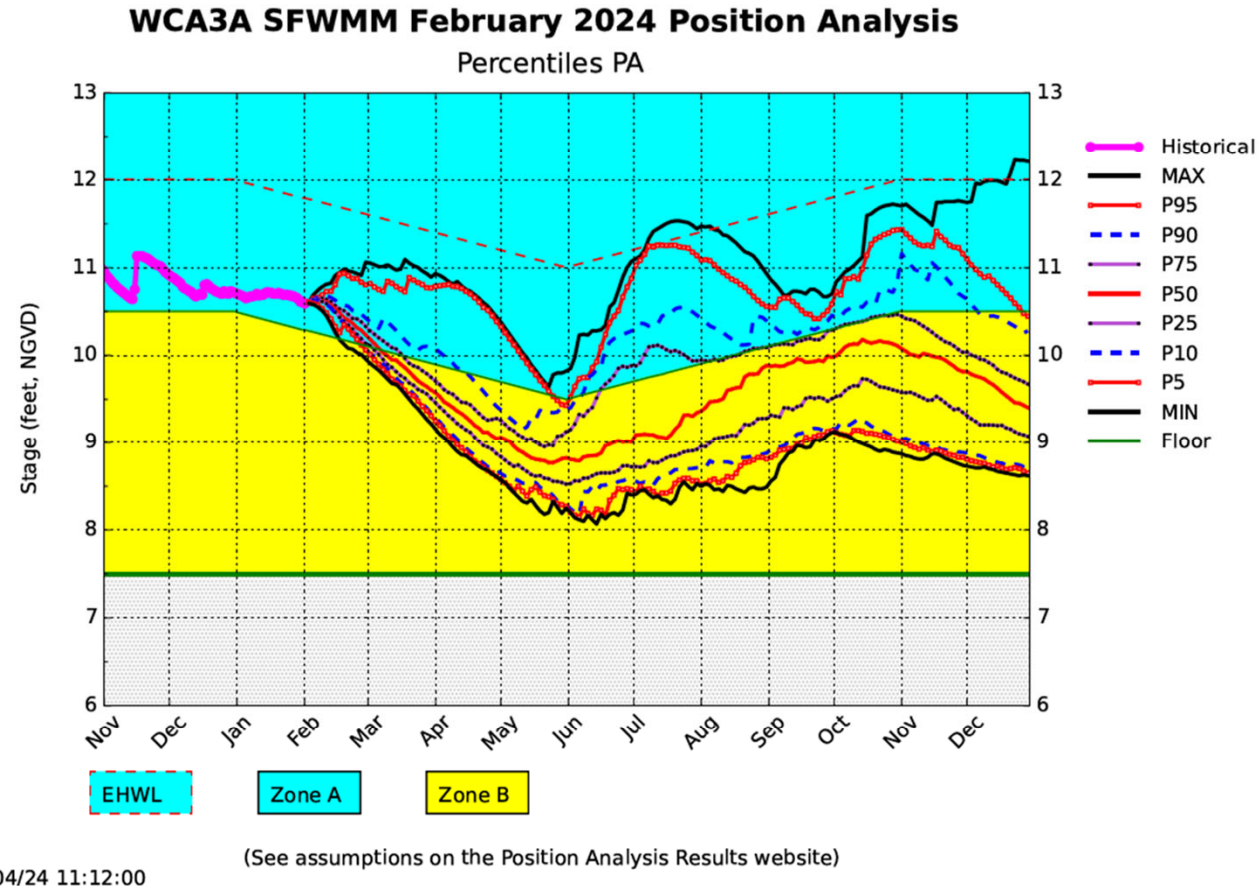
For this week, the Tamiami Trail Flow Formula calls maximum releases from WCA-3A to NESRS. Current L-29 stage constraint is at 8.3 feet NGVD. South Dade Conveyance System is stable. S-335 and S-338 are open. S-356 is pumping. G-211 is closed. S-332B/C/D are pumping as needed. S-176 and S-177 are closed. S-18C is currently open and S-197 is closed. LPG-2 stage at 8.5 SMA is below ground. S-357 is pumping as needed to maintain stages 4.5 to 5.0 ft NGVD in the C-357 canal. S-199 and S-200 are pumping (no CSSS restrictions until 03-15).

WCA-1 stage is above regulation schedule; WCA-2A stage is above regulation schedule; WCA-3A stage is above regulation schedule in Zone A and being operated under a temporary planned deviation. S-10s are open ~ 490 cfs. S11s are open ~1230 cfs. S12S (A-D) are fully open ~ 1,650 cfs. S-333 and S-333N are limited due to L-29 stage constraint ~ 430 cfs. S-343 A and B open. S-344 is open passing ~ 150 cfs. Interior structures to WCA-3A S-339 and S-340 are open. WCA-1 releases to tide S-39 through Hillsboro Canal ~500 cfs. WCA-2A reg releases through C-14 (S-38 ~ 450 cfs) and NNR (S-34E ~ 230 cfs). WCA-3A to tide via S-151, S-31 into the C-6 canal and then S-26 (~150 cfs). South Miami-Dade ag drawdown continues (Since October 15th, Operate S21A, S20F and S179 on the low stage range).

Presenter: John Mitnik

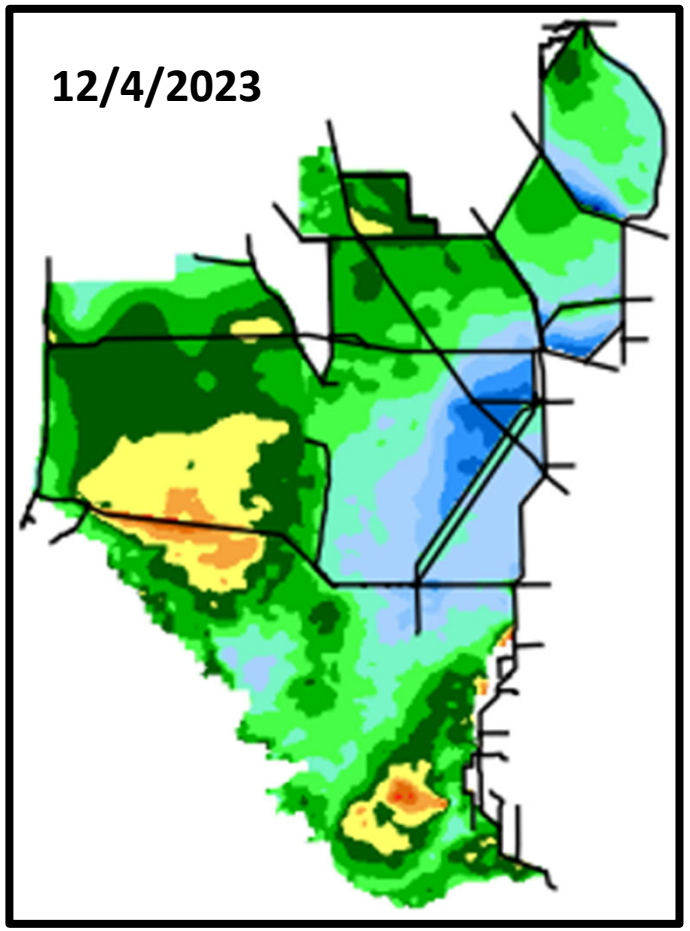
System considerations for sending water south for the period 01/29/2024 to 02/04/2024

