

LOWER ST. JOHNS RIVER (LSJR) TECHNICAL ADVISORY COMMITTEE (TAC) MEETING

Thursday, June 22, 2023

10:00 AM – 11:30 AM

Via Teams (Virtual)

Attendees

Soraya Aidinejad, St. Johns Riverkeeper	Kerry Kates, Florida Fruit and Vegetable Assn.
Katie Bizub, JEA	Lori McCloud, SJRWMD
Derek Busby, SJRWMD	Mike Null, Green Cove Springs
Tiffany Busby, Wildwood Consulting	Josh Papacek, SJRWMD
Doug Conkey, SJRWMD	Jennifer Sagan, WSP
Kaitlyn Dietz, GTMNERR	Kelly Smith, UNF
Dean Dobberfuhl, SJRWMD	Lucy Sonnenberg, Citizen Scientist
Alan Foley, Jones Edmunds	Riely Timbs, SJRWMD
Cori Hermle, FDACS	Tiffany Trent, SJRWMD
Moira Homann, DEP-DEAR	Zoe Tressel, St. Johns Riverkeeper
Bill Karlavige, COJ	

Welcome and Introductions

Tiffany Busby welcomed everyone to the meeting. Everyone introduced themselves.

Lake Jesup In-Lake Phosphorus Reduction, Tiffany Trent, St. Johns River Water Management District (SJRWMD)

Tiffany Trent explained that Lake Jesup is located in the Middle Basin, near the City of Sanford. It is an 8,000-acre lake that is hypertrophic and polymictic. The average depth is four to six feet. The lake is offline with one outlet to the St. Johns River. The tributaries include inflows from the following: Chub Creek, Wharf Creek, Salt Creek, Sweetwater Creek, Gee Creek, Soldier Creek, Navy Canal, Six Mile Creek, and Howell Creek, among others. The set up is similar to Crescent Lake, with an offline lake that doesn't have the advantage of flow through that occurs in the main river and lakes like Lake George and Lake Monroe.

Tiffany Trent showed a photographic of a typical algal bloom, which are common in the lake. There are total maximum daily loads (TMDLs) for both total nitrogen (TN) and total phosphorus (TP) in the lake of 1.32 milligrams per liter (mg/L) and 0.094 mg/L, respectively. In the recent past, the district is focusing on efforts to address in-lake nutrient loading and the phosphorus in the sediment that can be released into the water column.

The SJRWMD hired CDM Smith to evaluate various phosphorus binding amendments and their effectiveness to remove phosphorus. They produced a report that detailed the costs, water quality improvements, load removal, and feasibility. One of the recommendations was to perform a mesocosm laboratory study on three amendments: Phoslock; Virophos; and Nclear TPX.

Later, the district hired WSP, and lead investigator Jennifer Sagan, to perform a lake sediment investigation. Former studies on the sediment did not agree on muck thickness and phosphorus content. The probes were different between the studies, which is likely to change the results. Their task was to document the sediment muck thickness and characterization. They compared the results to the prior studies (Cable, 2017 and ERD, 2014). The results were similar and allowed us a better understanding of lake sediments. Three samples were collected for in-house flux study.

They are also performing a toxicity evaluation, which is in progress. WSP is going to perform a peer reviewed literature search on other applications of the same three products. If they find that the other application examples used concentrations of the products less than the manufacturer's recommendation, they will perform their own toxicity study at the recommended concentration, so we know the potential toxicity prior to using any of the products.

For the lake sediment characterization, there were 49 sites where soil thickness, water depth, and physical/chemical characteristics were noted. The areas with the highest TP concentrations were selected for limnocorrals deployment. Tiffany Trent showed a map of the muck thickness in the lake and a map of the sites with the TP concentrations. They decided to deploy the limnocorrals in the high TP concentration area noted in red on the Lake Jesup TP concentration map.

Tiffany Trent explained how they used the limnocorrals and showed photos. The limnocorrals are 1.5 meters in diameter and it works to sequester the soil pore water from the surrounding lake and pore water.

Eight limnocorrals were deployed in May 2023. After 1 week, measurements were taken from each corral. Six corrals were dosed with the amendments (two replicates each) and two were left as controls. Then, bi-weekly in-situ measurements are planned for 6 months and will be removed in November 2023. The mesocosms and the material generated are considered fill, so they will remove the material at the end of the project, so they are not “filling” the lake.

Additional flux core sampling will also be performed. The goal is to get samples from different arrays of TP concentrations within Lake Jesup. WSP will be doing this in-house on 32 cores, 4 from each site with two aerobic treatments and two anaerobic treatments. Nutrient flux estimations will be calculated based on the change of nutrient concentration over time, which will help estimate the internal cycling portion of the annual nutrient load.

