

April 17, 2023

Special Master Hon. John M. Barkett  
Shook Hardy & Bacon  
Citigroup Center  
201 S. Biscayne Blvd., Suite 3200  
Miami, FL 33131  
jbarkett@shb.com

**By Electronic Mail**

Re: *United States v. South Florida Water Management District*, S.D. Fla. No. 88-1886  
(Everglades Consent Decree)

Dear Special Master Barkett:

This letter is in response to your e-mail of March 1, 2023, confirming your request for a submission from the Settling Parties' counsel to address specific questions you posed at the February 28, 2023 Technical Oversight Committee (TOC) meeting. Your questions concern the ongoing studies and potential recommendations of the S-333 Working Group for addressing the "localized drivers" that may have caused or contributed to the WY 2019 exceedance of the Shark River Slough (SRS) Long Term Limit.<sup>1</sup> The answers to each of your questions are as follows.

1. *You advised me that potential additional remedies had been screened at the outset of the sediment and hydrodynamic study. Please identify them.*

The S-333 Working Group initially identified 11 potential solutions, which are summarized below:

### **Engineering Solutions**

1. Raise the gate sill at the S-333 structure to a higher elevation. This action could make it more difficult for phosphorus-laden sediment to pass through the S-333 complex into eastern SRS.
2. Modify the apron of the S-333 structure by enlarging the approach area and lengthening the submerged structural protection feature. This action would limit erosion in front of the structure, which could limit sediment accumulation in the vicinity of the structure and reduce the amount of phosphorus-laden sediment passing through the S-333 complex into eastern SRS.
3. Armor the canal embankment with rip-rap at the headwater of the S-333 structure. This action would mitigate canal bank erosion in the approach channel to the S-333 structure, which could result in less sediments accumulation in the upstream vicinity of the structure.

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<sup>1</sup> On February 14, 2023, counsel for the Settling Parties provided an initial joint letter with background and detail on the Working Group process. For brevity and to avoid repetition, we have omitted that background here.

4. Fill in the decommissioned S-12E structure intake bay. This action would eliminate a potential location of canal flow-field disturbance immediately downstream of the S-333 complex, which could reduce the amount of phosphorus-laden sediment transported into eastern SRS.

### **Maintenance Solutions**

5. Install and routinely maintain/dredge “speed bump” sediment traps upstream of the S-333 complex in the L-67A and L-29W canals. This action would temporarily capture sediments, which could then be removed through regular maintenance.
6. Install a marine mattress in the L-67A and/or L-29 canal junction upstream of the S-333 complex. This action would mitigate canal bottom and side bank erosion resulting in less sediment accumulating in the canals and flowing into eastern SRS.
7. Dredge sediments from the L-67A and/or L-29 canals upstream of the S-333 complex, and potentially institute a periodic maintenance program to remove accumulated sediments that could otherwise flow into eastern SRS.
8. Remove some or all of the spoil bank located on the west side of the L-67A canal. This action would improve marsh-canal connectivity and could improve the quality of the water being conveyed from the L-67A canal to SRS.
9. Reduce channelized connections between Water Conservation Area (WCA) 3A and the local canals by planting native vegetation, installing flow-inhibiting features, and regulating airboat entry points. These actions could reduce the conveyance of marsh sediments and floc to the L-29 and/or L-67A canals upstream of inflows to SRS.

### **Operational Solutions**

10. Modify operations of the S-333, S-333N, S-12C, and S-12D structures based on time of year and stages in the L-67A canal and adjacent WCA 3A marsh. This action may result in improved quality of the water being conveyed to SRS because it would minimize or eliminate the introduction of high flows with elevated total phosphorus (“TP”) concentrations that occur during regional dry conditions.
11. Modify the flow path in which water is conveyed to SRS through the S-333 complex by utilizing sheetflow to convey water from WCA 3A to WCA 3B and into eastern SRS. This action would result in more water flowing into eastern SRS through the marsh and less water entering SRS from the S-333 complex, which could improve the quality of the water reaching SRS.