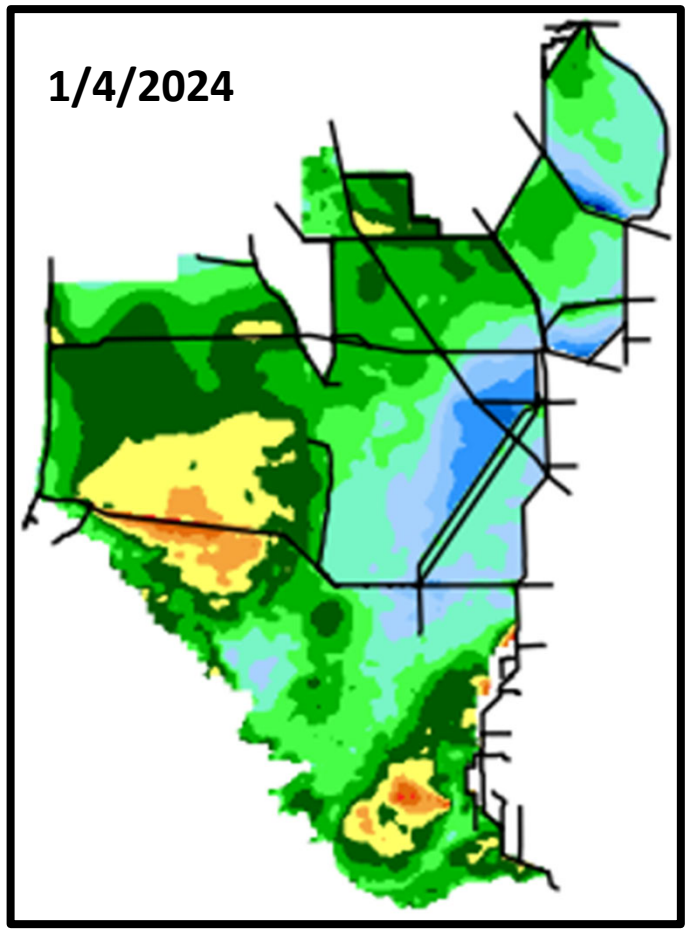


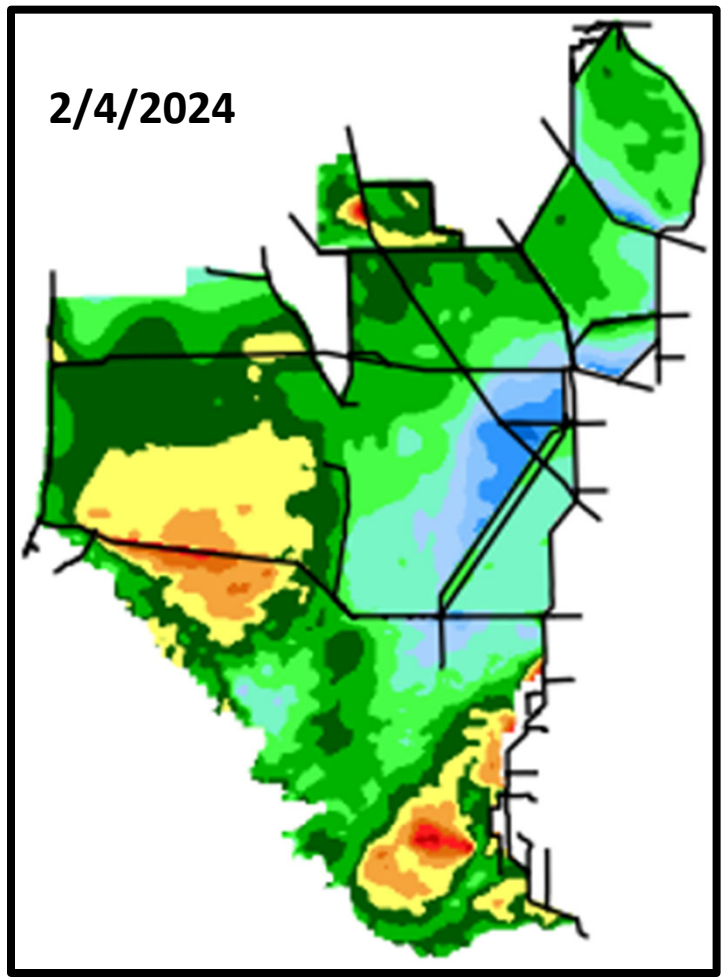


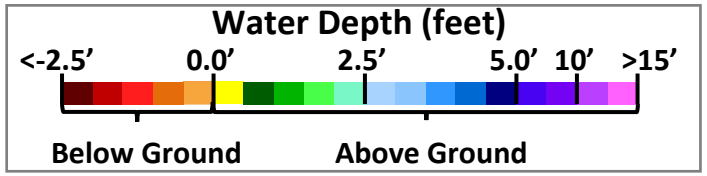
Presenter: John Mitnik

Everglades Water Depths



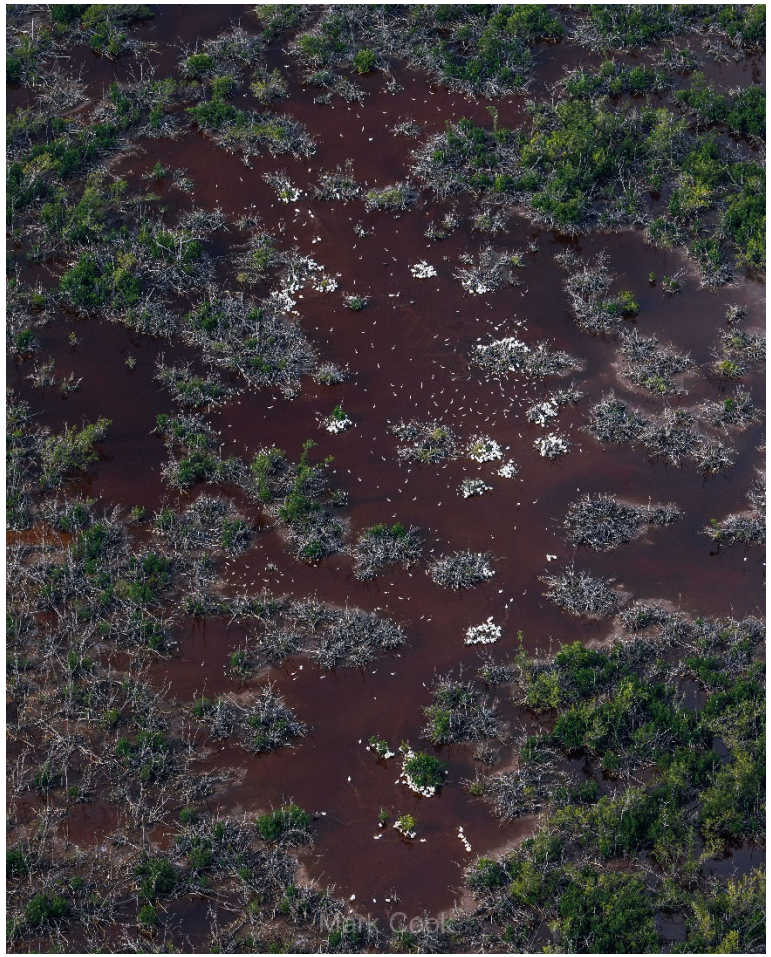






Presenter: Lawrence Glenn

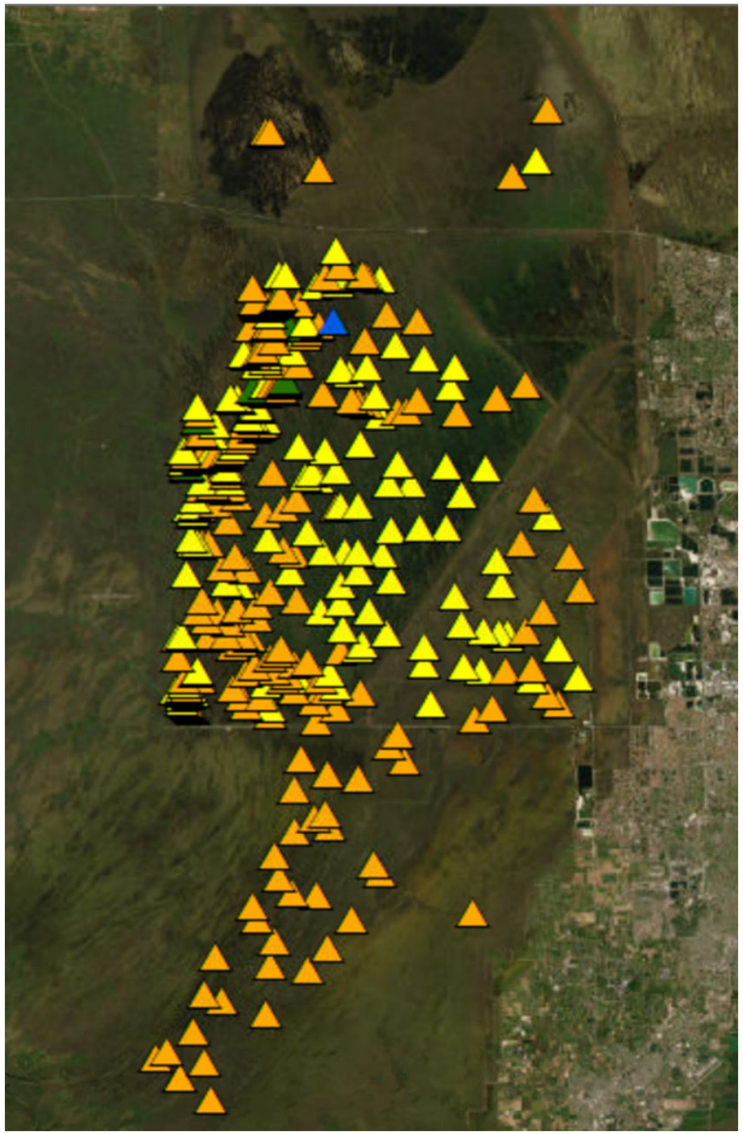
Wetter than average conditions have been a boon to Everglades fish production & wading bird foraging



- 10,000 - 14,000 birds are foraging along the coast of Florida Bay.
- About 1000 Roseate Spoonbills are foraging in WCA-3A-N.
- Great Egrets, Wood Storks and Roseate Spoonbills have just started nesting.
- A consistent drydown is now necessary to provide new foraging patches and sustain nesting.

Presenter: Lawrence Glenn

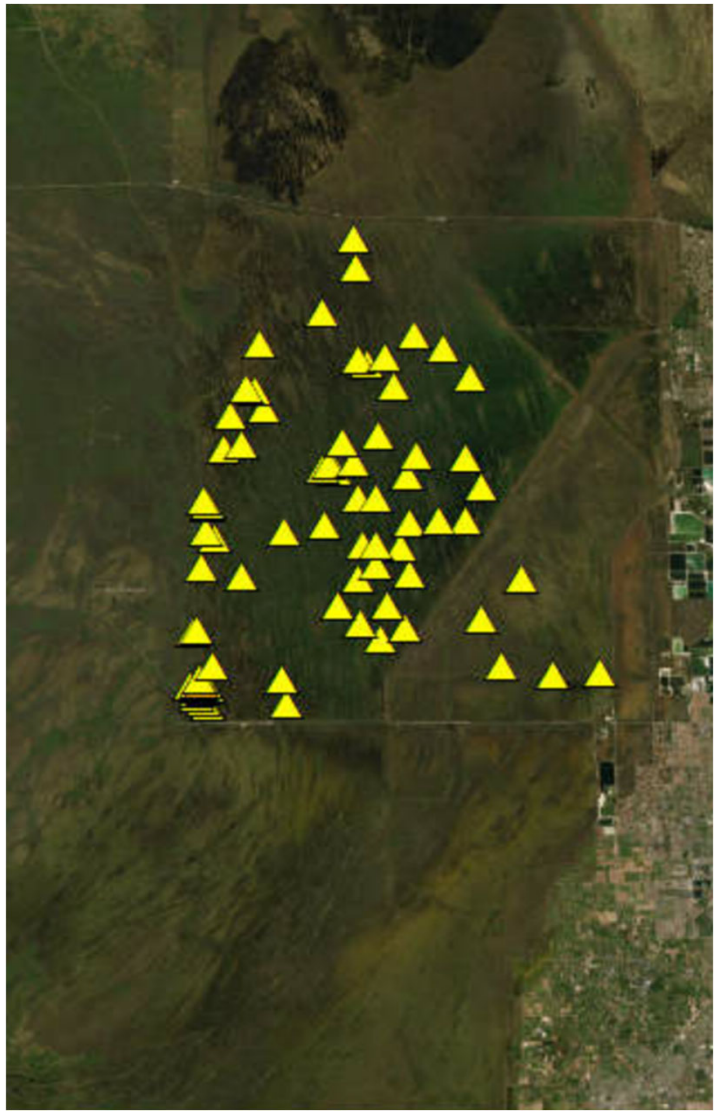
Everglades Tree Island Inundation for 371 Tree Islands (1/29/24)



- There are a total of 371 tree islands within WCA-3A, -3B and ENP that have established soil surface elevations, at the highest point of the islands.
- Comparing those elevations to the water surface elevation as estimated by SFWDAT provides information on the number of days islands are completely inundated.
- However, not all islands are similar. There is a large variation in island elevation, size and plant diversity.
- Grouping tree islands by the average proportion of the year that the extant islands are continuously inundated (“Clustering”), provides an understanding of how water management and climate can influence the ecology of an island.
- The next 3 graphs “cluster” tree islands into 3 groups: Wet, Average, and Dry