Comment: Jennifer Sagan noted that Tiffany Trent was correct that it will take about 2 weeks each for each nutrient flux study.

Question: Lucy Sonnenberg asked when the toxicity results will be completed.

Answer: Tiffany Trent answered that the results will be included in the final report in April 2024. This will be a literature review. If they do find that the study was using a lower amount of product, they will assess higher levels using bioassays.

Question: Lucy Sonnenberg asked about the mesocosms, are you expecting water to come up from the pore water or how the movement of the pore water into the water column.

Answer: Tiffany Trent replied that we do expect the pore water to flux into the water column. When the amendments are added, we expect to create a cap and isolate the sediments from fluxing into the water

column. We want to avoid water entering the corral from outside and allowing pore water to enter from outside of the corral. It works like a cap.

Question: Lucy Sonnenberg asked does it precipitate water column dissolved phosphorus?

Answer: Tiffany Trent responded no, it is meant to bind the bioavailability of phosphorus in the soils, so it is not available to flux.

Question: Lucy Sonnenberg asked if Jesup is only impaired for TP or is also impaired for TN? When do we start worrying about TN?

Answer: Tiffany Trent stated that she doesn't personally know of any projects specifically targeted for nitrogen removal. We usually focus on limiting TP because there are algae that can fix their own nitrogen, so we need to control them with low TP so they can't make their own nitrogen.

Comments: Tiffany Busby added that the Lake Jesup BMAP tracks both TN and TP and related projects. The approach is that reducing TP will help also reduce the production of TN in the lake. Riley Timbs noted that there is a lot of nitrogen fixation in Lake George, downstream of Lake Jesup but upstream of the Lower Basin.

New St. Johns River Modeling Efforts, Moira Homann, Florida Department of Environmental Protection (FDEP)

Moira stated that FDEP has a new effort they are starting soon. They are starting a task assignment with Janicki Environmental to provide comprehensive information for the entire St. Johns Basin. They worked closely with the SJRWMD to select the consultants, and the team includes GHD and Tim Wool (formerly with U.S. EPA-Region 4). They are going to update the models for the St. Johns River, including the Lower Basin, Upper Ocklawaha, Orange Creek, Lakes Harney and Monroe, and the Wekiva River. The DEP will be working closely with the SJRWMD on the model calibration and to align with district goals as well.

This will be a process that will take several years. FDEP will be hosting meetings with stakeholders, starting broadly and then narrowing down to specific geographic locations.

Tiffany Busby added that her firm is part of the Janicki Environmental modeling team and that the scope of work includes approaching the TAC for technical comments during the modeling process.

Question: Derek noted that this is a hydrologic and water quality modeling effort. Are the models going to be linked?

Answer: Moira Homann answered, yes, the models will include linked hydrologic, water quality, and watershed loading models. The thought is to give more details and to see what of the existing models can be used and what needs to be revised or recreated.

Question: Lucy Sonnenberg asked about the Lower St. Johns Main Stem and if there will be updated inputs for this modeling such as the Jax Port Authority work, the Trout River dredging, and the septic systems that have been removed. Thank you for your efforts.

Answer: Moira Homann responded that we intend to use updated information. Moira asked Dean Dobberfuhr if he wanted to add to that response. Dean said that the district wants to update the nutrient budgets--we realize that we can provide information to the department for the modeling process.

2023 Legislative Update, Tiffany Busby, Wildwood Consulting

Tiffany Busby provided a brief overview of the 2023 Florida legislative session. First, she reviewed some of the 2020 Clean Waterways Act provisions and noted that some are not yet implemented and are now moving forward. The act requires local governments to submit onsite sewage treatment and disposal

system (OSTDS) and wastewater plans in nutrient basin management action plan (BMAP) areas. The act requires FDEP to adopt the local OSTDS and wastewater plans into the nutrient BMAPs, respectively. The draft local plans are due to FDEP by February 1, 2024, and the final plans due by August 1, 2024. The statutory deadline for FDEP to adopt the plans into the nutrient BMAPs is July 1, 2025.

Tiffany Busby noted that an informational online seminar will be held on June 26 about the Clean Waterways Act requirements and these plans. Information gathered for other purposes such as the 2021 Senate Bill 64 and the 2021 House Bill 53 can be used in the plans.

She reviewed the requirements for the OSTDS plans and the wastewater plans. Tiffany Busby added that the 2023 House Bill 1379 prohibits new, conventional OSTDS on lots one acre or less in all nutrient BMAP areas, including the Lower St. Johns River Main Stem. New septic systems must be enhanced, or the home hooked to sewer.

She also reviewed additional requirements from the 2023 House Bill 1379. The bill increases BMAP requirements and water quality protection. The bill requires additional local government comprehensive planning and expands eligibility for state funding. Tiffany Busby added that there are even more measures for the Indian River Lagoon area, including Mosquito Lagoon. She also noted that the springs BMAP protection measures were also expanded.

