APPENDIX G
RECOVER TECHNICAL MEMOS

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MEMORANDUM

To:
Howard Gonzales Jr., (Chief, Ecosystem Branch, Programs & Project Management Division)
Andrew J LoSchiavo, (Restoration and Resources Section Chief, Planning and Policy Division),
RECOVER Executive Committee (REC):
Donna George; Gretchen Ehlinger; Laura Brandt; Agnes McLean and Phyllis Klarmann

From:
Decomp Physical Model (DPM) Leadership

Colin Saunders CJS; Sue Newman SN ; Christa Zweig  ; Fred Sklar FS

April 3, 2020

Dear Howie, Andy and the REC,

We are requesting that RECOVER and USACE work with the DPM Leadership on a collaboration to integrate monitoring and adaptive management into the planning of the CEPP-South project/contracts. There are lessons to be learned from the DPM that can be applied to CEPP-S, and there are uncertainties that still need to be reduced. This collaboration would address the uncertainties brought-to-light by the Decomp Physical Model (DPM) adaptive management pilot study and would help build a consensus around the scope and scale of the CEPP-S USACE contracts and a general CEPP-S Adaptive Management plan.

The DPM Leadership believes that there is a scientific way to mitigate the CEPP-S potential to cause downstream marsh degradation. We believe that there are designs for spreader swales (e.g., tree plantings) and canal plugs (e.g., hydro-dams) that could be incorporated into CEPP-S construction contracts. However, to be clear, it is not our intention to slow down the execution of the USACE's New Start contract that needs to be implemented by the close of FY20. Working together we can be sure that first contract is holistic and cognizant of the need for a Monitoring and Adaptive Management Plan.

This Memo is divided into three parts: 1) General DPM results, 2) the need for A.M. and 3) options for a path forward. But first, a little background on adaptive management and the DPM.

USACE Implementation Guidance for Section 2039 (Monitoring ecosystem restoration), Section 2036 (Mitigation for fish and wildlife and wetlands losses) of the 2007 Water Resources Development Act (WRDA) and Section 1161 of WRDA 2016 (Appendix A) requires monitoring and adaptive management for ecosystem restoration projects. To quote from the USACE Technical Guide on AM: *"Adaptive management is defined as a formal, science-based approach to risk management that permits implementation of actions despite uncertainties. Knowledge gained from monitoring and evaluating results is used to adjust and direct future decisions."*

The DPM is a CERP Pilot Study and AM Assessment specifically designed to evaluate the uncertainties associated with canal backfilling and hydrologic velocities needed for CERP.

Phase II data collection is focused upon the causes and the rate of downstream marsh degradation associated with canal-to-marsh delivery of fresh, “clean” water. Elements of this degradation were not realized until recently and were not anticipated when the CEPP Adaptive Management Options Matrix was constructed and costs were estimated. The question now for the State and USACE is: How do we operationalize this risk reduction tool (i.e., Adaptive Management) into CEPP-South?

Part 1. DPM Results. The first 2 phases of the adaptive management DPM project document that the restoration of marsh-to-marsh connectivity is the key to restoring the ridge and slough (R&S) landscape. This includes re-establishing hydrologic sheetflow when re-connecting basins following the removal of flow barriers and restoring the ecological processes that maintain or restore marshes upstream and downstream within the reconnected footprint.

DPM findings related to point source discharges

- They generate localized high velocities (typically >5 cm/s) downstream and as a result:
    - Shift vegetation communities, including a loss of periphyton.
    - Create elevated biomass TP in periphyton.
    - Create phosphorus-enriched sediment (i.e., >500 mg TP/kg).
    - A phosphorus-enrichment zone is advancing at approximately 150-m / year.

DPM findings related to canal-water flow across levee gaps

- When canals are not plugged or partially backfilled then most (50-70%) of the water across the L-67C levee gap is canal-water, and as a result:
    - Levee gaps create enriched conditions downstream through mobilization of P enriched canal sediments (> 800 mg TP/kg) and the concentration of these sediments into a small area.
- Backfilled (partial and complete) canal treatments adjacent to the gap exhibit higher marsh-to-marsh flow than the unfilled treatment and greater areal coverage of submerged aquatic vegetation (SAV); producing higher fish catch-per-unit-effort, greater surface area for sediment capture, and improved ability to assimilate water column P.