Presenter: Lawrence Glenn

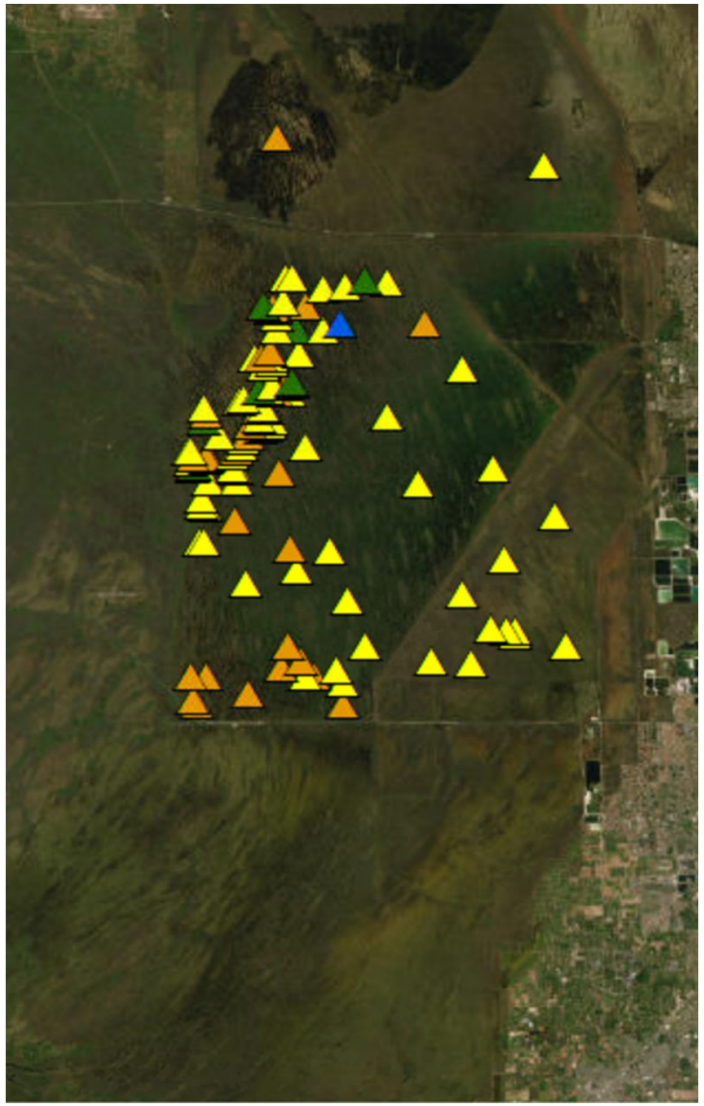
Everglades Tree Island Inundation: “Wet” cluster



- A “wet” island is one that has been inundated (1991-2020) between 65% and 90% of the time, on average, per year.
- There are a total of 82 “wet” tree islands within WCA-3A, -3B.
- These islands contain tree species like Pond Apple and Willow which are very tolerant to flooded conditions.
- On 1/29/24, 80 of the 82 “wet” islands remain wet and have been continuously inundated for more than 120 days.

Presenter: Lawrence Glenn

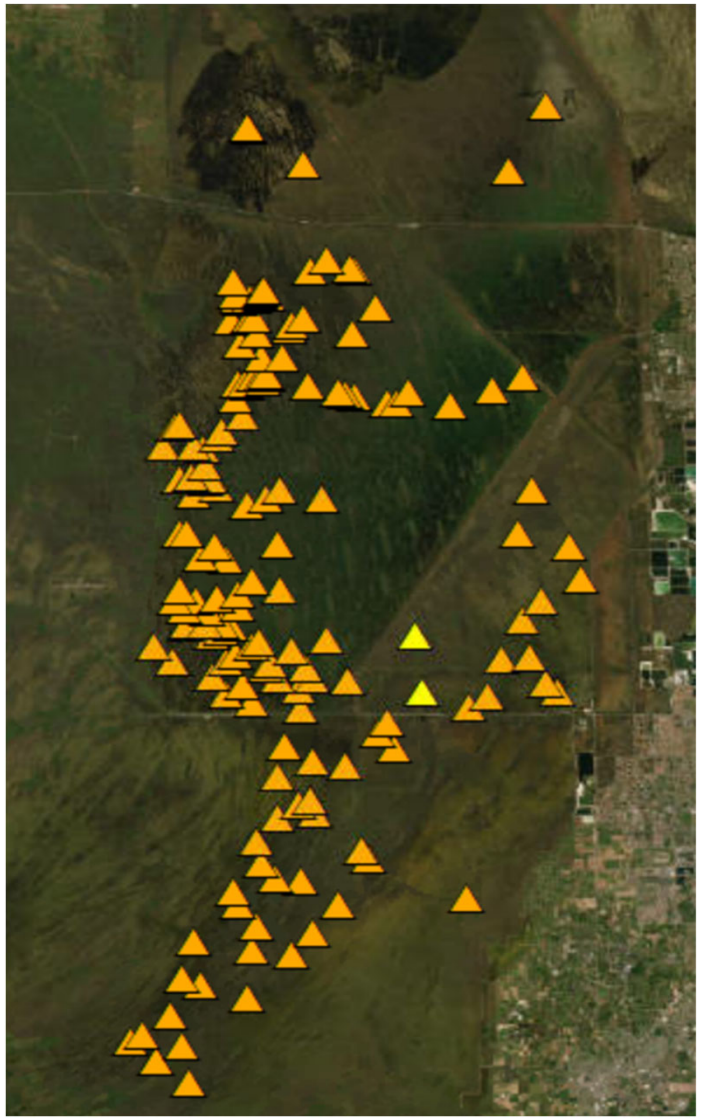
Everglades Tree Island Inundation: “Average” cluster



- An “average” island is one that has been inundated (1991-2020) between 25% and 65% of the time, on average, per year.
- There are a total of 120 “average” tree islands within WCA-3A, -3B.
- These islands contain plant species like Coco Plum and Dahoon Holly which are relatively tolerant to flooded conditions.
- On 1/29/24, 68% of the “average” islands have been continuously inundated for more than 120 days.

Presenter: Lawrence Glenn

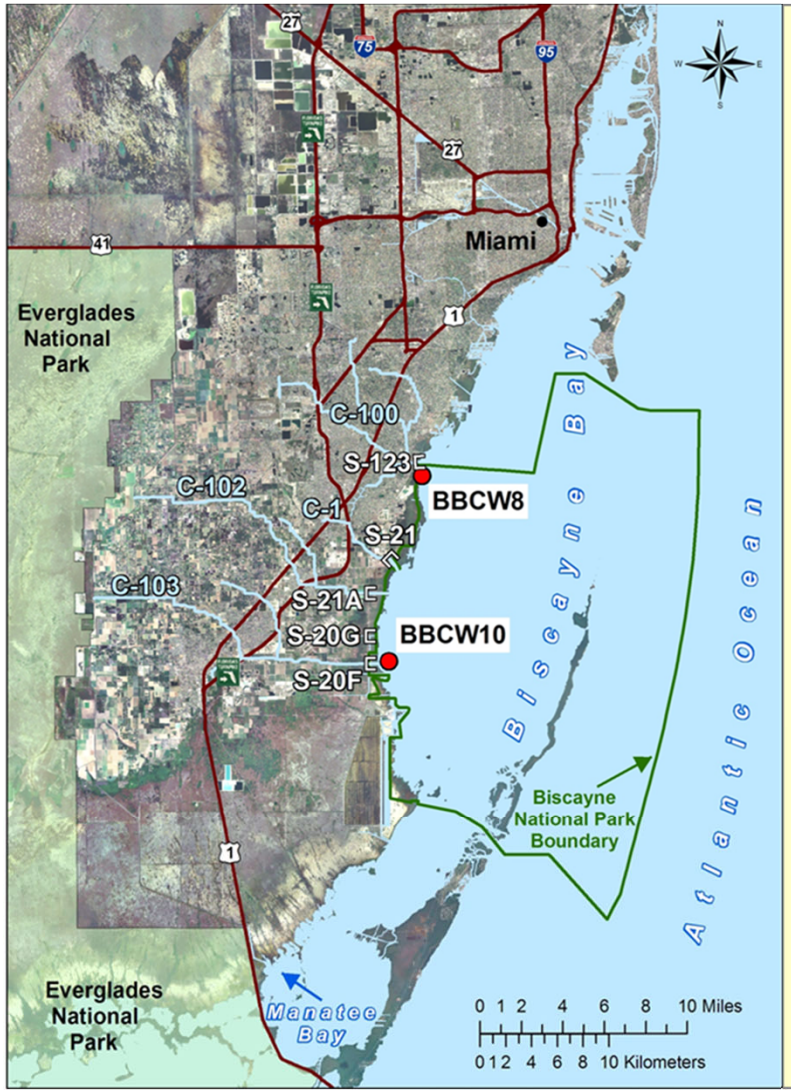
Everglades Tree Island Inundation: “Dry” cluster

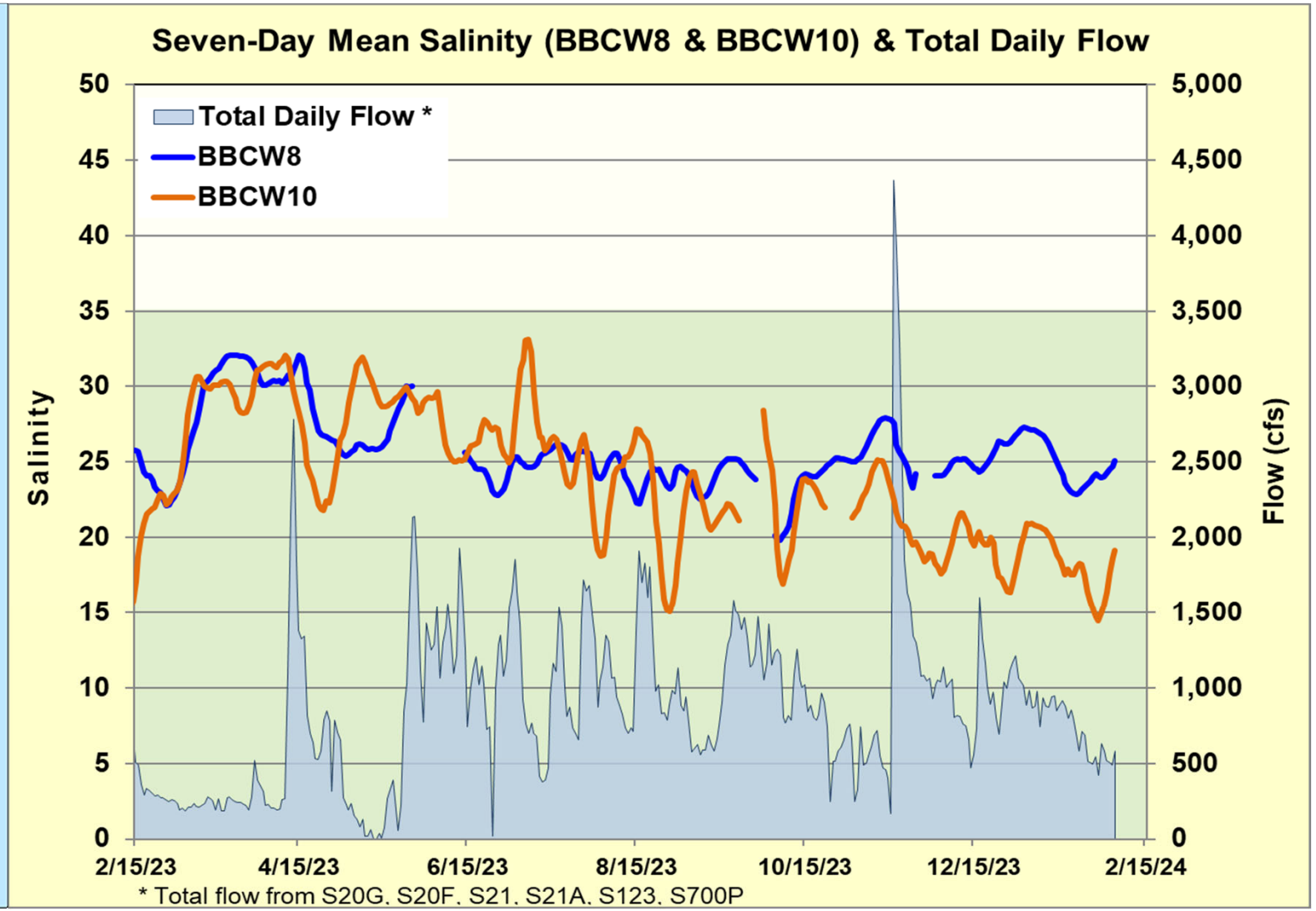


- A “dry” island is one that has been inundated (1991-2020) less than 25% of the time, on average, per year.
- There are a total of 169 “dry” tree islands within WCA-3A, -3B and ENP.
- These islands often called tropical hardwood hammocks, contain plant species like Gumbo Limbo and Paradise tree which are relatively intolerant to extended flooding.
- On 1/29/24, only 2% of the “dry” islands were continuously inundated for as much as 166 days. 98% of the “dry” islands were dry on 1/29/24.

