Notes from the Quarterly Meeting of the Everglades Technical Oversight Committee (TOC)

May 5, 2020

South Florida Water Management District
3301 Gun Club Road, West Palm Beach, FL 33406

TOC Representatives:

Julianne LaRock, TOC Chair, SFWMD
John Barkett, Special Master
Daniel Crawford, USACE
Lori Miller, Refuge
Frank Powell, FDEP
Donatto Surratt, ENP

Note: *This meeting was conducted entirely online and by phone and was recorded by a court reporter. Copies of the transcript are available for purchase; for more information, please contact Florida Court Reporting (561-689-0999). Handouts and presentations are available on the TOC website (https://www.sfwmd.gov/our-work/toc) and a recording of the meeting is available online at http://sfwmd.iqm2.com/Citizens/Media.aspx.*

10:00 a.m. **1. TOC Opening Business** – Julianne LaRock, SFWMD

1A. Welcome, Announcements, and Identification of Participants

Julianne LaRock, SFWMD, called the meeting to order and welcomed attendees. TOC representatives introduced themselves and Juli gave brief instructions on virtual meeting guidelines and software controls.

1B. Agenda Modifications and Documents Available on the TOC Website

Julianne LaRock reviewed the agenda and the list of files recently posted on the TOC website.

1C. Approval of Meeting Summary for February 18, 2020

Donatto Surratt requested a correction to a date in the February 18, 2020, meeting summary and the TOC approved the summary with this change.

Associated Online Documents:

- Final Agenda for May 5, 2020
- Draft Meeting Notes for February 18, 2020

10:28 a.m. **2. Fourth Quarter Settlement Agreement Report** – Jonathan Madden, SFWMD

Jonathan Madden, SFWMD, presented the 2019 fourth quarter Settlement Agreement report, which includes results of total phosphorus (TP) monitoring in the Refuge, Shark River Slough, and Taylor Slough and Coastal Basins through December 2019. Shark River Slough and Taylor Slough and Coastal Basins reporting includes 12-month tracking only. Results for Shark River Slough are preliminary because they were calculated using provisional flow data. Final results for Shark River Slough will be presented after the United States Geological Survey (USGS) provides final flow data for the S-12 structures.

Refuge 14-station geometric mean TP values for October, November, and December 2019 were below the computed long-term levels. All but one value over the past 36 months have been below or equal to the long-term level. The average over the 36 months ending

December 2019 was 6.9 ppb. On average, the values are 2.9 ppb below the long-term levels during the 36-month period. Preliminary geometric mean TP concentrations for January through April 2020 are 3 to 4 ppb below their respective long-term levels. In April 2020, only 11 of the 14 stations could be sampled due to dry conditions.

Shark River Slough preliminary TP flow-weighted mean concentrations (FWMC) for the 12-month periods ending in October, November, and December 2019 were calculated using two methods. Regardless of the method used for the calculation, the FWMC for each of the three periods was above the long-term limit. Using Method 1, the observed percentage of sampling events with a FWMC greater than 10 ppb was above the guideline value for the periods ending in October and December 2019 but was only above the guideline for the period ending in October 2019 using Method 2. Overall, flows to Shark River Slough during these periods were fairly low.

Taylor Slough and Coastal Basins TP FWMC values for the 12-month periods ending in October, November, and December 2019 were calculated using three methods. The FWMC of each period was below the long-term limit of 11 ppb.

Associated Online Documents:

- Settlement Agreement Report, October – December 2019
- Settlement Agreement Report, October – December 2019 Presentation
- Quality Assessment Report for Water Quality Monitoring, October – December 2019
- Quality Assessment Report for Water Quality Monitoring, October – December 2019 – Water Quality Data
- Provisional Shark River Slough TP Tracking Report, Fourth Quarter 2019
- Refuge TP Compliance Table, 2007 through Fourth Quarter 2019
- Taylor Slough and Coastal Basins Tracking Report through Fourth Quarter 2019

10:44 a.m. **3. Shark River Slough Final Water Year 2019 Annual Compliance Results** – Jonathan Madden, SFWMD

Jonathan Madden, SFWMD, presented final WY2019 annual compliance results for Shark River Slough from the third quarter Settlement Agreement report. The report was previously presented at the February TOC meeting and has been revised to include the final flow data from the USGS for the S-12 structures.