DPM findings related to Ridge/Slough restoration

- Where high flows occur, slough sediments move into ridges, an important step in rebuilding and restoring pattern and topography of the R&S landscape.
- Vegetation management as part of an Active Marsh Improvement (AMI) plan will reconnect remnant sloughs extending the footprint of restorative sheetflow conditions.

Part 2. Potential impacts of CEPP-S without Adaptive Management (AM)

The scientific community associated with conducting and analyzing the DPM science have met numerous times over the last few years, extrapolated the DPM findings into a future and concluded that the marshes in the pocket, WCA-3B and possibly even the Park, will continue to degrade, if lessons learned from the DPM are not somehow integrated into CEPP-S. Without a CEPP-S Adaptive Management plan then:

- P-enrichment and marsh degradation will expand within the pocket and downstream of the L-67C degrade.

- The expanse of marsh degradation from the southernmost portion of the L-67C, approximately 700-m from the L-29 levee, could reach the L-29 within a decade.
- Cattails in the Blue Shanty Flow Way will become self-sustaining and resilient.
- Restoration of R&S topography and patterning will not occur in areas where cattail are established, despite higher flows.
- Without some backfilling of canals, the potential for fish habitat improvement via colonization of SAV will not be possible. Further, without canal SAV, the processes for mitigating P-enrichment via settling and P assimilation would be minimal.

Part 3. Recommendations for a Path Forward

Without some form of active adaptive management that there will be less marsh-to-marsh connectivity across the L-67A pocket and over the L-67C levee degrade, and as a result, the CEPP goals of hydrologic and ecological restoration will not be met for this part of the Greater Everglades. Phases 1 and 2 of the adaptive management DPM project indicate that uncertainties remain about how to construct culverts and levee gaps without detrimental ecological impacts. We believe, based upon the data that has been published in the peer-reviewed, South Florida Environmental Report that an adaptive management program could be implemented as part of CEPP-S and that options include the following:

- Abiotic or biotic spreader swales downstream of culverts to reduce sediment enrichment from point-source discharges and localized loading. Swales could halt the rate of sediment and marsh degradation and its spread further downstream to the L-29 levee gap
- Canal backfilling or plugging to reduce canal-to-marsh flow and reduce excessive P-loading and enrichment downstream of the L-67C levee degrade. Initial field tests of temporary applications (e.g., hydro-dams instead of limestone fill) could be adjusted with testing (e.g., adjust elevation/length and shape of swales, canal plugs or backfill).
- The creation of shallower portions of the L-67C canal to support SAV, improve fish habitat, better capture and assimilate water column phosphorus, and replace high-TP legacy sediments with low-TP sediments that promote, rather than interfere with, R&S restoration.
- Use an Active Marsh Improvement (AMI) plan, similar to the program in DPM Phase 2, to expand and reconnect remnant sloughs throughout the entirety of the Blue Shanty Flow Way; providing additional “ecological lift” to the R&S landscape by maximizing the area of sheetflow, increasing aquatic production for foodwebs, and adding habitat for use by small fauna and wildlife.

In conclusion, we want to work with the Corps and RECOVER on the options associated with the incorporation of a CEPP-South AM Plan into the USACE New Start contract, the PDOM and the design features for the Blue Shanty Flow Way. This will ensure that all three basins (pocket, interior/south WCA-3B and the ENP) affected by CEPP-S projects receive benefits of enhanced sheetflow without the negative consequences of marsh degradation, cattail invasions, loss of slough function and the excessive localized loadings from culverts and canal flows. We would like to have a meeting to discuss next steps.