Presenter: Lawrence Glenn

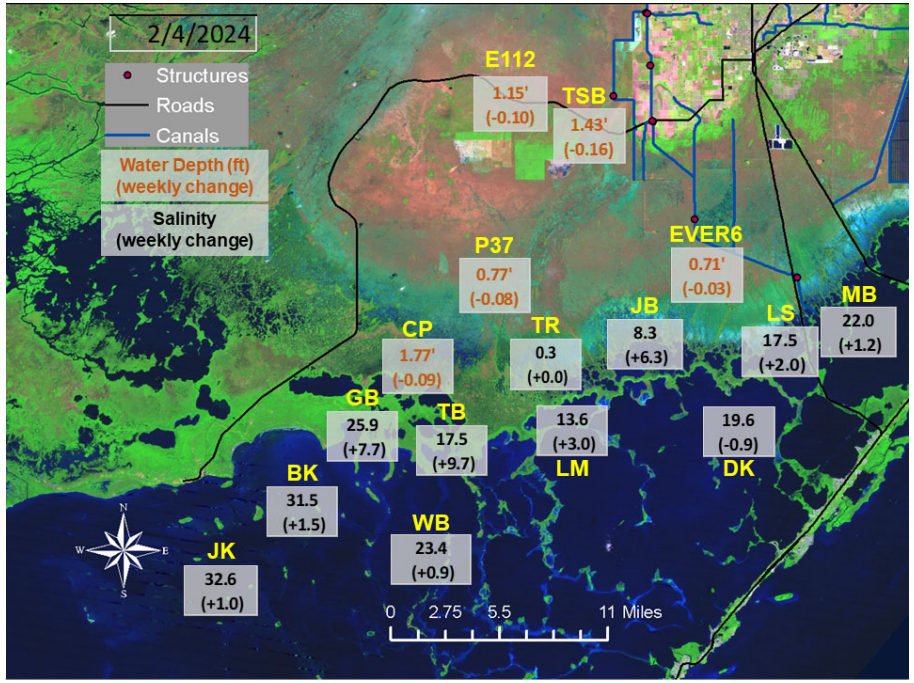
Biscayne Bay Salinity Conditions

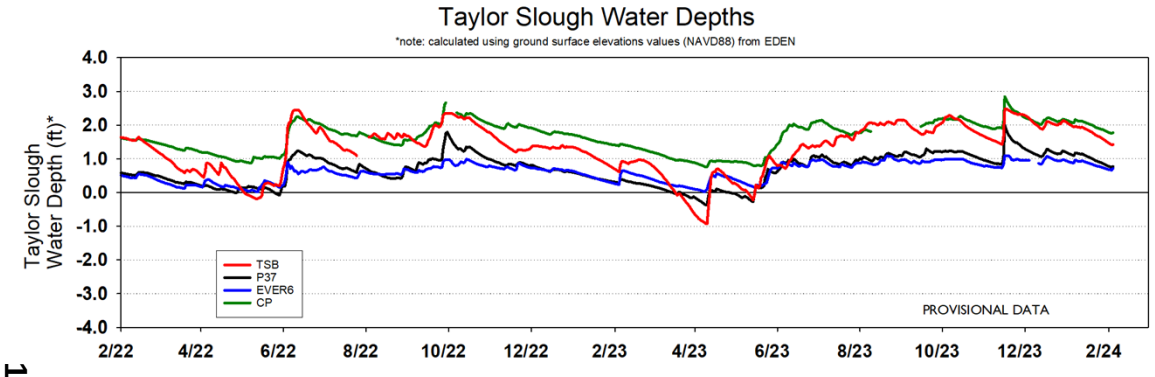


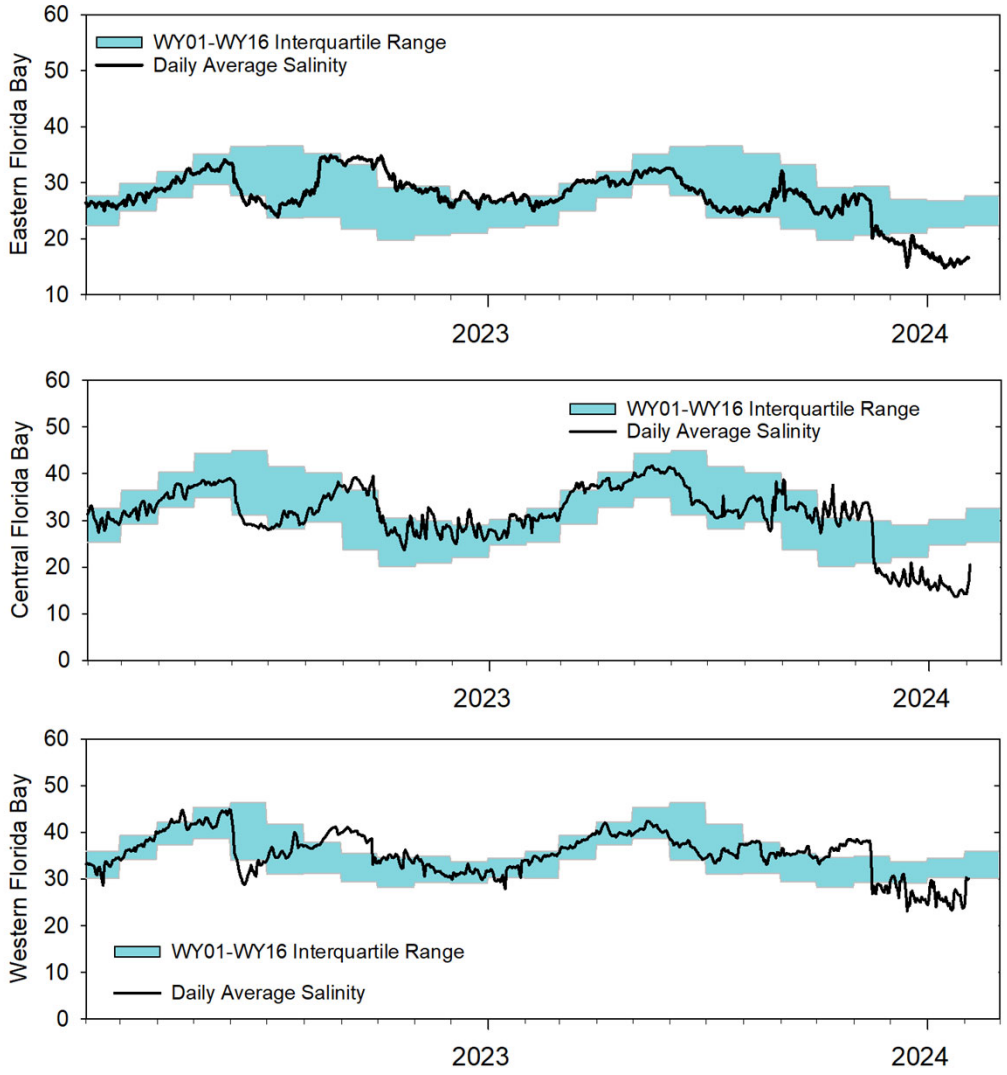


Presenter: Lawrence Glenn

Florida Bay Salinity

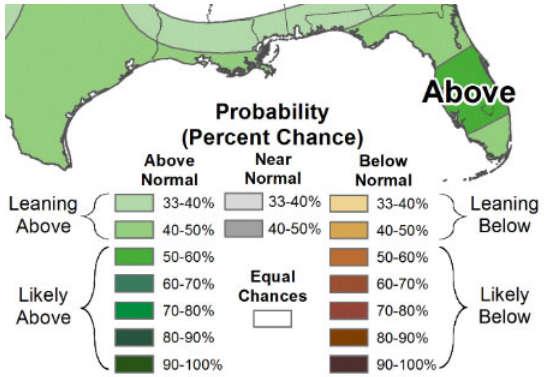




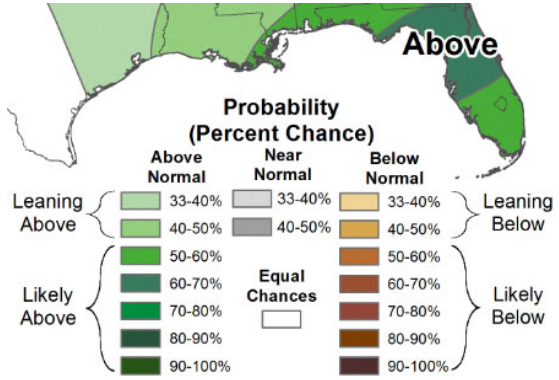


Presenter: Lawrence Glenn

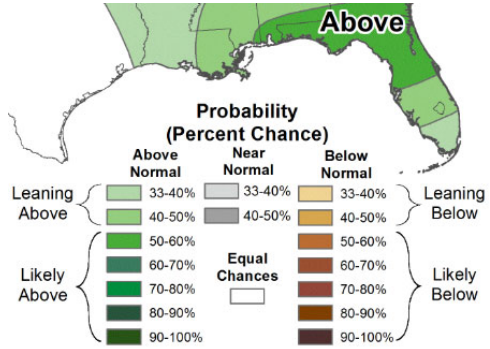
CPC Precipitation Outlook for South Florida