Question: Mike Null asked if the presentation could be posted.

Answer: Tiffany Busby responded that she would post the PowerPoint on the TAC website.

Technical Updates and Announcements

City of Jacksonville

Bill Karlavige stated there were no updates to share.

St. Johns River Water Management District Update

Derek Busby shared the district's cost share results from the last round of funding. There were 54 applications, districtwide. From the applications, the 19 funded projects included 11 water quality, 3 water conservation, 1 water supply, and 4 flood protection projects. There was \$20 million of funding available.

Derek showed the estimated water resources benefits from the project. He also shared a map of the project locations. In this round, there were no funded projects in the Lower Basin. However, from 2016 to 2023, there have been 29 agricultural (Tri-County Agricultural Area) projects in the Lower Basin for a total construction cost of \$161 million and the district or state funding totaling \$58 million. The estimated reductions are 289,000 TN lbs/yr and 24,000 TP lbs/yr.

Non-ag projects in the Lower Basin include the Doctor's Lake advanced effluent treatment, which is still ongoing. This project removes TP; it is a pay-for-performance project and a demonstration project. To date, it has cost \$5.075. They are considering replacing the media this summer to increase the removal efficiency.

Another important project is the Black Creek water resource Development project. This is a \$188.7 million project to pump high-flow surface water from the south fork of Black Creek to Alligator Creek and Lake Brooklyn.

The district is pursuing strategic planning basins with a reorganization and hiring basin managers. These basins will include the Lower St. Johns River Basin (which includes the St. Mary's River, the Nassau River; and the Northern Coastal Basin); the Ocklawaha Basin, the Middle St. Johns River Basin; and the

Indian River Lagoon/Upper St. Johns River Basin. Derek suggested that we should engage the Lower St. Johns person, when they are hired.

Riley Timbs mentioned that the district is undertaking an innovative project to treat small algal blooms (toxin-producing blooms) in the Lower Basin such as Doctors Lake, Georges Lake, and Crescent Lake. There are a couple of harmful algal blooms (HABs) occurring now, including one on June 15 in Crescent Lake in with *Microcystis* with some measurable microcystin. They have also observed a HAB in Georges Lake (a different lake than Lake George) in the past few days and they are awaiting lab results on the algal species and toxin make up.

The SJRWMD annual submerged aquatic vegetation (SAV) survey is also underway. The recent stormy weather has stymied some of the survey trips. It will take some time to collect the data and to write it up. It looks like it might be rough year for SAV in the river. Since the Hurricane Irma SAV loss, the canopy height have stayed extremely low, but we have seen recovery in bed footprints/extent. However, this year we received some dark water, which is unhelpful to the recovery of the SAV beds.

Question: Lucy Sonnenberg asked about treating small HAB blooms. What is the treatment? How long has this technology been used? How does it work, chemically?

Answer: Riley Timbs responded that the SJRWMD monitors as part of a larger DEP effort, but the district has also contracted to treat the blooms as well. The company is called Blue Green Technologies which uses Lake Guard Oxy. This product contains an algacide called “PAK 27.” This product uses sodium percarbonate with hydrogen peroxide as its active ingredient. The PAK 27 product is distinguished by its coating which allows it to float so it can target algae floating on the surface. It is a fairly recent technology. There was a pilot project in the South Florida Water Management District on Lake Minneola a few years ago that was successful. The PAK 27 has been used for a long time but not this proprietary product. Lori responded that the project is an evaluation tool with small applications. It creates an oxidative environment that kills the algae.

Comment: Cori Hermle noted that the district has a nice summary of the Lake Minneola project online.

Question: Jennifer Sagan asked Riley Timbs if when they do their SAV survey if the district is using the FWC data related to the exclosures they are using around SAV beds to compare the “free range SAV” versus those SAV inside the exclosures.

Answer: Riley Timbs responded that, yes, they are using those data and he is the first author on the small study with the Florida Fish and Wildlife Conservation Commission (FWC). Riley just got comments back on the paper and he hopes it will be published next month. If you enclose already present SAV and exclude herbivores, it will grow. FWC is doing some new work on some large scale exclosures—Lake George last year—and now some in the Main Stem. The district does not monitor the exclosures. When you can keep turtles and blue crabs out, the SAV beds grow. Riley stays connected with the FWC lead investigator, Dan Kolterman, but the district is not using their data in the annual survey.

Florida Department of Environmental Protection Update

There were no updates.

Fisheries Independent Monitoring

There were no updates.

U.S. Army Corps of Engineers Update

There were no updates.

Local Government Updates

There were no updates.

Other Member Updates

There were no updates.

The meeting adjourned at approximately 11:30 am.