

Indian River Lagoon Basin Management Action Plans

Meeting Summary

Tuesday, December 11, 2018

3:00 PM

*FAU Harbor Branch Oceanographic Institute
5600 N US Highway 1, Fort Pierce, FL 34946
J. Seward Johnson Education Center Auditorium*

Attendees

Carolina Alvarez, Brevard County
Vincent Burke, Indian River County
Tiffany Busby, Wildwood Consulting
Eric Charest, Indian River County
Sara Davis, DEP
Pat Dayan, St. Lucie County
Mark Dixon, Air Force Civil Engineer Center
Bill Eggers, AquaFiber
Chris Fagerstrom, ECT
Cathy Foerster, ATM
Stanley Ganthier, FDEP
Patricia L. Gertenbach, FDOT
Jim Glass, FL Fly Fishing Assoc.
David Gunter, Indian River Farms Water
Control District
Chris Guth, Federico & Associates, Inc.
Madeline Hart, FDACS
David Huggins, DEP
Charles Jacoby, SJRWMD
Lisa Krinsky, UF
Jenni Lamb, City of Melbourne

Esteban Lopez, E Sciences, Inc.
Arthur Lorenz, USAF
Bach McClure, Brevard County
Keith Mills, City of West Melbourne
Matthew Mitts, City of Vero Beach
Keegan O'Brien, MSE Group
Judy Orcutt, Citizen
Marion Parsons
Danessa Pecorino, City of Vero Beach
Alexis Peralta, Indian River County Stormwater
Thomas Price, IHA/Kennedy Space Center
Jeff Ratliff, City of Cape Canaveral
Sandra Reller, City of Titusville
HM Ridgely, Evans Properties
Gary Ritter, Florida Farm Bureau
Jeff Smith, ECT
Dani Straub, City of Melbourne
John Tarantine, USAF
José Vegas, St. Lucie County
Don West, St. Lucie County

Welcome and Opening Remarks

Sara Davis welcomed everyone to the Indian River Lagoon (IRL) Basin Management Action Plans (BMAPs) meeting, and noted that the meeting covered all three IRL BMAPs. She thanked the Harbor Branch Oceanographic Institute for the use of their facility. She asked attendees to sign in for the meeting. Sara introduced herself as a manager in the BMAP program. Sara introduced Kevin Williams and David Huggins as part of the IRL and South Florida team. Kevin is the main contact for the Banana River Lagoon (BRL) and David is the main contact for the North IRL (NIRL). Sara also noted that Breanna Crowell is also working on the South Florida BMAPs but was unable to attend today's meeting. Breanna is the main contact for the Central IRL (CIRL). Sara added that Breanna is currently working remotely, so the best way to reach her is via email. Sara asked everyone to introduce themselves and encouraged everyone to restate their name when asking questions for the benefit of the meeting notes.

Overview of the IRL BMAPs

Kevin Williams reviewed the three IRL BMAP areas that include the CIRL, NIRL, and the BRL. These three BMAPs were adopted in 2013 and some areas had entity allocations while other areas did not. In

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BRL, Project Zone A did not have allocations where Project Zone B did have allocations. CIRL had no allocations while NIRL had allocations in both project zones. Kevin reminded everyone that the first Statewide Annual Report (STAR) was compiled based on projects ongoing or completed during the 2017 calendar year. This STAR 2018 was submitted to the Florida Legislature in June 2018. Kevin reviewed the stakeholders in each BMAP. Kevin noted that NIRL has two project zones—Project Zone A and Project Zone B. BRL also has Project Zone A and Project Zone B. CIRL has three project zones—Project Zone A, Project Zone SEB, and Project Zone B as well as the South IRL (SIRL) area.

2019 STAR

Kevin described some background information on the STAR report and the legislative requirements. Reports are required annually to the Florida Legislature. To facilitate statewide coordination of this reporting, the Florida Department of Environmental Protection (DEP) has aligned the reporting period to the calendar year. The STAR summarizes projects and accomplishments across all the BMAPs adopted statewide. The report must be submitted by July 1st each year. DEP still intends to host annual meetings to highlight stakeholder activities, even though an individual annual report on each BMAP will no longer be compiled.

Kevin reminded everyone that the STAR 2018 has been completed; he added that the report is available online and includes reporting on other programs as well including total maximum daily loads, minimum flows and levels, and recovery or prevention strategies. The requests for project updates that were sent in November are for the STAR 2019 report covering any 2018 activities. Kevin noted that the project requests are due back to DEP on January 15, 2019. This deadline allows the report to be compiled and submitted to the Florida Legislature by the July 1st deadline.

Kevin introduced Dr. Chuck Jacoby from the St. Johns River Water Management District (SJRWMD) for an update on water quality in the IRL.