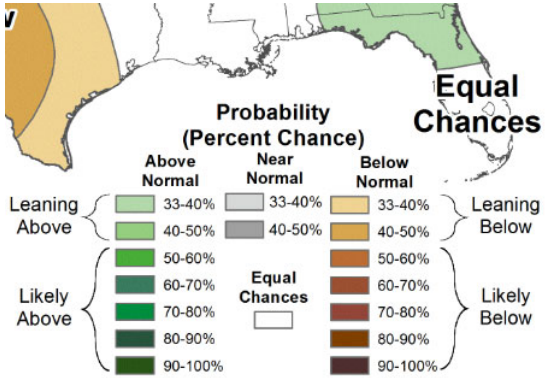
Feb 2024



Feb 2024 – Mar 2024



Mar 2024 – May 2024



Apr 2024 – Jun 2024

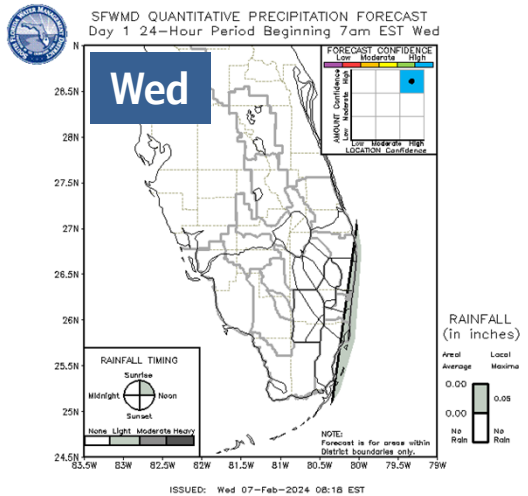
Updated January 31, 2024

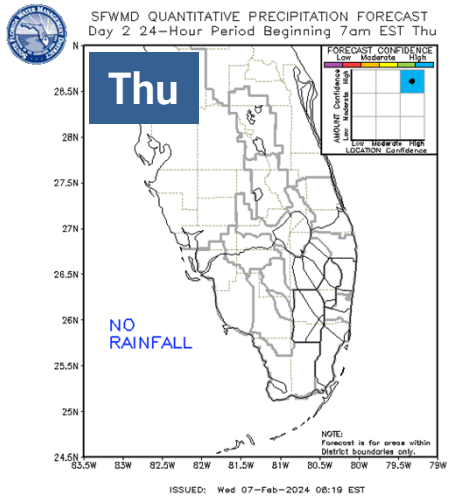
- The most recent CPC precipitation outlook for South Florida for February 2024 is for a substantial increase (50-60%) in the likelihood of above normal rainfall for the EAA and areas north, and for increased chances (40-50%) of above normal rainfall for the remainder of the District.
- The 3-month window of Feb 2024 – Apr 2024 indicates a major increase in the likelihood (60-70%) of above normal rainfall for the Upper Kissimmee basins and substantially increased chances (50-60%) of above normal rainfall for the Lower Kissimmee and areas south.
- The outlook for the 3-month window of Mar 2024 – May 2024 is for substantially increased chances (50-60%) of above normal rainfall for most of the District, with a major increase (60-70%) for areas in the Upper Kissimmee.
- The outlook for the 3-month window Mar 2024 – May 2024 shows increased chances of above normal rainfall (40-50%) for Lake Okeechobee and areas north, with the remainder of the District showing slightly increased chances (33-40%) of above normal rainfall.
- All the 3-month windows from Apr 2024 – Jun 2024 to Oct 2024 – Dec 2024 show equal chances of below normal, normal and above normal rainfall. The 3-month windows of Nov 2024 – Jan 2025 to Feb 2025 – Apr 2025 signal an increased chance of below normal rainfall for south Florida.

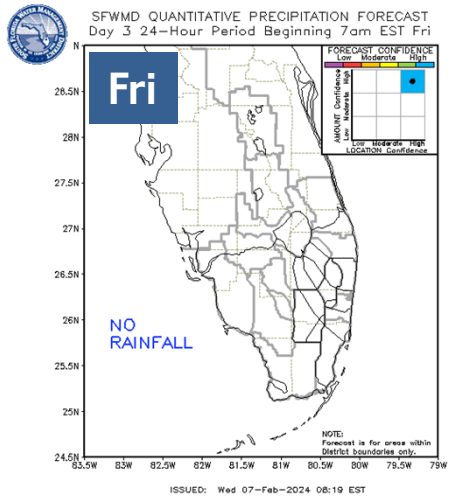
Presenter: John Mitnik

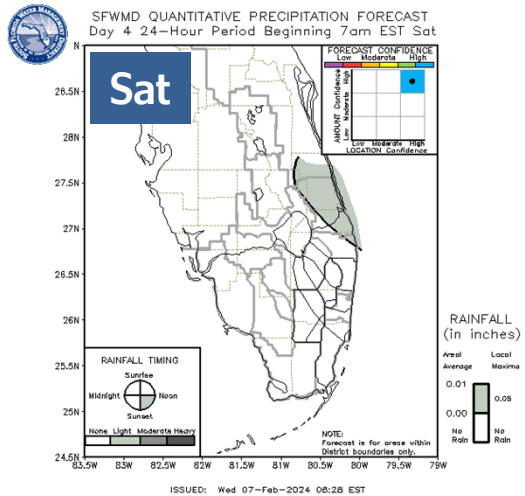
https://www.cpc.ncep.noaa.gov/products/predictions/30day/

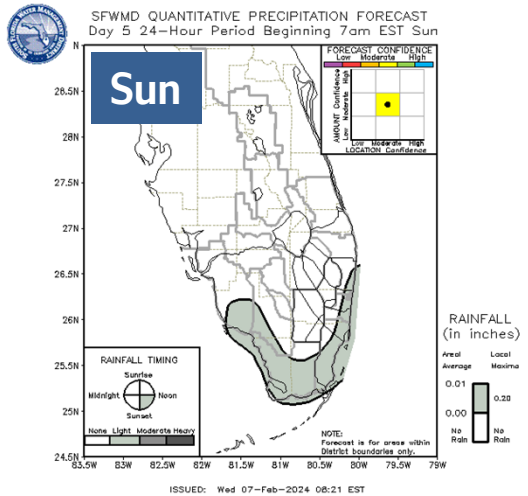
Short-, Medium-, & Extended-Range Outlooks

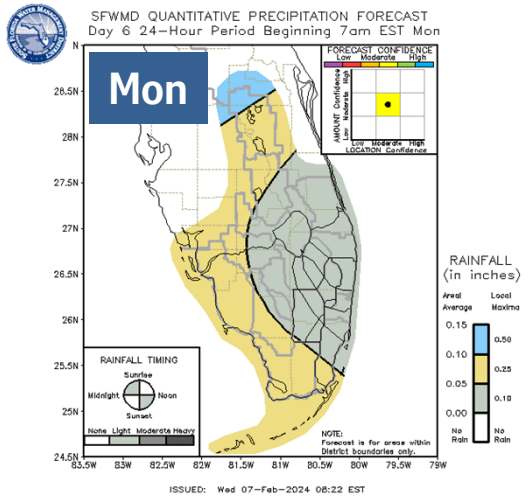


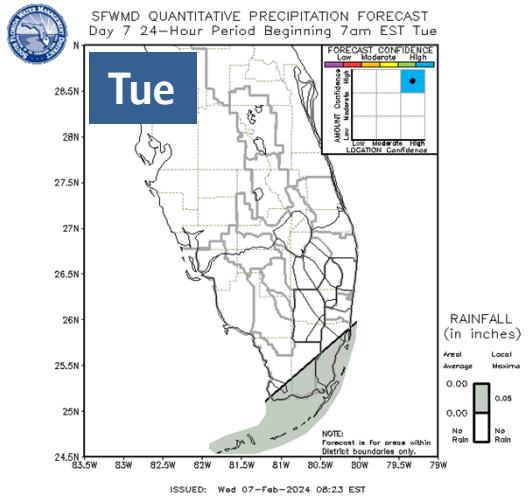


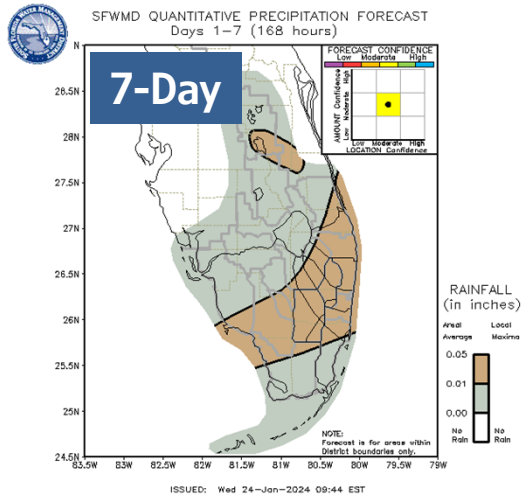












Weekly Summary

Week 1 (Historical Avg: 0.49”): Much below normal
Week 2 (Historical Avg: 0.49”): Much above normal

Presenter: John Mitnik

Flamingos in STA_2

Photo: Jacob Dombrowski

Parkland Royale Property Release of TIITF'S

2/08/2024

What is a TIITF????

I am not a Lawyer but my understanding and research says:

Reservation for Water, Canal, dike, storage over real property

Or

Reservation for State Roads over Real Property

They were purchased and recorded in the Early 1900's over 10's of thousands of Acres in South Florida

Owned by

"The Trustees of the Internal Improvement Trust Fund for the State of Florida"

Administered By the Florida Department of Environmental Protection

Who has Delegated Authority to release them to SFWMD

SFWMD determines a fee to be paid to release them, my fee is $ 150,000

SFWMD has been releasing them Administratively for 20+ years

I have had at least 6 projects where we had them released

Property Id: 474119010024 **Please see map disclaimer

Where is Parkland Royale???

Its in the Wedge, a area of land that was Moved from Palm Beach County to Broward County, the Norththwest corner of the County

February 2, 2024

1:38,400
0 1,500 3,000 6,000 ft
0 500 1,000 2,000 m

Flight Date : Jan. 6 to Jan. 11, 2023 Broward County Property Appraiser

Property Id: 474119010024 **Please see map disclaimer

Parkland Royale
is 73 acres

February 2, 2024

1:4,800
0 225 450 900 ft
0 65 130 260 m

Flight Date : Jan. 6 to Jan. 11, 2023 Broward County Property Appraiser

Parkland Royale, Site Plan, 205 Single Family Homes, and 5 acre Park Donated to Parkland

Parkland Royale Property consists of 3 tax parcels:

Parcel 1) **Tax id: 474119020010** Old NSID Parcel, 25 acres

All TIITF'S reservations released 8/28/2011, 5/7/43

Parcel 2) Tax id**: 474119010024** New Parkland Park.