CC: Ken Bradshaw, Daniel Crawford, Christyn Figueroa, Lawrence Glenn, Lisa Ingram, Jennifer Leeds, Matt Morrison, Mindy Parrott, Alexandra Salazar, Jennifer Reynolds, Leslye Waugh

REstoration, COordination, and VERification (RECOVER)
Executive Committee

MEMORANDUM

DATE: August 24, 2020

TO: Central Everglades Planning Project (CEPP) Project Managers:

USACE:	**Kyle Keer (South), Tamela Kinsey (North), Donna George (EAA)**
SFWMD:	**Leslye Waugh (all)**

FROM: RECOVER Executive Committee

THROUGH: RECOVER Program Managers

USACE:	**Donna George**
SFWMD:	**Phyllis Klarmann (Interim)**

SUBJECT: RECOVER'S CONSIDERATION OF FINDINGS FROM THE DECOMPARTMENTALIZATION AND SHEETFLOW ENHANCEMENT PHYSICAL MODEL (DPM) FINDINGS FOR CEPP PRESENTED IN PROJECT MEMORANDUM DATED APRIL 3, 2020

1. PURPOSE:

Through this memorandum, the RECOVER Executive Committee (REC) expresses its consideration of findings from the DPM Science Team stated in their memorandum dated April 3, 2020 and requests that the CEPP Project Delivery Team (PDT) consider incorporating some or all of the recommendations into CEPP Design and the CEPP Adaptive Management Plan (see April 3, 2020 memo and below).

2. REGULATION/GUIDANCE:

As stated in the 2003 Program Regulations (Pro Regs) for Comprehensive Everglades Restoration Plan (CERP), "RECOVER was established by USACE and SFWMD to conduct assessment, evaluation, and planning and integration of the CERP with the overall goal of ensuring that the goals and purposes of CERP are achieved" (2003 Pro Regs 385.20(a)). The 2003 Pro Regs also state that "RECOVER is not a policy making body, but has technical and scientific responsibilities that support implementation of CERP."

Additionally, RECOVER is guided by CERP Guidance Memorandum (CGM) 066, RECOVER Assistance to Projects During Implementation, and CGM 056, Guidance for Integration of Adaptive Management (AM) into Comprehensive Everglades Restoration Plan (CERP) program and Project Management. CGM 066 states, "RECOVER will review and provide input to project-level monitoring plans, adaptive management plans, and operation plans." CGM 056 states, "RECOVER will assist Project Delivery Teams (PDTs) by: (1) reviewing adaptive management plans developed by PDTs and consulting with PDTs to improve and execute the adaptive management plan; and (2) advising PDTs on strategies to resolve program level uncertainties and activities that may help PDTs develop and execute the adaptive management plan."

3. INFORMATION/BACKGROUND:

The CEPP PIR Annex D contains the adaptive management plan required by USACE implementation guidance for WRDA 2007 Section 20391, the 2003 Programmatic Regulations for the Comprehensive Everglades Restoration Plan and CGM 56, and the monitoring plans required to address various laws, regulations, and permits necessary to implement CEPP. Annex D also describes how adaptive management will be applied throughout the process. "RECOVER will *work with* the CEPP project managers to develop workplans and monitoring scopes of work in coordination with other technical resource providers as needed to provide the budget, schedule, and details to execute the adaptive management strategies identified in the Annex D. At a minimum, one RECOVER scientist should be dedicated to overall coordination of the CEPP monitoring and adaptive management efforts. Additional technical expertise should be engaged as needed." In a separate memorandum dated August 24, 2020, RECOVER requested that the CEPP Project Management create and support an Adaptive Management Team in coordination with RECOVER, the CEPP PDT and the DMP Science Team. Although an official Adaptive Management Team doesn't currently exist, the DPM Science Team through the Decomp Physical Model has been addressing uncertainties and providing information to the PDT that can be used to inform and improve project implementation.

In early calendar year (CY) 2020, discussions between the DPM Science Team and the CEPP PDT regarding the locations of S-63x structures in the L-67A levee and the S-633 interim gap in the L-67C levee were held. Throughout January and February, the DPM Science Team and the CEPP PDT discussed the science and data obtained from DPM and its applicability to CEPP. Concerns were raised by the CEPP PDT regarding application of new science, effects on project schedule and timing, as well as, engineering changes and redesign efforts. In mid-March 2020, CEPP Project Management requested that RECOVER review and evaluate the DPM science recommendations regarding these structures.

RECOVER completed this request via memorandum sent to CEPP Project Management on March 24, 2020. Via the March 24th memorandum, RECOVER, "recommended the relocation of the S-63x structures to better align with remnant sloughs and areas that provide more favorable elevation

gradients," and "recommended the position of the S-633 interim gap be located south of the remnant tree island."