Shark River Slough final TP FWMC for the 12-month periods ending in July, August, and September 2019 were calculated using two methods. Using Method 1, the FWMC for the period ending in July 2019 (9.4 ppb) was equal to the long-term limit, but FWMC for the periods ending in August and September 2019 (9.9 and 10.0 ppb) were slightly above their respective long-term limits (9.6 and 9.7 ppb). Using Method 2, the FWMC exceeded the long-term limits for the periods ending in August and September 2019, with FWMC of 9.2 and 9.3 ppb, and limits of 9.1 and 9.2 ppb, respectively. The observed percentages of sampling events with a FWMC greater than 10 ppb was above the guideline values for all three periods for Method 1, and for the periods ending in August and September 2019 for Method 2.

Compliance is based on the federal water year, the 12-month period ending on September 30. The 12-month period ending in September 2019 represents federal water year 2019 (WY2019). Since the FWMC for this period using both methods were higher than the respective long-term limits, this represents an exceedance. Additionally, as noted above, the

observed percent of sampling events with TP values greater than 10 ppb was higher than the guideline for both methods for WY2019. Greater detail about the WY2019 results is provided in the next agenda item.

Associated Online Documents:

- Settlement Agreement Report, July – September 2019 (revised)
- Settlement Agreement Report, Water Year 2019 Annual Shark River Slough Compliance Presentation

10:52 a.m. **4. Water Quality Conditions for Everglades National Park, Water Year 2019, Shark River Slough** – Jonathan Madden, SFWMD

Jonathan Madden presented greater detail on the final WY2019 Shark River Slough compliance results and compared with previous water years. The presentation provided multiple ways of looking at the data along with related water quality information including flow values, stage levels, total suspended solids (TSS) levels, and TP concentrations. As noted in the presentation, there appears to be some correlation between TSS levels and TP concentrations at S-333. When stages are higher, flows tend to be higher. When stage is below 9.2 feet, TP levels tend to be higher. Overall, the TP FWMC for WY2019 was 11 ppb at S-333, and an unprecedented proportion of the total Shark River Slough flow volume (63%) entered through S-333.

The next step for the TOC is to consider the WY2019 exceedance and evaluate it with the questions provided in the 2016 letter from the principals. The results do not appear to be influenced by any data error. Regarding the possibility of extraordinary natural phenomenon, it is not immediately clear. In summary from the presentation, WY2019 conditions were dry with low stages entering the water year and little flow early in the water year.; Relative to the WY2008 through WY2019 Long-Term Level period: WY2019 had the lowest maximum canal stage and the lowest flow-weighted mean canal stage; there was an unprecedented proportion of discharge at S-333 (63%); rainfall over WCA-3 was 44.1 inches (third lowest in the Long-Term Level period); rainfall in the previous wet season was also low (low initial stage); and it was the first full water year under Increment 2 operations. Complete details of the presentation are provided in the presentation file and in the meeting recording.

Julianne LaRock opened the discussion for technical comments and walked through the principals' guiding questions (1. Has TOC sufficiently evaluated the relevant information for a better understanding of what might have caused the exceedance? 2. Has TOC determined there is substantial evidence it is due to error or extraordinary natural phenomena? 3. If there is no substantial evidence it was due to error or extraordinary natural phenomena, has TOC applied Appendix C to consider what additional remedies may need to be taken?).

A discussion between TOC representatives followed, with additional input from technical staff. Comments and questions during the conversation included:

- Why only compare WY2019 rainfall to the Long-Term Level period? Consider analysis to include a longer historical record.
- What temporal and spatial rainfall patterns were associated with March and June sampling events highlighted on slide 12?
- Where does TSS come from? Is it marsh based? Canal Based? Scouring of canal sediments? Algae (chlorophyll, temperature, oxygen % saturation)?

- Can water quality data in the marsh or at S-152 provide bigger-picture [regional] patterns of phosphorus?
- It is probably useful to also look at stages farther north than just the S-333, which can be prone to localized draw-down. Zoom out to include the intermediate scale water levels (such as station 3-69).
- Is this a localized issue? Could this be an operational issue?

Stuart Van Horn provided additional explanation of the WCA-3A inflows and why the presentation focused on eastern inflows as depicted on slide 7. The primary STA discharging into WCA-3A is STA-3/4, which has for years been consistently meeting the Water Quality Based Effluent Limitation established for the Everglades STAs. These flows together with discharges from WCA-2 into WCA-3A and flow through the S-9/S-9A pump complex are the inputs from areas external to WCA-3A that could potentially have most influence on phosphorus levels at S-333. Discussion followed covering topics of legacy loading of phosphorus into the Everglades and the potential routes, mechanisms and timing of transport of nutrients through the system relative to the existing monitoring.

Bill Walker asked about seeing updated long-term trends of phosphorus concentrations with Seasonal Kendall analysis at structures. He and John Barkett noted it would be better to see if there are existing analyses that could be used instead of redoing. Paul Julian indicated that there are trend analyses presented in various locations within Chapter 3 of the SFER relating to both flow sites and marsh network stations which may be useful. Mr. Barkett further emphasized the importance of considering solutions as causes are investigated.