SJRWMD Water Quality Monitoring Update & Review

Chuck Jacoby stated that the IRL is currently at an historical low for seagrass. Chuck showed spatial modeled chlorophyll-a levels in September 2011, January 2015, March 2016, and March 2018. Chuck explained the major photosynthesizers in the IRL need to be in balance; the major photosynthetic groups are phytoplankton, seagrasses, and drift algae. The distribution of these groups is currently out of whack factoring phytoplankton. Using satellite imagery, you can see the changes in phytoplankton levels over time by seeing the change in chlorophyll-a levels.

Chuck noted the big change in 2011 with the nickname "the Superbloom." This brown tide reoccurred in 2012 in the Mosquito Lagoon. In 2014 and 2015, the bloom activity was fairly quiet. Then in 2016, there was a brown tide event resulting in a major fish kill in the BRL. In 2017 and 2018, we have seen more brown tide as well as other phytoplankton types bloom in the IRL basins.

Chuck showed some graphs of chlorophyll-a in each lagoon. The red arrow indicates the time when the 2011 Superbloom occurred. The brown arrow shows where the 2016 brown tide event occurred. The Orange arrow indicates the mixed phytoplankton event—the bloom started as brown tide but changed over time.

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Chuck showed additional graphs of carbon in milligrams of carbon per liter (mg C/L) over time with colors that show the type of plankton in the water column. The red and yellow colors show where dinoflagellates and diatoms were dominant. The blue color shows cyanobacteria prevalence and the brown and green colors show brown tide (*Aureoumbra lagunensis*) and other types. The scientists have found some small, green phytoplankton in the IRL that has not yet been fully identified. These are included in the cyanobacteria/blue color shown and are referred to as "picocyanobacteria."

The newer, dominant phytoplankton means that the players have changed in the IRL. There are more, smaller phytoplankton and they turn over faster. There are some new types of green algae becoming more prevalent. The brown tide—while historically present in very low levels—is now more likely to be dominant under certain conditions. Some phytoplankton can use organic nitrogen and phosphorus which is unavailable to some phytoplankton without the assistance of microbial activity. Others can fix their own nitrogen, potentially including the picocyanobacteria. Overall, as nitrogen levels go down or phosphorus goes up, the nitrogen fixation levels go up. Chuck explained that the nitrogen to phosphorus ratio appears to be important in predicting which phytoplankton species will be dominant.

Bach McClure asked if nitrogen-fixers are in the mix in the IRL, if the IRL essentially becomes phosphorus limited. Chuck responded that is possible. The point is that some types can bring nitrogen into the system, so we don't want to shift the nitrogen to phosphorus ratio too much because that can prompt microcystin blooms, which are very undesirable.

Then Chuck showed a graph of chlorophyll-a and dissolved Total Kjeldahl Nitrogen (TKN-D) over time in the Titusville area. He noted that TKN-D includes organic nitrogen and ammonia. There is little trend in nitrogen. However, there is rising total phosphorus (TP) levels, including a "burst" of TP in 2010. They are trying to figure out where the surge of TP came from.

In terms of seagrass, more phytoplankton mean more shade for seagrass and general declines. Prior to 2011, the seagrass extent was expanding, but has dropped since then.

Jim Glass noted that the graph covers the entire IRL area and asked if more geographic-specific information would be provided. He also suggested that the percent cover should be considered and not just the seagrass footprint. Chuck responded that there will be some more geographic detail in future slides.

Chuck added that in addition to the seagrass aerial mapping, twice per year the SJRWMD measures seagrass transects, including a review of the percent cover of the seagrass. Chuck stated that there has been a decline in percent cover since 2001, but that does not account for the expansion of the seagrass beds. Since the percent cover doesn't tell you the full picture of the seagrass health, they prefer to use a biomass measure that is calculated by dividing the mean percent cover by the mean transect length.

Next, Chuck showed a graph that showed across the IRL the seagrass area, mean percent cover, and the mean transect length. The data demonstrate a significant drop in 2011 and a significant change in mean cover in 2001. By area, the BRL had the most dramatic drop, but the NIRL, CIRL, and the Mosquito Lagoon all had significant drops in 2011. Chuck noted that the CIRL showed a decline in 2001 as well. Nicknamed by the SJRWMD as "Lori's Bloom," the high chlorophyll-a levels in 2001 were associated with a drop in seagrass. Chuck also showed graphics of the seagrass, drift algae, and phytoplankton over

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time. When the seagrass declined in 2011 the graphs show the decline with a concurrent increase in phytoplankton in each area, although the magnitude of the phytoplankton increase varies. In the Mosquito Lagoon, the drift algae levels have remained down. In the CIRL, there has been an overall loss in biomass. In NIRL, you can see that when one category goes up, the others go down. So there is a dynamic that cycles in the system and the changes observed may not be only associated with nutrient loading.