On April 3, 2020, The U.S. Army Corps of Engineers (USACE) and the REC received a memorandum from the DPM leadership. Via the April 3rd memorandum, DPM Leadership outlined three main items: (1) general DPM results; (2) the need for adaptive management; and (3) options for a path forward. The DPM Leadership requested coordination and collaboration between RECOVER, USACE, and DPM Leadership.

Following receipt of the April 3rd memorandum from DPM Leadership, RECOVER held a series of meetings to discuss the DPM memorandum and evaluate the results and recommendations from DPM. RECOVER concurred with the findings of the DPM science team and recommend that the CEPP Project Delivery Team (PDT) consider the incorporation of some or all of the recommendations provided by the Decomp Physical Model (DPM) Science Team into CEPP Design and the CEPP Adaptive Management Plan.

The following section outlines the issues raised by the DPM study for CEPP regarding potential downstream marsh degradation and recommendations for these issues.

4. ISSUES:

The DPM Science Team raised three issues to the attention of RECOVER and provided recommendations for RECOVER's consideration. Those three issues refer to: design of spreader swales, reduction of canal flows, and active marsh improvement.

Design of Spreader Swales

Findings from the DPM study presented in the South Florida Environmental Reports (Saunders et al., 2016; Saunders, 2020; Sklar, 2020) have documented the following:

- High localized velocities of >3 cm/s occur in ridge and slough habitats within approximately 400-m of the S-152;
- Under these velocities, slough periphyton disappears;
- Slough algal biomass becomes enriched in Total Phosphorus (TP) content, >500 mg/kg;
- Slough algal biomass becomes dominated by green algae over taxa typical of calcareous, low TP periphyton mats;
- Benthic "floc" sediments become enriched in TP, >500 mg/kg;
- Because green-algal derived, high-TP sediments are transported in the water column with enhanced flow, they are transported downstream;
- A zone of floc P-enrichment (>500 mg TP/kg) is spreading south of the S-152 structure at approximately 150-m / year.

The DPM science shows marsh degradation associated with point-source (culvert) discharges with the power to degrade downstream systems at the rate of 150 meters per year. It is recommended

that field testing of spreader swales be implemented because swales that dissipate high-energy flows around culverts (Breusers and Raudkivi, 1991) are hypothesized to reduce localized high velocities and P-loading that cause sediment enrichment and marsh degradation.

DPM Recommendation

Conduct field tests and/or computer simulations to identify the optimal spreader swale design for minimizing ecological damage and maximizing sheetflow benefits around point-source discharges from the S-152 structure. Based on the optimal design, construct spreader swales, as needed, to minimize (maximize) ecological damage (benefits) associated with discharges from the S-631, S-632 and S-633 structures.

Reduction of Canal Flows

Findings from the DPM study presented in the South Florida Environmental Report (Saunders et al., 2016; Saunders, 2020; Sklar, 2020) have demonstrated the following:

- Flows from the S-152 culvert move into the L-67C canal and generate high velocities >10 cm/s within (and parallel to) the L-67C canal;
- Prior to levee removal and canal fill treatments, sediments collected within the L-67C canal were already enriched in P (approximately >1000 mg/kg);
- The majority of flows moving across the L-67C levee gap in DPM are from the canal-to-marsh flow rather than marsh-to-marsh flow (i.e., flow moving perpendicular to the canal and adjacent levee gap);
- Backfilled portions of the L-67C canal exhibit higher proportions of marsh-to-marsh flow; and
- Marshes downstream of the unfilled L-67C canal became enriched in sediment TP (>500 mg/kg) within approximately three years of DPM flows; in contrast, marshes downstream of the backfilled portion of the L-67C canal exhibit lower sediment TP and relatively slower rates of TP increases.