Has 2 TIITF'S on it: D.B. 46, Page 240, canals

5 acres D.B. 666, Page 223, road rights of way

Parcel 3) Tax id: **474119020021** Original Sabra Land 43 Acres

Some of it Has 2 TIITF'S on it: D.B. 46, Page 240, canals

27 acres D.B. 666, Page 223, road rights of way

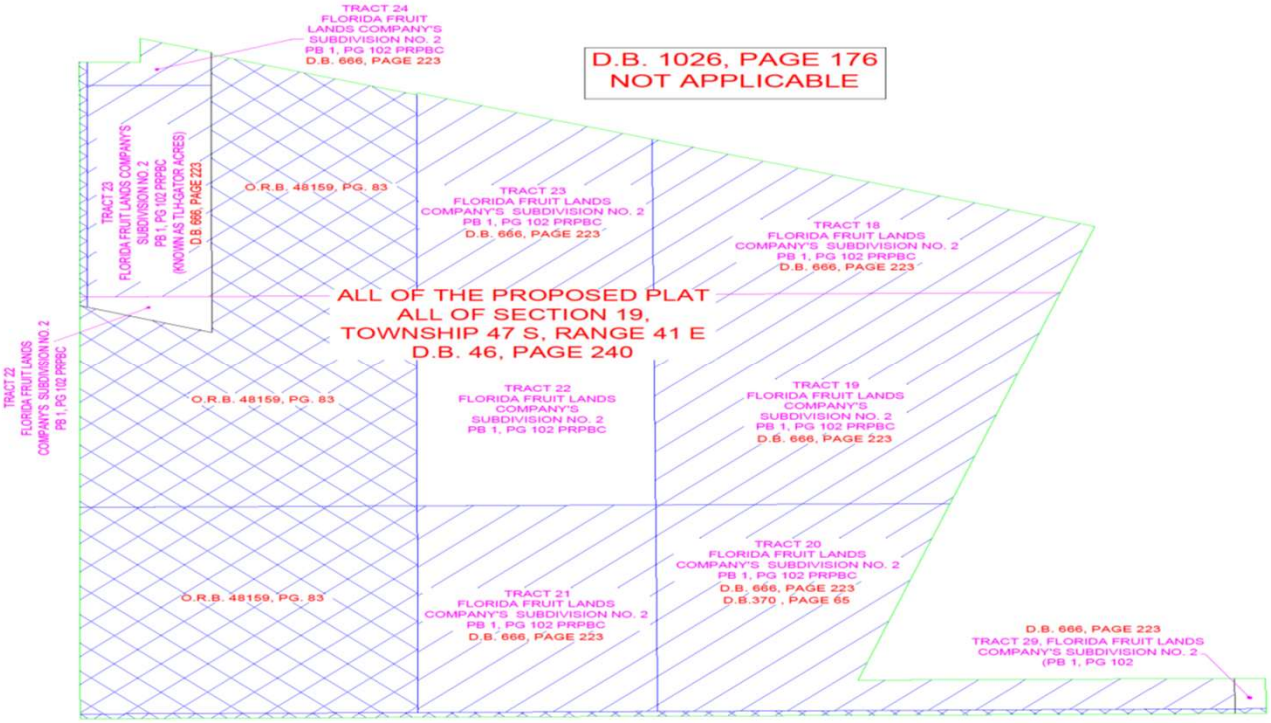
Some of it has 1 TIITF on it: D.B. 46, Page 240, canals

6 acres

Some of it has 3 TIITF'S on it: D.B. 46, Page 240, canals

8 acres D.B. 666, Page 223, road rights of way

D.B. 370, Page 65, canals


TRACT 24
FLORIDA FRUIT
LANDS COMPANY'S
SUBDIVISION NO. 2
PB 1, PG 102 PRPBC
D.B. 666, PAGE 223
D.B. 1026, PAGE 176
NOT APPLICABLE
TRACT 23
FLORIDA FRUIT LANDS COMPANY'S
SUBDIVISION NO. 2
PB 1, PG 102 PRPBC
(KNOWN AS TUH-GATOR ACRES)
D.B. 666, PAGE 223
O.R.B. 48159, PG. 83
TRACT 23
FLORIDA FRUIT LANDS
COMPANY'S SUBDIVISION NO. 2
PB 1, PG 102 PRPBC
D.B. 666, PAGE 223
TRACT 18
FLORIDA FRUIT LANDS
COMPANY'S SUBDIVISION NO. 2
PB 1, PG 102 PRPBC
D.B. 666, PAGE 223
ALL OF THE PROPOSED PLAT
ALL OF SECTION 19,
TOWNSHIP 47 S, RANGE 41 E
D.B. 46, PAGE 240
TRACT 22
FLORIDA FRUIT LANDS
COMPANY'S SUBDIVISION NO. 2
PB 1, PG 102 PRPBC
O.R.B. 48159, PG. 83
TRACT 22
FLORIDA FRUIT LANDS
COMPANY'S
SUBDIVISION NO. 2
PB 1, PG 102 PRPBC
TRACT 19
FLORIDA FRUIT LANDS
COMPANY'S
SUBDIVISION NO. 2
PB 1, PG 102 PRPBC
D.B. 666, PAGE 223
TRACT 20
FLORIDA FRUIT LANDS
COMPANY'S SUBDIVISION NO. 2
PB 1, PG 102 PRPBC
D.B. 666, PAGE 223
D.B.370 , PAGE 65
O.R.B. 48159, PG. 83
TRACT 21
FLORIDA FRUIT LANDS
COMPANY'S SUBDIVISION NO. 2
PB 1, PG 102 PRPBC
D.B. 666, PAGE 223
D.B. 666, PAGE 223
TRACT 29, FLORIDA FRUIT LANDS
COMPANY'S SUBDIVISION NO. 2
(PB 1, PG 102

Parkland Royale Phase 2 Status

- Mr. Tuttle's Background
  - Local land developer
  - Developer 20 properties in Broward and palm beach county
  - Many had tiffs which were released over the years
  - In the past the TIITF's were only released after the ERP's were issued, because ERP planned the drainage for that property

- Bought and developed Parkland Royale Phase 1 in 2012
  - ERP Issued 4/21/2014
  - Wetland Credits required and paid for by me
  - Had TIITF's released by SFWMD

- Bought Parkland Royale Phase 2 in 2015
  - Land like Phase 1, was in the Wedge
  - Property was an overgrown farm from the 1950's
  - 90 % of the property was claimed as wetlands, very low grade
  - ERP issued 3/7/2016
    - Required Mitigating wetland
    - I spent 2.8 million in off-site Mitigation Credits
    - No mention of TIITF's in comments

- Applied for a modified ERP 9/9/2020
  - No mention of TIITF'S in comments
  - Modified ERP issued 9/29/21

- Early work permit issued by Parkland and NSID in 2021
  - Per the issued ERP lakes dug, site filled, berms built

- Property status as of today:
  - Fully zoned
  - Fully approved site plan
  - Fully approved preliminary plat
  - Fully approved paving drainage water and sewer plans
  - Fully Approved Army Corp Permit
  - Fully approved ERP
  - Fully approved dewatering permit
  - Fully approved water use permit
  - Fully approved canal connection right of way permit
  - Lakes dug; site filled per ERP
  - Starting water and sewer within 60 days

- Applied to have the TIITF'S released which cover approximately 60 % of the property
- Releases were put on hold pending decision and direction of SFWMD board on TIITF'S
- If TIITF'S are not released, property is unbuildable and has no value
  - Tuttle has over 30 million invested in property
    - Purchase of property
    - Offsite wetland mitigation credits
    - Digging of lakes
    - Filling of property to grade
- If TIITF'S are not released this decision would be financially devastating to me and my family

Summary:

- There are no new canals needed in the area of my land
- Half my property already has had the TIITF'S released
- There is a 2 acre lay down are next to my property if SFWMD needed a lay down area
- To change the process of releasing TIITF'S with no warning or review process or discussions is not fair

Pumps turned on at EAA Reservoir Stormwater Treatment Area

CERP Construction and Planning Projects

Progress Report

South Florida Ecosystem Restoration Projects including the Comprehensive Everglades Restoration Plan (CERP) are authorized when a planning study is approved by Congress as part of a Water Resource Development Act (WRDA). Responsibility for design and construction of CERP and other restoration projects is shared between the U.S. Army Corps of Engineers (USACE) and the South Florida Water Management District (SFWMD), based on coordination between the two agencies, the Integrated Delivery Schedule (IDS), and the Project Partnership Agreement for each project. This document reports on the USACE's progress on CERP efforts for the restoration of the Greater Everglades as directed by Governor DeSantis in Executive Order 23-06, as well as the SFWMD's continued efforts to expedite Everglades restoration projects and improve water quality and quantity.

Biscayne Bay Coastal Wetlands – Cutler Wetlands Component

Lead Agency: SFWMD

Anticipated Completion Year: 2025

Project Description: The Biscayne Bay Coastal Wetlands Project – Cutler Wetlands Component will improve the health of Biscayne Bay, aid in wetland rehydration, build coastal resiliency and improve water quality. The Cutler Wetlands Component is the final component of the Biscayne Bay Coastal Wetlands Project.

Status: Construction.

- Contract 6A – Pump Station S-701 under construction
- Contract 6B – Construction contract awarded in December 2023

Biscayne Bay Coastal Wetlands – L-31 East Flowway

Lead Agency: USACE

Anticipated Completion Year: 2026

Project Description: The project restores freshwater flows to southern Biscayne Bay and Biscayne National Park while improving salinity distribution near the shore. It also restores historical freshwater wetland habitat adjacent to the Bay, which acts like a sponge, soaking up water in the wet season and slowly releasing it in a more natural pattern.

Status: Construction; Operational Testing and Monitoring Period.

- Contract 4 – Pump Station S-709: Construction is complete. Operation Testing and Monitoring Period is underway.
- Contract 5A – Pump Station S-705: Contractor is still working with FPL to install permanent power. On Sept. 29, 2023, USACE, SFWMD, FDEP, and the Contractor conducted a final inspection of the pump station located on the L-31E Canal at the intersection with the C-102 Canal. Construction is complete. Permanent power expected in February from FPL.
- Contract 5B – Pump Station S-703 and Recreational Sites: Excavation of the intake vault and installation of all sheet pile and king piles are complete. Control building, stilling well platforms and spreader canal excavation is all underway.
- Contract 5C – Pump Stations S-710 and S-711, Seepage Canal C-711W: Piling and auguring are complete for S-711 and S-710. Installation of precast box for spreader canal is underway and sod was installed on spreader canal. Seepage Canal berm construction is substantially complete, sod will be placed. Awaiting permanent power from FPL.

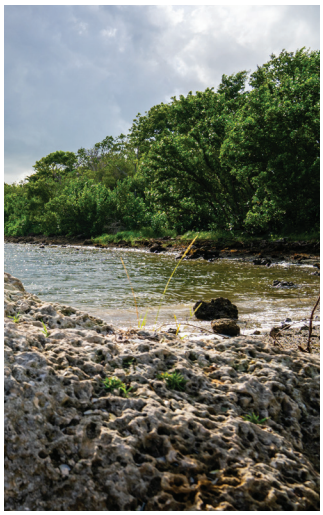
Biscayne Bay and Southeastern Everglades Ecosystem Restoration (BBSEER)

Lead Agency: USACE

Anticipated Completion Year: 2026

Project Description: The BBSEER Project aims to restore natural areas in southeastern Miami-Dade County, including the Model Lands, Southern Glades, nearshore estuarine habitats of Biscayne Bay, and the associated coastal and freshwater wetlands.

Status: Planning; A 3x3x3 planning study waiver request for scope, schedule and budget is in development to complete the study. The project team is in round three modeling process and will continuing to refine alternatives. **Next Milestone:** Confirmation of a Tentatively Selected Plan is scheduled June 2024.



Biscayne Bay Shoreline

Broward County Water Preserve Areas

Lead Agency: USACE

Anticipated Completion Year: 2034

Project Description: This project will reduce water loss from the Central Everglades. It is designed to perform two primary functions: reduce seepage loss from Water Conservation Area (WCA) 3A/3B to the C-11 and C-9 basins; and capture, store and distribute surface water runoff from the western C-11 basin that has been discharged into WCA 3A/3B.

Status: Design.