The general TOC consensus (not formally voted on) was that the exceedance was not due to any data error, was probably not due to extraordinary natural phenomena, and that it appeared to be localized; most TOC representatives feel a more detailed look is needed. To this end, and as a result of the discussion, several items for follow-up action were agreed upon. Julianne LaRock welcomed all TOC members (even if they were not specifically assigned an action item) to feel free to bring any additional information at the next meeting that might be helpful.

Julianne LaRock concluded the discussion with a reminder that we want to come back to the next meeting with the additional information the TOC agreed to look at and provide, as well as thoughts on Appendix C of the Settlement Agreement and what additional remedies could be taken if the cause of the exceedance is determined.

TOC General Consensus: *(not formally voted on)*

The WY2019 Shark River Slough exceedance does not appear to be due to data error or extraordinary natural phenomena; it appears to be localized and possibly related to operations. However, a more detailed look is needed to determine the cause of the exceedance. Several action items have been agreed on to bring this information to the next TOC meeting for a determination.

Action Items 1-4:

1. Donatto Surratt will compare ambient water quality at S12D and S152 (in response to a request for this from Frank Powell).
2. Jonathan Madden will rank WY2019 into the longer period of record for WCA-3A rainfall and provide specifics about how the information is calculated and which gauges it includes (in response to requests for this from Donatto Surratt and Lori Miller, respectively).
3. Daniel Crawford will provide information about whether stages farther north in L-67A exhibited the same trends as at S333, to evaluate the characterization of whether it was an extraordinarily dry year (related to the statement in the presentation that S333 headwater stage was the lowest on record over the year).
4. TOC representatives, as they are looking into additional information about the exceedance, will begin considering Appendix C of the Consent Decree and what potential remedies could be taken if the cause of the exceedance is determined.

Associated Online Documents:

- Water Quality Conditions for Everglades National Park, Water Year 2019 Shark River Slough Presentation
- Principals to the Consent Decree, Direction to TOC Representatives, Feb. 25, 2016

12:30 p.m. **5. Appendix A Subteam Update** – Paul Julian, FDEP

Appendix A Subteam Activity Update – Paul Julian, FDEP; Jonathan Madden, SFWMD; and Donatto Surratt, ENP

Paul Julian gave a brief update on recent Appendix A subteam activities, noting that the team met on April 8 and 28. During this time, the subteam revisited the scoping document to make sure it is still pertinent and ultimately made no revisions. The subteam also compiled a list of pros and cons for each alternative method specific to Appendix A for Shark River Slough and Taylor Slough and Coastal Basins. The team introduced a new method for Shark River Slough, Method 1.5, which was presented next.

Shark River Slough Method 1.5 – Jonathan Madden, SFWMD; and Donatto Surratt, ENP

Jonathan Madden briefly described Methods 1 and 2 for Shark River Slough. Method 1 includes only the historic structures (S333 and the S12s) and S355A and B, which rarely flow, with S333 adjusted with the outflow from S334 (i.e., Method 1 = S12s + (S333 + S355A + S355B - S334)). Method 2 adds S356 to the structures included in Method 1 (i.e., Method 2 = S12s + (S333 + S355A + S355B + S356 - S334)). When the Consent Decree equation (on page A-5 of Appendix A) was developed, S356 was not in place. The subteam developed Method 1.5 as a way to approximate "additional inflow from the WCAs" to Shark River Slough. It would be applied daily as minimum flow (S-335 and S-356) and S-356 TP (station S356-S334). In other words, if S-356 pumping volume is less than S-335 volume, then WCA flow would be represented by the S-356 flow (i.e., if S-356 < S-335, then WCA flow = S-356); alternately, if S-356 pumping volume is greater than S-335 volume, the WCA flow would be represented by the S-355 flow (i.e., if S-356 > S-335, then WCA flow = S-335). The daily flow calculated in this

way would be applied to the TP FWMC and long-term limit. Method 1.5 annual TP FWMC and annual TP Limit results would always be between the results for Methods 1 and 2.

Donatto Surratt presented information about seepage sources to S356 (WCA3B and ENP) and how Method 1.5 parses these two sources. Both of these sources have seepage losses to the east that contribute to S356 flows, but these contributions have not been modeled and it is not straightforward how to calculate them. Based on the last ten years of Combined Operational Plan (COP) Alternative output, the adjusted S356 flows that would be incorporated into the compliance calculation ranged from 53 to 100% of the full S356 flow. Donatto feels that Method 1.5 is a good approach to use moving forward that will simplify the compliance reporting but cautioned it would need to be revisited if the flow patterns observed under the COP do not continue.