Based on DPM findings, shallower portions of the L-67C canal would be expected to support SAV, improve fish habitat, capture water column P, and replace high-TP legacy sediments with low-TP sediments (Saunders et al., 2016; Saunders, 2020; Sklar, 2020). The DPM Science indicates that canal backfilling and/or plugging has the potential to reduce canal-to-marsh flow and prevent excessive P-loading downstream of the L-67C degrade. It is recommended that computer simulations and/or field testing of canal plugs or fill be implemented to reducing canal-to-marsh flow and evaluate the best design that minimizes canal-to-marsh flow and the resulting damaging effects of P-enrichment of sediments downstream of the degraded L-67C levee. Design alternatives will explore and may utilize combinations of materials (e.g., adjustable short hydro-dams; long hydro-dams; limestone plugs) to evaluate the best approach for reducing canal-flow. Testing may include evaluation of ecological responses to plugged (DPM gap) versus unplugged (S-633 gap) canal and levee gap treatments. Temporary applications (e.g., hydro-dams) could be adjusted with testing to assess optimal volumes or heights of canal plugging.

DPM Recommendation

Conduct field tests and/or computer simulations to identify the optimal canal-plug design for minimizing harmful ecological effects of canal-to-marsh flows within and downstream of the L-67C canal and degraded levee. Based on the optimal design, canal plugging may be needed to minimize (maximize) ecological damage (benefits) from the L-67C canal/gap feature elsewhere within the Blue Shanty Flow Way and downstream of the S-631 within WCA-3B.

Active Marsh Improvement

Findings from the DPM study presented in the South Florida Environmental Report (Saunders et al., 2016; Sklar, 2020) have demonstrated the following:

- reconnecting remnant sloughs, using targeted herbicide application based on historic imagery, provides "ecological lift" to the Ridge-and-Slough landscape;
- Slough velocities are increased by 2-3-fold; and
- Velocities following the historic north-to-south flow pattern are increased disproportionately, indicating redirection of sheetflow at the landscape-level.

The DPM Science showed that by implementing active adaptive management (AMI) of the vegetation downstream of a point source or a levee gap it is possible to enhance ecological benefits of slough restoration, enhance downstream flow, increase the spatial footprint of sheetflow restoration, and improve the alignment of flow with the historic patterning. A large-scale implementation of active marsh improvement in the Blue Shanty Flow Way is expected to improve hydrologic connectivity, sheetflow benefits and discharge to the L-29 levee gap.

DPM Recommendation

Implement active marsh improvement steps to maximize restorative sheetflow velocities and increase coverage of slough habitat. Conduct an active marsh improvement approach within a CEPP Adaptive Management program to enhance the discharge capacity of flow through the Blue Shanty Flow Way to the L-29 degrade, Tamiami Trail Bridge and Everglades National Park.

5. RECOVER'S EVALUATION:

RECOVER agrees with the SFWMD DPM Science Team that uncertainties remain about the effectiveness and potential ecological risks associated with flow structures and features associated with CEPP in WCA-3B. Updating the CEPP Adaptive Management Plan, incorporating the scientific approach of field tests, computer models, and appropriate hydrologic and ecological monitoring should be included into CEPP in coordination with the CEPP Project Team.

First, RECOVER recommends evaluation and possible implementation of alternate spreader swale designs aimed at enhancing the magnitude and area of sheetflow while minimizing ecological degradation, cost and structure discharge capacity.

Second, RECOVER recommends evaluation and possible implementation of alternate canal-flow reduction designs aimed at reducing canal-to-marsh flow and maximizing marsh-to-marsh flow across the degraded L-67C levee.

Third, RECOVER recommends evaluation and possible implementation of alternate Active Marsh Improvement designs aimed at enhancing restorative sheetflow velocities over as large an area as possible within the Blue Shanty Flow Way.

Fourth, RECOVER recommends continued evaluation of all CEPP uncertainties that may require monitoring and adaptive management.

RECOVER looks forward to continued coordination and communication between RECOVER, CEPP, and DPM to advance the CEPP Adaptive Management Plan to reach the best ecological and hydrological restoration possible.