- Contract 2 – C-11 Impoundment Embankment: Final design is in progress and the construction award is expected in Q4 FY 2024.
- Contract 3 – C-11 Impoundment Pump Station: Design is in progress, and the construction award is expected in late FY 2025.
- Contract 4 – WCA3A Seepage Management Area: Design to begin in Q1 FY 2024.
- Contract 5 – C-9 Impoundment: Design to begin in Q3 FY 2024.

Caloosahatchee (C-43) Reservoir

Lead Agency: SFWMD

Anticipated Completion Year: 2025

Project Description: The project will capture excess C-43 Basin runoff and regulatory releases from Lake Okeechobee during the wet season and release water from the reservoir during the dry season. It includes development of one aboveground reservoir, with a total storage capacity of approximately 170,000 acre-feet. The project will reduce the extreme salinity changes in the Caloosahatchee River Estuary by providing a more consistent flow of freshwater discharging into the estuary.

Status: Construction.

- Package 1 – Embankment Preloading at 6 critical structures around the dam and demolition of existing infrastructure work is complete.
- Package 2 – S-476 Pump Station replaces the original irrigation pump station located on the header canal that supplied water to existing water users work is complete.
- Package 3 – S-470 Inflow Pump Station which pulls water from the Caloosahatchee River through the Townsend Canal to the Reservoir work is complete. Ribbon cutting event held on December 19, 2023.
- Package 4 – Reservoir: Concrete work at S-473 completed, concrete work at S-471, S-483, site access bridge and local bridge continue, soil cement (buttress) 9.5 of 22 miles completed, soil cement proof of concept (slope) accepted, 1st 1,000 feet of slope placed and completed last week, Townsend Canal sheet pile installation south of power lines completed, Phase II Soil Bentonite Wall completed on west embankment, Phase II SB wall "re-dig" underway proceeding from S-474 west, F5 gap closure embankment completed and Phase II SB wall installed at F5. All three motors/pumps installed at S-479 and functioning (commissioning to follow), M3 embankment north of S-475 near completion, perimeter canal and intake canal work continue, contracts for wave wall and sand column relief manifold (north reach) awarded.

Central Everglades Planning Project (CEPP) Everglades Agricultural Area (EAA) Reservoir

Lead Agency: USACE

Anticipated Completion Year: 2030

Project Description: CEPP includes four phases of projects that help restore the natural flow of water south from Lake Okeechobee to the Central & Southern Everglades. The CEPP EAA Phase will store, treat and send new water to the Everglades. The EAA Reservoir reduces damaging discharges from Lake Okeechobee to the Northern Estuaries. The 10,000-acre reservoir component includes 240,000 acre-feet of storage and delivers water to the 6,500-acre A-2 STA for water quality treatment. The project provides an additional average annual 370,000 acre-feet of clean water sent to the Everglades.

Status: Design; Construction.

- Contract 11B - Embankment, outlet structures and spillway: Final design has been completed and the construction award is expected at the end of FY 2024.
- Contract 11C - S-636 Seepage Pump Station: Design began in March 2023, and the construction award is expected in Sept. 2026.
- Contract 10A - Seepage Inflow/Outflow Canal: Environmental monitoring and pre-construction survey work continues. Dewatering within the footprint of the inflow/outflow canal is ongoing. De-mucking, clearing, and grubbing activities began in March 2023. Excavation of the canal footprint continues and is 25% complete.
- Contract 11A - Foundation Preparation & Cutoff Wall: Contractor mobilized to the site in Aug. 2023 and began setting up temporary facilities. Clearing, grubbing and de-mucking of borrow pit areas 2 and 3 is complete with borrow area 5 underway. Construction on the east side of the batch plant platform is ongoing.
- Contract 12: S-623 Reservoir Inflow Pump Station: In design and will be in construction by SFWMD in mid-2024.

Central Everglades Planning Project (CEPP) Everglades Agricultural Area (EAA) Stormwater Treatment Area (STA)

Lead Agency: SFWMD

Anticipated Completion Year: 2024

Project Description: The 6,500-acre STA will clean water stored in the 240,000 acre-foot EAA Reservoir and allow it to be moved south to the Everglades. Stormwater Treatment Areas use aquatic vegetation to remove harmful nutrient pollution from the water. Sending more clean water south will support the ecological health of the Everglades and Florida Bay.

Status: Construction.

- Contract 9B - STA Cells: In construction. Initial filling commenced end of January 2024.
- Contract 9B - STA Inflow-Outflow Canal: Construction completed in FY 2023.

Central Everglades Planning Project (CEPP) Everglades Agricultural Area (EAA) Canal Conveyance Improvements

Lead Agency: SFWMD

Anticipated Completion Year: 2027

Project Description: The North New River Canal Conveyance increases canal capacity by 200 cfs. The Miami Canal Conveyance Improvements increase canal capacity by 1,000 cfs.

Status: Design.

- Contract 9A - EAA North New River Canal Improvements: Construction contract awarded in December 2023.
- Contract 9A - EAA Miami River Canal Improvements Phase 1: Design is ongoing and construction award by end of FY 2024.
- Contract 9A - EAA Miami River Canal Improvements Phase 2: Design is ongoing and construction award in early FY 2025.

Central Everglades Planning Project (CEPP) New Water Seepage Barrier Wall Project

Lead Agency: SFWMD

Anticipated Completion Year: 2024

Project Description: The CEPP New Water Seepage Barrier Wall Project extends the successful underground wall that was built as part of the 8.5 Square Mile Area Seepage Wall Project. The project supports ongoing restoration efforts to move water south through the Everglades and into Florida Bay while mitigating potential flooding impacts in communities outside of Everglades National Park.

Status: Construction.

- Contract 13 - CEPP Seepage Wall: In construction. Trenching is complete. Concrete bentonite pouring is 100% complete. Permanent capping is 88% complete.

Everglades Agricultural Area Reservoir Stormwater Treatment Area

Central Everglades Planning Project (CEPP) North Phase

Lead Agency: SFWMD

Anticipated Completion Year: 2030

Project Description: CEPP North will restore water levels in the northern portion of the Central Everglades and improve our water resource resiliency in South Florida. The features within the CEPP plan include a reservoir, a stormwater treatment area and water flow improvements.

Status: Design; Construction.

- Contract 7A - L-6 Diversion: A groundbreaking for S-620 was held in May 2023. S-622 is in design and contract award is in Q1 FY2025.
- Contract 7A - L-4 Canal Improvements & Distribution Features & S-8A Modifications are in design.
- Contract 7B - S-8 Pump Station Modifications is in design and Phase 1 construction contract award is in Q2 FY2024.
- Contract 8A - L-5 Canal Improvements is in design to be constructed in 2 packages.
- Contract 8B - Miami Canal Backfill and Vegetated Hammocks survey is ongoing.

Central Everglades Planning Project (CEPP) South Phase

Lead Agency: USACE

Anticipated Completion Year: 2031

Project Description: CEPP South removes water flow barriers to allow natural flow of water south into Everglades National Park. Components include the construction of a pump station, the installation of culverts and spillways and the removal of a roadway and levees that will all help increase the flow of clean water south from WCA 3A to Everglades National Park.

Status: Design; Construction.

- Contract 1AR - L-67A Culverts: The contractor has mobilized the processing equipment to S-631 and cofferdam construction is 99% complete. Geogrid placement is ongoing at S-632.
- Contract 2A - Pump Station S-356E and S-334E Gated Spillway: Final design is complete with Contract Award rescheduled from June 2024 to September 2024. Delay was due to time required to complete coordination with FDOT to execute a construction agreement. Execution of the construction agreement with FDOT occurred in December 2023.
- Contract 3B - S-355W Gated Spillway in L-29 Canal: Final design is complete. The contract award has been rescheduled from March 2024 to July 2024 and possible risk of further delay due to additional time required to complete coordination with the FDOT to execute a construction agreement. Execution of that agreement is expected in February 2024.
- Contract 5 - Blue Shanty Flowway: Final design is scheduled to be complete in FY 2026, and the contract award is scheduled for FY 2026.
- Contract 6 - L-29 Levee Removal: Design is scheduled to begin in FY 2024, and the contract award is scheduled for FY 2028.

Indian River Lagoon South – C-23 Estuary Discharge Diversion Canal

Lead Agency: SFWMD

Anticipated Completion Year: 2025

Project Description: This interconnect canal project will divert harmful discharges from the C-23 Canal and send it south to the C-44 Reservoir. It improves water quality in the St. Lucie Estuary and helps bring flows to the Estuary closer to its natural pattern.

Status: Construction; S-457 Pump Station foundation pour is complete, canal excavation in Segment 1 is 65% and Segment 3 is 95% complete, Segment 2 Clearing & Grubbing has begun, and Coca Cola Box Culvert excavation is 33% complete.

Indian River Lagoon South – C-23/24 North Reservoir

Lead Agency: USACE

Anticipated Completion Year: 2030

Project Description: The C-23/24 North Reservoir is a component of the IRL South Project, encompassing more than 2,000 acres. Once completed, it will store approximately 32,000 acre-feet of water.

Status: Design.

- Contract 1 – S-426 Pump Station, Afterbay, S-245 Culvert, PC-37 Canal and Structure: The draft final design is complete, and the contract award is scheduled for Q2 FY 2024.
- Contract 2 – Reservoir Embankment Construction: The draft final design is expected May 2024.

Indian River Lagoon South – C-23/24 South Reservoir

Lead Agency: SFWMD

Anticipated Completion Year: 2030

Project Description: The C-23/24 South Reservoir is a component of the IRL South Project, encompassing more than 3,500 acres. Once completed, it will store approximately 57,000 acre-feet of water.

Status: Design is ongoing by the SFWMD. Package 1 - Canal and Structure construction contract will be awarded in FY 2024, and Package 2 - Reservoir construction contract will be awarded in FY 2025.

Indian River Lagoon South – C-23/24 STA

Lead Agency: USACE

Anticipated Completion Year: 2026

Project Description: The 2,700-acre C23/24 STA is designed to treat water from the C-23 and C-24 Basins. Its purpose is to reduce the sediment, phosphorus, and nitrogen going to the St. Lucie River Estuary and the southern portion of the Indian River Lagoon.

Status: Construction; Stormwater treatment areas (STA) Cells 1 and 2 are near 100% complete. Cell 3 clearing and grubbing is 90% complete. Cell 4 clearing and grubbing is 75% complete. Cell 5 clearing and grubbing is 97% complete. All water control structures are 50% complete.

Indian River Lagoon South C-25 Reservoir and STA

Lead Agency: SFWMD

Anticipated Completion Year: 2028

Project Description: The C-25 Reservoir and STA will capture, store and treat local stormwater runoff from the C-25 Canal. The project reduces the rate of harmful flows to downstream estuaries and improves water quality in the estuary and lagoon. Project features include an 803-acre reservoir with 5,176 acre-feet of storage, a 532-acre STA, and a 250 cfs pump station.

Status: Design. Package 1 for Site Preparation estimated contract award in Q4 FY 2024.

Indian River Lagoon South – C-44 Reservoir

Lead Agency: USACE

Completion Year: 2021

Project Description: The C-44 Reservoir will store 50,000 acre-feet of water, including local basin runoff and Lake Okeechobee releases. This will reduce harmful releases reaching the St. Lucie Estuary that can fuel harmful algal blooms.