Bill Walker believes there may be existing information available from Regional Simulation Model (RSM) output that includes water flux analyses showing how much of the flow through S-356 is from either S-335 or seepage into that canal from WCA-3B above S-356 and S-335, and the recycle from ENP above S-331.

Pros and Cons of Alternative Compliance Methods – Paul Julian, FDEP

Paul Julian presented a comparison of pros and cons for each method; for Shark River Slough these are Method 1, 1.5, and 2; for Taylor Slough and Coastal Basins these are Methods 1, 2, and 3. See presentation file (linked to farther below) for complete details.

Of the three methods for Shark River Slough, Method 1.5 sticks closest to the original Settlement Agreement Appendix A language to include “additional inflows from the WCAs”. Bill Walker indicated he thought an additional equation or clarification of the equation may be needed to show details about how FWMC is determined for Method 1.5. Stuart Van Horn provided additional explanation about how the values are calculated and noted much of this information is available in a spreadsheet posted on the Appendix A subteam FTP site; Paul Julian noted that a similar tracking sheet is available on the TOC website.

For Taylor Slough and Coastal Basins calculations, Method 3 gives a better approximation than Methods 1 and 2, while leveraging the existing monitoring network of surface water inflows into Taylor Slough and Coastal Basins and ENP, and is the closest method to following the spirit of Appendix A (“direct inflows to the Park”). However, it would require an increased monitoring effort and therefore an increased potential for data gaps.

The majority of the TOC representatives were in favor of recommending Method 1.5 as the sole compliance calculation for Shark River Slough and Method 3 as the sole compliance calculation for Taylor Slough and Coastal Basins. Frank Powell had not previously heard the details and needed time to consider and discuss with the FDEP principal. The representatives agreed to go back to their principals and discuss the recommendation to use Method 1.5 for Shark River Slough and Method 3 for Taylor Slough and Coastal Basins and return at the next meeting to confirm.

Action Item 5:

TOC representatives will discuss with their principals the recommendation to use Method 1.5 for Shark River Slough and Method 3 for Taylor Slough and Coastal Basins and return at the next TOC meeting to confirm.

Associated Online Documents:

- Shark River Slough Method 1.5 Explanation and Methods Comparison Presentation
- Appendix A - Pros and Cons Regarding Alternative Compliance Methods for Shark River Slough and Taylor Slough and Coastal Basins

1:25 p.m. **6. Public Comment**

Melodie Naja, Everglades Foundation, expressed appreciation for the Appendix A subteam's efforts and that the parties are close to a consensus. Ms. Naja feels that Method 3 for Taylor Slough and Coastal Basins seems comprehensive and that Method 1.5 for Shark River Slough seems good as long as the public has assurances it is accurately accounting for all of the seepage reaching Shark River Slough, and would like to see monitoring to differentiate between sources of seepage. In relation to the WY2019 exceedance, Ms. Naja would like to hear more about local remedies at S-333, the type and transport of sediments in the L-67 canal, how to operate S-333 to minimize these events in the future, how the S-333N structure will be operated and if we will see the same pattern there, and to see more vegetation mapping in WCA-3.

Gregory Munson, Gunther Law Firm representing U.S. Sugar, indicated he was glad to hear of progress on the Appendix A methodology and was concerned about a lack of resolution on WY2019. He expressed concerns about a March 16 letter from SFWMD to USACE which was in response to the USACE COP. Mr. Munson said USACE's modeling under COP reflects an increased risk of violation under Appendix A and USACE offered to implement an adaptive strategy to minimize that risk; however, the SFWMD letter rejected that approach and said USACE should rely on "already identified processes within the Consent Decree to address water quality", which seems very vague and unclear because this could mean a number of things that may not be effective long-term. Mr. Munson said he is concerned about the potential consequences of an Appendix A exceedance. He urged the TOC to resolve the underlying issues and feels the best approach may be some kind of "safe harbor" under Appendix A and feels SFWMD should consider the adaptive management approach USACE is recommending.

Bill Walker commented that any time one measures flow or concentration, there is random error and natural variation. The standard error for the regression between concentration and flow in the Appendix A equation is about 1.8 ppb. So, when comparing the additional uncertainty associated with Method 1.5 or Method 2, you are really not adding that much uncertainty to the compliance determination). Changes in operation could make a bigger difference, but not how you measure it.

1:39 p.m. **7. TOC Closing Business** – Julianne LaRock, SFWMD

Julianne LaRock reviewed available dates for the next meeting, and the TOC tentatively confirmed the next quarterly meeting for Tuesday, August 11, 2020.

1:42 p.m. Julianne LaRock adjourned the meeting.