6. REFERENCES:

- Breusers H.N.C. and A.J. Raudkivi. 1991. Hydraulic Structures Design Manual Series, Vol. 2. ISBN 9789061919834. CRC Press. 152 Pages
- DOD. 2003. Programmatic Regulations for the Comprehensive Everglades Restoration Plan; Final Rule. Department of Defense, 33 CFR Part 385, Federal Register, November 12, 2003.
- Fischenich, C.G, S.J. Miller and A.J. LoSchiavo. 2019. A Systems Approach to Ecosystem Adaptive Management: A USACE Technical Guide. ERDV?EL SR-19-9. 171 pp. http://acwc.sdp.sirsi.net/client/default.
- Saunders, C.J. (ed.). 2016. Appendix 6-1: Decomp Physical Model Research. 2020 South Florida Environmental Report – Volume I, South Florida Water Management District, West Palm Beach, FL.
- Sklar, F.H. (ed.). 2020. Chapter 6: Everglades Research and Evaluation. 2020 South Florida Environmental Report – Volume I, South Florida Water Management District, West Palm Beach, FL.
- USACE and SFWMD. 2011. CERP Guidance Memorandum 56: Guidance for Integration of Adaptive Management (AM) into Comprehensive Everglades Restoration Plan (CERP) program and Project Management.
- USACE and SFWMD. 2018. CERP Guidance Memorandum 66: RECOVER Assistance to Projects During Implementation.
- USACE. 2014. Central Everglades Planning Project Final Integrated Project Implementation Report and Environmental Impact Statement. Revised December 2014.

RECOVER Executive Committee
SUBJECT: RECOVER'S CONSIDERATION OF FINDINGS FROM THE DECOMPARTMENTALIZATION AND SHEETFLOW ENHANCEMENT PHYSICAL MODEL (DPM) FINDINGS FOR CEPP PRESENTED IN PROJECT MEMORANDUM DATED APRIL 3, 2020.

RECOVER Executive Committee

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Donna George
USACE

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Agnes McLean
NPS

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Laura Brandt
USFWS

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Fred Sklar
SFWMD

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Phyllis Klarmann
SFWMD

Enclosure (include DPM memo from April 3rd)

Cc:

Lawrence Glenn, Director, Water Resources Division, SFWMD
Jennifer Reynolds, Division Director, Ecosystem and Capital Projects, SFWMD
Jennifer Leeds, Bureau Chief, Ecosystem Restoration, SFWMD
Andrew LoSchiavo, Chief, Restoration and Resources Section, Planning, USACE
Betsy Evans, RECOVER Greater Everglades Regional Coordinator, USACE
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Leslye Waugh, CEPP South Project Manager, SFWMD
Michael Simmons, RECOVER Adaptive Management Lead, USACE
Matt Morrison, Office Chief, Federal Policy and Coordination, SFWMD
Mitchell Thomas, CEPP Engineer, USACE
Howie Gonzales, Chief, Ecosystem Restoration Branch, Project Management, USACE

RECOVER Executive Committee
SUBJECT: RECOVER'S CONSIDERATION OF FINDINGS FROM THE DECOMPARTMENTALIZATION AND SHEETFLOW ENHANCEMENT PHYSICAL MODEL (DPM) FINDINGS FOR CEPP PRESENTED IN PROJECT MEMORANDUM DATED APRIL 3, 2020.

Angela Dunn, Chief, Environmental Branch, Planning, USACE
Donna George, RECOVER Project Manager, USACE
Phyllis Klarmann, RECOVER Interim Executive Committee Member, SFWMD
Agnes McLean, RECOVER Executive Committee Member, ENP
Laura Brandt, RECOVER Executive Committee Member, USFWS
Gretchen Ehlinger, RECOVER Executive Committee Member, USACE
Fred Sklar, RECOVER Executive Committee Member, SFWMD
Melissa Nasuti, CEPP Environmental Lead, USACE

MEMORANDUM FOR Central Everglades Planning Project – South Project Managers

Nicolette Iatropoulos, Michael Collis
U.S. Army Corps of Engineers, Jacksonville District

Julie Mitchell
South Florida Water Management District

DATE: 7 APRIL 2026

SUBJECT: REstoration, COordination, VERification (RECOVER) recommendations for Central Everglades Planning Project – South (CEPP-S) design of L-67A canal plugs and spreader swales.

1. **PURPOSE:** This memorandum documents RECOVER's recommendations for the evaluation of alternative designs of canal plugs and spreader swales, as provided by the CEPP-S project delivery team.