Status: Construction Complete, in Operational Testing and Monitoring. Repairs to S-402 complete. Designing additional seepage management feature to be constructed under separate contract starting in 2024.

Indian River Lagoon South – C-44 STA

Lead Agency: SFWMD

Completion Year: 2019

Project Description: The 6,400-acre C-44 STA will remove harmful nutrients and provide regional water quality benefits. It will treat the water stored in the reservoir before it is released into the estuary.

Status: Construction Complete, in Operational Testing and Monitoring.

Indian River Lagoon South Natural Water Quality Storage Areas and Muck Removal

Lead Agency: SFWMD

Anticipated Completion Year: TBD

Project Description: This project is part of Indian River Lagoon – South Phase II and will work together with other IRL-South components to protect and restore the lagoon and estuary. It will create natural storage by preserving and restoring lands in the contributing basins of the north and south forks of the St. Lucie River and the estuary.

Status: Planning; Acquiring Lands.

Lake Okeechobee System Operating Manual (LOSOM)

Lead Agency: USACE

Anticipated Completion Year: 2024

Project Description: The USACE is updating the Lake Okeechobee operations manual to reevaluate and define operations for the Lake Okeechobee regulation schedule that takes into account additional infrastructure that will soon be operational.

Status: Planning; The Water Control Plan (WCP) will go into effect once it is signed by USACE, South Atlantic Division. Additional coordination is still underway within USACE to complete the Final Environmental Impact Statement (EIS). The Final WCP will be released when the Final EIS is complete.

Lake Okeechobee Watershed Restoration Project (LOWRP)

Lead Agency: SFWMD

Anticipated Completion Year: TBD

Project Description: LOWRP is an Everglades restoration planning effort that will improve water levels in Lake Okeechobee; improve the quantity and timing of discharges to the St. Lucie and Caloosahatchee estuaries; restore degraded habitat for fish and wildlife throughout the study area; and increase the spatial extent and functionality of wetlands.

The Florida Legislature appropriated a total of $150 million for the LOWRP during the previous three legislative sessions. During the 2021 legislative session, the Florida Legislature also passed Senate Bill 2516 to further support and expedite the implementation of LOWRP. This funding was provided to the SFWMD for the design, engineering and construction of specific LOWRP components designed to achieve the greatest reduction in harmful discharges to the Caloosahatchee and St. Lucie Estuaries.

Status: Planning; Design, Well Testing and ASR Science Plan. The USACE is targeting a Chief's Report for the wetlands restoration in Summer 2024.

Loxahatchee River Watershed Restoration Project

Lead Agency: SFWMD

Anticipated Completion Year: 2032

Project Description: The Loxahatchee River Watershed Restoration Project will restore and sustain the overall quantity, quality, timing and distribution of fresh water to the federally designated "National Wild and Scenic" Northwest Fork of the Loxahatchee River for current and future generations. This project also seeks to restore, sustain and reconnect the wetlands and watersheds that form the historic headwaters for the river. These areas include Jonathan Dickinson State Park, Pal Mar East/Cypress Creek, DuPuis Wildlife and Environmental Management Areas, J.W. Corbett Wildlife Management Area, Grassy Waters Preserve, Loxahatchee Slough, the Northwest Fork of the Loxahatchee River and the Loxahatchee River Estuary.

Status: Design.

- Flowway 1: Anticipated to execute design contract in FY 2024.
- Flowway 2 and 3: In design, survey and geotechnical work underway.

Picayune Strand Restoration Project

Lead Agency: USACE

Anticipated Completion Year: 2025

Project Description: This project restores the natural water flow across 85 square miles in western Collier County that were drained in the early 1960s in anticipation of extensive residential development. The restoration involves plugging 48 miles of canals, removing 260 miles of crumbling roads, and constructing three major pump stations, all of which will restore more than 55,000 acres of natural habitat.

Status: Construction. All three Picayune pump stations and Miller Tram and Road Removal are complete.

- Southwest Protection Feature Levee: Four of six lifts for the full seven miles are complete and the fifth and sixth lifts are underway with expected completion by December 2024.
- Conveyance Features (Design/Build Contract): U.S. 41 culverts construction complete, restoring bypass road and bicycle path, expected final completion in February 2024. CR-92 construction underway and expected completion by October 2024.

Southern Everglades

Lead Agency: USACE/SFWMD

Anticipated Completion Year: TBD

Project Description: The Southern Everglades project aims to provide substantial amounts of freshwater to improve the quantity, timing, and distribution of freshwater in the Greater Everglades and Everglades National Park wetlands and Florida Bay.

Status: Planning; The 2023 Integrated Delivery Schedule (IDS) indicates the study will kick off in 2025.

Western Everglades Restoration Project (WERP)

Lead Agency: USACE/SFWMD

Anticipated Completion Year: TBD

Project Description: The Western Everglades Restoration Project is an Everglades restoration planning effort that aims to improve the quantity, quality, timing, and distribution of water in the western Everglades. The study area covers approximately 1,200 square miles, bounded by the L-1 Canal to the north; the L-2 Canal, Stormwater Treatment Area (STA) 5/6, and the eastern boundary of the Miccosukee Tribe of Indians of Florida Reservation to the east; a natural watershed boundary to the west; and portions of U.S. Highway 41, Loop Road, and the southern Miccosukee Tribe of Indians of Florida Reservation area to the south.

Status: Planning, Design & Construction; The 3x3x3 planning study waiver request, for schedule and budget to complete the study, was approved by the Assistant Secretary of the Army, for Civil Works, January 2024. The draft Planning Implementation Report (PIR) and draft Environmental Impact Statement (EIS) were released for public comment 15 Dec 2023. A series of "open house" public meetings were held in December to discuss the project. In-person and virtual National Environmental Policy Act (NEPA) Public Meetings were held January 17 & 18, 2024. The USACE is targeting a Chief's Report in September 2024 for inclusion in WRDA 2024.

- Region 4 early work - L-28 Culverts construction contract awarded in December 2023. Modeling complete and Geotechnical work ongoing for 11-Mile Road, US-41 and Loop Road Culverts.

Northern Everglades and Estuaries Protection Program (NEEPP)

Progress Update – February 2024

SOUTH FLORIDA WATER MANAGEMENT DISTRICT (SFWMD) PROGRESS UPDATE

On December 19, 2023, our interagency team of federal, state, and local officials gathered at the Caloosahatchee (C-43) Reservoir Project site to celebrate the completion of the Caloosahatchee (C-43) Reservoir Pump Station. The Caloosahatchee (C-43) Reservoir is an 18-square-mile, above-ground water storage project in Hendry County, which is designed to hold excess water during the wet season and then provide beneficial flows of freshwater to the Caloosahatchee Estuary during the dry season. As a NEEPP project in the Caloosahatchee River Watershed, this is also part of the state-federal CERP with the U.S. Army Corps of Engineers for regional restoration and storage enhancement. With the pump station now finished, work is ongoing to complete the reservoir's large embankments. Following construction completion, this massive reservoir will hold approximately 170,000 acre-feet of water. Looking ahead, initial operations are planned to commence in 2025.

Caloosahatchee (C-43) Reservoir Pump Station ribbon cutting (SFWMD, December 2023).

INTERAGENCY SPOTLIGHT

In December 2023, Governor Ron DeSantis submitted the state's proposed **Focus on Florida's Future Budget for Fiscal Year 2024-2025** to the Florida Legislature. Building on the progress achieved under Executive Orders **19-12** and **23-06**, the Governor's Budget for Fiscal Year 2024-2025 includes recommendations to further advance the protection of Florida's environment and water quality, totaling $3.4 billion. Key priorities include Everglades restoration – Comprehensive Everglades Restoration Plan (CERP), Northern Everglades and Estuaries Protection Plan (NEEPP), and Lake Okeechobee Watershed Restoration Project (LOWRP); targeted water quality improvements for the newly expanded Water Quality Grant Improvement Program, Indian River Lagoon water quality improvement projects, accelerated projects to meet scientific nutrient reduction goals, and Caloosahatchee River and Estuary water quality improvement projects; and work focused on combating harmful algal blooms and red tide. Further details on the Focus on Florida's Future budget proposal are available at **flgov.com/wp-content/uploads/2023/12/Budget-Highlights.pdf**.

New Caloosahatchee (C-43) Reservoir Pump Station (SFWMD, December 2023).

A LOOK AHEAD

January 9 – March 8, 2024
2024 Regular Session of the Florida Legislature.

March 1, 2024
Final 2024 SFER publication on the SFWMD website at **SFWMD.gov/SFER**.

FLORIDA DEPARTMENT OF ENVIRONMENTAL PROTECTION (DEP) PROGRESS UPDATE

DEP is working through the verification process for updated project information from stakeholders through December 31, 2023, in support of the *2023 Statewide Annual Report on Total Maximum Daily Loads, Basin Management Action Plans, Minimum Flows or Minimum Water Levels, and Recovery or Prevention Strategies (STAR)*, which will be published by July 1, 2024. This comprehensive annual report provides updates on 6,000+ water quality restoration projects being implemented in over 30 active BMAPs across the state. For additional information regarding the annual STAR, visit DEP's website at **floridadep.gov/STAR**.

DEP is collecting and reviewing Clean Waterways Act (CWA) wastewater and onsite sewage treatment and disposal system (OSTDS) draft remediation plans from local governments as part of the 2025 BMAP update process. Draft plans are due February 1, 2024, and the final plans will be due August 1, 2024. More information on these plans can be found at **floridadep.gov/dear/water-quality-restoration/content/clean-waterways-act-requirements-wastewater-onsite-sewage.**

As part of the state's firm commitment to water quality restoration, several water quality grant awards have been announced recently. These include $10 million for innovative technologies to combat harmful algal blooms, $30 million for water quality projects in the Caloosahatchee River and Estuary, $200 million for water quality projects statewide, and $100 million for projects to restore the Indian River Lagoon. Of this total, an estimated $94 million is associated with water quality improvement projects within the SFWMD region. More details about all these grants can be found at **protectingfloridatogether.gov/state-action/grants-submissions**.

FLORIDA DEPARTMENT OF AGRICULTURE AND CONSUMER SERVICES (FDACS) PROGRESS UPDATE

As of January 30, 2024, FDACS has enrolled 84% of the agricultural acres and has completed 85% of required implementation verifications (IVs) for agricultural operations within the NEEPP boundary. IV completion increased by 4% in December and January as more of the enrolled producers whose IVs were deferred due to impacts of Hurricanes Ian and Nicole are having IVs completed. FDACS continues to collect and retain required nutrient application records as IVs are conducted.

FDACS Office of Agricultural Water Policy (OAWP) is working to revise nine existing Florida agricultural Best Management Practices (BMP) manuals and rules. As part of this effort, OAWP is also creating a new manual to enroll livestock types, such as goats, sheep, swine and more exotic animals, that do not currently have a BMP manual available. The Sod Manual and Cattle Manual revisions have been drafted and OAWP expects to start rulemaking for these two soon. Work groups for the other manuals are scheduling meetings and have started drafting needed revisions.

Green Heron (SFWMD, September 20