The take-home messages that Chuck outlined included the following observations: 1). There are event-driven shifts in primary producers; 2). There are event-driven shifts in cycling; 3). There are losses in slower-growing groups like seagrass and drift algae; and 4). There are gains by faster-growing "bad actors." Overall, the phytoplankton are more robust and are able to respond faster to changing conditions than drift algae and seagrass.

The next steps that are recommended are the following: 1). Decrease external and internal loads; 2). May need to decrease loads further than previously determined; 3). May need to help seagrass reestablish (such as planting seagrass and guarding it while it establishes); 4). Other actions yet to be identified.

Matthew Mitts asked about the seagrass health after 2011. It is misleading to talk about the recovery that occurred after 2011 because currently the seagrass are at their lowest levels since 1943. Matthew asked how we can better broadcast that information to the public, so there is more awareness of the extent of the current seagrass decline. Chuck responded that he can add that information to the front page of the IRL website, so that information is easy to find.

Someone asked a question about Hurricane Matthew and Hurricane Irma and changes resulting from those storms. Chuck replied that there was no direct change observed based on the hurricanes. However, there is concern that the storms may have caused the sediment to be unstable and, therefore, making it more difficult for seagrass to establish themselves. Sediment instability, waves, and grazing all impede seagrass establishment.

Mark Dixon asked about the salinity levels in the lagoon and possible effects from higher salinities. Chuck responded that salinities were rising through 2011 but, overall, salinities go up and down over time in the IRL, so the salinity levels were not unusual. It is likely that the drought conditions contributed to the high salinities. In these years, less loading and clearer water were observed, which tends to boost seagrass levels.

Pattie Gertenbach asked if the small, green phytoplankton are new to the IRL. Chuck replied that some of the small phytoplankton were found in older samples, but they were not as dominant. Also, brown tide was found in older samples, but at very low levels. Chuck added that brown tide does well in high salinities—so they were present and ready to bloom when salinity levels were high.

Seagrass Mapping and Compliance

David Huggins introduced himself and explained that he would review the most recent seagrass mapping and BMAP compliance results. David reviewed the IRL restoration target, which is seagrass recovery based on depth at the deep-edge of the union coverage of mapping years 1943 through 1999. The target is the TMDL depth limit for each project zone based on 90 % of the union coverage.

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To evaluate the current seagrass depth, that data are used from the SJRWMD IRL mapping efforts. The data are generated through aerial photo interpretation and ground-truthing. The spatial coverage of the seagrass beds are evaluated every two years. Compliance with the target is performed using the most recent four sets of mapping data. David explained that there is a two-step evaluation process. Step 1 compares the TMDL cumulative frequency distribution curve to the distribution curve for the most recent four sets of data. Step 2 compares the median depth from the target compared to the median depth for each assessment year.

David reviewed the compliance results for each project zone. Overall, none of the areas were compliant with the exception of CIRL B which was compliant for Step 1 but not for Step 2. Being compliant in only one step means that CIRL B was also noncompliant overall. These results were expected based on the seagrass levels described by Chuck previously.

Matthew asked if David could review the Step 1 process. David explained the Step 1 cumulative frequency distribution curve and added that 50 % or more of the current curve has to be to the right of the TMDL curve, including the 50 % point, to be considered compliant.

Path Forward

David then described the path forward with the IRL BMAPs. David explained that DEP is planning to update all three BMAPs, including the allocations. The plan is to update the allocations for all entities using the SWIL model information. This will include defining allocations for BRL A and the CIRL/SIRL areas that previously did not have allocations. It will also include recalculating existing allocations. The TMDL reductions in rule will be applied (likely the percent reduction) to the SWIL loading estimates. Additionally, the BMAP boundaries will be updated to more accurately reflect the contributing area and the SWIL modeled area. The project zone boundaries will also be adjusted to align with any boundary changes.

David reminded everyone that the STAR project updates based on the current project lists and BMAPs are due by January 15th. For the BMAP update, the plan is to use the SWIL model for BMAP allocations. This will mean additional public meetings during 2019 with the goal of finishing the BMAP amendments by the end of 2019.

Mark asked about the U.S. Air Force's Malabar Transfer Annex property and asked about the process for an exemption or to be considered *de minimus*. John Tarantine added that they previously submitted information for the CIRL BMAP related to this property. Sara replied that DEP would be comprehensively reviewing all lands under this allocation approach and during further discussions about those details in 2019. Mark asked what the timeline is for the allocation calculations. Sara responded that the allocation effort included work to be performed by Claudia Listopad under contract with Brevard County as well calculations by DEP, so the schedule still needs to be coordinated. There is a call scheduled this Friday with Claudia and Brevard County representatives to discuss the timetable. There is mutual interest between Brevard County and DEP to move forward quickly.