2. **GUIDANCE:** RECOVER is an interagency and interdisciplinary scientific and technical team first described in the "Central and Southern Florida Project Comprehensive Review Study Final Integrated Feasibility Report and Programmatic Environmental Impact Statement" or "Restudy" in 1999. As outlined in the 2003 Programmatic Regulations for the Comprehensive Everglades Restoration Plan; Final Rule (Department of Defense [DOD] 2003):

   > RECOVER was established by the U.S. Army Corps of Engineers (USACE) and the South Florida Water Management District (SFWMD) to conduct assessment, evaluation, and planning and integration activities using the best available science that support implementation of the Comprehensive Everglades Restoration Plan (CERP or Plan) with the overall goal of ensuring that the goals and purposes of the Plan (footnote on Plan is CERP WRDA Section 601(a)(4) Definitions) are achieved.
   >
   > RECOVER is not a policy making body but has technical and scientific responsibilities that support implementation of the Plan. (33 CFR Part 385.20 (a)).
   >
   > RECOVER is an interdisciplinary, interagency scientific and technical team that was designed to perform system-wide analyses. The role of RECOVER is to promote an integrated view within the implementing agencies on matters relevant to the implementation of the Plan in order to ensure that the goals and purposes of the Plan are achieved. RECOVER will play an important role in ensuring that a system-wide perspective is applied, and that the best available scientific and technical information is used during the development, implementation, and evaluation of the Plan. (33 CFR Part 385 IV.G.).

3. **REFERENCES:**

- Water Resources Development Act of 2000 (U.S. Congress 2000)
- Master Program Management Plan (U.S. Army Corps of Engineers [USACE] and South Florida Water Management District [SFWMD] 2000a)
- Design Agreement between the Department of the Army and South Florida Water Management District for the Design of Elements of the Comprehensive Plan for the Everglades and South Florida Ecosystem Restoration Project (USACE and SFWMD 2000b)
- Programmatic Regulations for the Comprehensive Everglades Restoration Plan; Final Rule (Department of Defense [DOD] 2003)
- Central and Southern Florida Project Comprehensive Review Study Final Integrated Feasibility Report and Programmatic Environmental Impact Statement, AKA "Yellow Book", excerpts on role of RECOVER (USACE April,1999)
- Comprehensive Everglades Restoration Plan Guidance Memorandum (CGM) 030.00 dated 22 July 2003 (USACE and SFWMD 2003)
- RECOVER Leadership Group Policy Manual, April 2022 (revised).
- Comprehensive Everglades Restoration Plan Guidance Memorandum (CGM) Number-Revision: 066.00, RECOVER Assistance to Projects During Implementation (RECOVER 2018).
- Restoration, Coordination, Verification (RECOVER) Support to Projects: Project Implementation Standard Operating Procedures & Product Template (RECOVER 2023).
- Memorandum for Record *DPM Science Recommendations to RECOVER* dated 03 April 2020
- Memorandum for Record *RECOVER's Consideration of Findings From the Decompartmentalization and Sheetflow Enhancement Physical Model (DPM) Finding for CEPP Presented in Project Memorandum Dated April 3, 2020* dated 24 August 2020.

4. BACKGROUND:

A. Adaptive Management as described in the 2014 CEPP PIR/EIS: The CEPP PIR Annex D contains the adaptive management plan required by USACE implementation guidance for WRDA 2007 Section 20391, the 2003 Programmatic Regulations for the Comprehensive Everglades Restoration Plan and CGM 56, and the monitoring plans required to address various laws, regulations, and permits necessary to implement CEPP. Annex D also describes how adaptive management will be applied throughout the process. "RECOVER will *work with* the CEPP project managers to develop workplans and monitoring scopes of work in coordination with other technical resource providers as needed to provide the budget, schedule, and details to execute the adaptive management strategies identified in the Annex D. At a minimum, one RECOVER scientist should be dedicated to overall coordination of the CEPP monitoring and adaptive management efforts. Additional technical expertise should be engaged as needed." In a separate memorandum dated August 24, 2020, RECOVER requested that the CEPP Project Management create and support an Adaptive Management Team in coordination with RECOVER, the CEPP project delivery team (PDT) and the Decomp Physical Model (DPM) Science Team. Because an official Adaptive Management Team didn't exist at the time, the DPM Science Team, through the Decomp Physical Model, addressed

uncertainties and provided information to the PDT that can be used to inform and improve project implementation.