Along with these initial options, the Working Group also suggested to the state and federal agency Principals that certain studies be undertaken to help inform the evaluation of potential solutions. Thereafter, the Working Group and the Principals agreed that in order to identify the appropriate next steps, it was necessary to develop a better understanding of the localized drivers, including the extent of sediment deposition in the canal at the headwaters of the S-333 complex and the sediment transport mechanisms that contribute to the high TP concentrations observed during low

canal stages. The S-333 Working Group conceptualized and structured the sediment and hydrodynamic studies to better characterize causation and to aid in evaluating the effectiveness and feasibility of potential solutions, including any additional solutions identified during the study and recommendation process.

Upon completion of the study reports, the Working Group will refine the list of potential solutions, determine which potential solutions appear to be most effective and feasible, and determine whether any additional data collection or modeling is necessary. These recommendations will be provided to the Principals in or before September 2023.

- 2. I assume that the study group is keeping an eye on potential additional remedies as it moves closer to completing the findings. Please provide an update on the status of additional remedies in your submissions.*

The S-333 Working Group developed the initial set of 11 potential solutions understanding that the list would be refined as they learned more about the sediment dynamics in the vicinity of S-333 complex. As the studies near completion, agency personnel specializing in engineering and construction have joined the Working Group to assist in reviewing the initial set of solutions and in identifying any additional potential solutions.

- 3. What is it about the 2021 exceedance that makes it similar to the 2019 exceedance? Have the study groups modified their studies in any way in response to the 2021 exceedance?*

In Water Years 2019 and 2021, the proportion of annual flow that entered eastern SRS at stages below 9.2 feet was particularly high. Water at the S-333 complex has consistently exhibited elevated TP concentrations when the S-333 headwater stages are at or below 9.2 feet, with TP concentrations continuing to rise as stage continues to fall. The amount of flow entering eastern SRS during these low stage/high TP periods affects the annual flow-weighted mean TP concentration for SRS, which is used to determine compliance with the SRS Long Term Limit.<sup>2</sup> The studies have not been modified based on the WY 2021 exceedance.

- 4. It looks like WY 2022 will result in another exceedance. That will make three in four years. I assume the study groups are aware of WY 2022 data and are looking at this “provisional” exceedance as well. Are they taking 2022 data into account in their studies.*

The S-333 Working Group is aware of the provisional data demonstrating an exceedance of the SRS Long Term Limit for WY 2022. The WY 2022 provisional data indicates significant flow during low canal stage periods, similar to WY 2019 and WY 2021. After the WY 2022 data is finalized (*i.e.*, after the June 2023 Quarterly TOC meeting), the TOC will further examine the causative factors for the exceedance, and any information of relevance may be considered in the development of the Working Group recommendations.

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<sup>2</sup> The Long Term Limit also decreases, within limits, as annual flow increases.

Per your request, counsel for the parties will provide another report with updated answers to Questions 2-4 on June 1, 2023.

Respectfully submitted,

/s/ Judith E. Coleman

Judith E. Coleman  
Senior Attorney  
U.S. Department of Justice  
Environment and Natural Resources Division  
Natural Resources Section  
P.O. Box 7611  
Washington, D.C. 20044-7611  
judith.coleman@usdoj.gov

/s/ Julia Lomonico

Julia Lomonico  
Managing Attorney  
South Florida Water Management District  
3301 Gun Club Road  
West Palm Beach, FL 33406  
jlomonic@sfwmd.gov

/s/ Charles A. DeMonaco

Charles A. DeMonaco  
Fox Rothschild LLP  
BNY Mellon Center  
500 Grant Street, Suite 2500  
Pittsburgh, PA 15291  
cdemonaco@foxrothschild.com

Counsel for Florida Dept. of Environmental  
Protection