Mark asked if the model looks at flows and how flows are considered. Sara asked Mark to email his question to her so she can ask for help in answering his question.

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Dani Straub indicated that the City of Melbourne had been left off the slide with the list of stakeholders and she wondered what happened to them. Sara responded that the city is a stakeholder in the BMAP, and DEP will follow up on that stakeholder list and correct it. Sara and Kevin also noted that the city can confirm that their projects are listed in Appendix C in the STAR 2018.

Matt asked why there is a big change in the CIRL boundary. Sara replied that when the southwestern area was originally included in the CIRL there was uncertainty about how directly connected the area was to the IRL. In the meantime, more refined information was available that indicates that some of that area is not flowing to the IRL and, therefore, should be excluded from the model and the BMAP boundary. Dani added that during the SWIL development, there was less participation from the entities south of Brevard County, so less local information was available. Sara commented that there was information that indicated the area being dropped was not connected to the IRL, but if anyone has information to share that is contrary to that premise, please let DEP know.

Pattie asked if the revised BMAP boundaries can be made available in geographic information system (GIS) format. Sara replied that the boundaries can be posted to the file transfer protocol (FTP) site with the other meeting materials when the DEP staff return to the office.

Pattie asked about projects previously submitted in the SIRL area. Sara explained that the STAR requests for information includes the current BMAP project lists and is based on the current (not new) boundaries. Every year, updates will be requested for any projects listed in the BMAPs that year. In 2019, we anticipate updating the BMAPs and when we establish revised project lists, then in future years, those will be sent out as STAR update requests. In the meantime, please update your existing project lists and continue to use the existing BMAP boundaries.

Mark asked if the new allocations currently apply. Sara replied that DEP will come back and hold additional meetings to discuss the new allocations before they will be applied to any entity.

Gary Ritter asked about the C-25 modifications and how that has affected the boundaries. Sara responded that, on the PowerPoint slide, the green area is the current BMAP boundary and the hatched line indicates the proposed new boundary that corresponds to the SWIL modeled area.

Mark asked about whether natural lands would be exempted from load reduction assignments. This is a big concern for the Air Force who manage properties with a lot of natural lands. Sara responded that the allocation approach will include a review of how to handle natural lands in the calculations. Usually, entities are not responsible for reducing loads from natural lands, so we will review how they will be handled in the IRL allocations.

Public Comments

Jim Glass noted that he represents the Fly Fishing Association and he is also a civil engineer. He asked about whether DEP has authority over what projects are funded and approved. Sara responded that there are a combination of factors that affect what projects are funded and approved. She explained that municipalities and counties make their own project priorities and may fund projects with their own funding sources. DEP can also award project money based on local requests. Also, the water management districts fund some projects. Additionally, the Florida Legislature also picks projects to fund directly.

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Jim noted that the IRL includes a wide area with many jurisdictions. He stated that a master plan needs to be done to tackle wastewater (especially septic systems) and stormwater sources. For example, Brevard County is performing studies and smoke-testing on the lateral-only connections (LOCs) but it is unclear if other counties (or cities) are conducting the same kinds of studies. Sara responded that it is beyond the authority of the BMAP program to develop that type of plan, and that various DEP programs and other agencies regulate the different sources in the watersheds such as treatment of over 200,000 septic systems. Sara added that she can talk more after the meeting, but these BMAPs are focused on reducing nutrients to reach restoration targets. Brevard County is also coordinating efforts within the county and developing project lists. It is not within the statutory authority of DEP to perform that on a county's behalf. DEP can assist, however, with sharing information and coordinating the BMAP efforts. For example, DEP shares information on new technologies and pilot projects across the state. Bill Eggers added that the IRL Comprehensive Conservation and Management Plan (CCMP) is in draft form right now and is open for public comments. Comments can be submitted online at the IRL Council website. Sara thanked Bill for reminding her about the draft CCMP.

Adjournment

The meeting adjourned at 4:09 pm.

Action Items

1. Chuck Jacoby offered to add the information about the current low levels of seagrass to the front page of the IRL website, so that information is easy to find.
2. DEP will correct the stakeholder list provided in the presentation to include the City of Melbourne. Dani Straub, City of Melbourne, will review the STAR 2018 project list and notify DEP of any errors.
3. Mark Dixon should send his flow question to Sara via email so she can share his question and get assistance with a response.
4. DEP will work with Brevard County and its contractor using SWIL to develop allocations for further discussions. Additional meetings will be scheduled in 2019 to review the allocations, gather additional projects, and amend the three BMAPs.
5. DEP will post the revised BMAP boundaries in GIS format as well as the PowerPoint presentations from this meeting.