B. New Science and Recommendations from the Decomp Physical Model Science Team: On April 3, 2020, the U.S. Army Corps of Engineers (USACE) and RECOVER received a memorandum from DPM Leadership. Via the April 3rd memorandum, DPM Leadership outlined three main items: (1) general DPM results; (2) the need for adaptive management; and (3) options for a path forward. The DPM Leadership requested coordination and collaboration between RECOVER, USACE, and DPM Leadership. Following receipt of the April 3rd memorandum from DPM Leadership, RECOVER held a series of meetings to discuss the DPM memorandum and evaluate the results and recommendations from DPM. RECOVER concurred with the findings of the DPM science team and recommended that the CEPP PDT consider the incorporation of some or all of the recommendations provided by the DPM Science Team into CEPP design and the CEPP Adaptive Management Plan.

C. RECOVER Support to Pursue DPM Recommendations Related to Canal Plugs and Spreader Swales: On August 24, 2020, the REC provided a memorandum to the CEPP-South (CEPP-S) PDT. Via the memorandum, the REC expressed its consideration of findings from the DPM Science Team stated in the April 3, 2020 memorandum and reiterated the request to the CEPP-S PDT to consider incorporating some or all of the recommendations into CEPP design and the CEPP Adaptive Management Plan. Recommendations in the memorandum included 1) evaluation and possible implementation of alternate spreader swale designs aimed at enhancing the magnitude and area of sheetflow while minimizing ecological degradation, cost and structure discharge capacity and 2) evaluation and possible implementation of alternate canal-flow reduction designs aimed at reducing canal-to-marsh flow and maximizing marsh-to-marsh flow across the degraded L-67C levee.

D. Development and Evaluation of Canal Plug and Spreader Swale Designs: In December 2024, the CEPP-S PDT, DPM Science Team, and RECOVER began coordinating on the modeling and evaluation approach for the alternative designs for spreader swales and canal plugs. Meetings and workshops were held throughout 2025 to determine evaluation criteria, develop a model, formulate alternatives, and discuss model output. Currently, the CEPP-S PDT determined a final array for the canal plug design and is formulating the final array for the spreader swale design. RECOVER reviewed model output from the designs available, to date.

The final array for the canal plug design:

a. No Action
b. Alt 1a: 9 plugs, (300-ft length, ~0.5 mile spacing)
c. Alt 6d: 4 plugs, (500-ft, ~1 mile spacing) + 31 mini plugs (3-ft, ~1,000 ft equal spacing)
d. Alt 6d-mod1b1: 7 plugs, (500-ft, ~1 mile spacing) + 27 mini plugs [26 (10-ft) and 1 (70-ft)], spaced ~1000 feet apart

The alternatives developed for the spreader swales:

a. No Action
b. Swale 1000 ft. length, 7.4 ft. height
c. Swale 2000 ft. length, 7.4 ft. height
d. Swale 2000 ft., length, 7.6 ft. height

5. RECOMMENDATIONS:

Coordination with RECOVER has occurred throughout the development and evaluation process of the alternative designs of spreader swales and canal plugs for CEPP-S. As a result, RECOVER offers the following recommendations:

A. Canal Plugs Evaluation: Continue with Alt 6d and Alt 6d-mod1b1 into the next round of evaluation to determine if performance is improved, while also considering other factors such as costs and environmental impacts. Conversely, if available, RECOVER requests the results of the second round of modeling that presumably included Alt 6d-mod1b1 and Alt 6d in order to provide a recommendation on best performing design.

B. Spreader Swales Evaluation: Adopt the 2,000 ft design as the preferred design length for the spreader swales, unless modeling indicates a shorter spreader canal still meets velocity and ecological targets. Using a 2,000 ft design standard for CEPP-S spreader canals promotes consistency between CEPP-N and CEPP-S implementation.

Based on the August 24, 2020 memorandum, the CEPP-S project team has fulfilled RECOVER's recommendation to 1) evaluate alternate canal-flow reduction designs aimed at reducing canal-to-marsh flow and maximizing marsh-to-marsh flow across the degraded L-67C levee, and 2) evaluate alternate spreader swale designs**.**

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