

Indian River Lagoon (IRL) Basin Management Action Plans (BMAPs)

Technical Meeting Summary

Friday, January 14, 2011

10:00 AM – 12:00 PM

*Brevard County Agricultural Center
3695 Lake Drive, Cocoa, Florida 32926*

Attendees

Amy Adams, Cape Canaveral Scientific, Inc. Vanessa Arnal, Citizen Virginia Barker, Brevard County J.M. Boyer, Masteller & Moler, Inc. Pearl Breckenridge, E-Sciences Tiffany Busby, Wildwood Consulting Robert Day, SJRWMD IRL NEP Mark Dixon, Patrick AFB Doug Durham, NASA Roger Dykes, Cocoa Mark Ellard, Geosyntec Rebecca Elliott, FDACS Gordon England, Stormwater Solutions John Fergus, Satellite Beach Chris Ferraro, FDEP Alicia Forbis, Fort Pierce John Gamble, Volusia County Clark Giangarra, Algae Collection Technology Inc. Scott Glaubitz, Indialantic Whit Green, SJRWMD Don Griffin, Rockledge Lorraine Guise, Titusville David Gunter, Indian River Farms WCD Dennis Hanisak, Harbor Branch Oceanographic Institution Harvey Harper, Environmental Research and Design Dianne Hughes, FDEP Erlyn Hupfer, ISC Environmental Assurance Tony Janicki, Janicki Environmental Carol Johnson, FDACS Scott Lamb, Palm Shores Carl Larrabee, Cocoa Beach Claudia Listopad, Applied Ecology Earl Masteller, Masteller and Moler John Matthews, NASA Mike McCabe, Palm Beach	Bach McClure, Brevard County Keith McCully, Indian River County Tom McGowan, MSLRWCD/AECOM Beth McMillan, Marine Resources Council Bill Messersmith, Vero Beach Keith Mills, West Melbourne Chris Mora, Indian River County Nick Murdock, Patrick AFB Edward Page, NRCS Steve Peene, ATM Marcy Policastro, Wildwood Consulting Ken Poole, Rockledge Allen Potter, Satellite Beach Robert Potts, E-Sciences Thomas Price, NASA Jeff Ratliff, Cape Canaveral Margie Reynolds, Sebastian Troy Rice, SJRWMD IRL NEP John Royal, Brevard County Charles Shinn, Florida Farm Bureau George Simons, Carter Associates David Sinton, Melbourne Village Joel Steward, SJRWMD Dani Straub, Melbourne Steve Szabo, Jones Edmunds & Associates Pat Tierney, StormH2O Amy Tracy, FDEP Bob Ulevich, SRID Mark Virgilio, FDEP Kalina Warren, FDEP Everett Wegerif, Cocoa Mike Wessel, Janicki Environmental Kaylene Wheeler, Palm Bay Kelly Young, Volusia County
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Welcome and Opening Remarks

Tiffany Busby welcomed everyone to the Indian River Lagoon (IRL) Basin Management Action Plans (BMAPs) meeting for the three subbasins. The purpose of the meeting is for the Florida Department of Environmental Protection (FDEP) to give an update on what they have been working on. FDEP had hoped to have new allocation numbers, especially for the Banana River Lagoon (BRL), for this meeting but those numbers are not ready yet. FDEP has been working on updating the BRL jurisdictional boundaries based on feedback from the entities, determining the allocation approach, and calculating project credit. In trying to finalize the allocations, FDEP wants to make sure they require the correct

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nutrient reductions. During the numeric nutrient criteria (NNC) process, newer information about seagrass in the IRL Basin became available and FDEP wanted to include those data in the analysis of progress towards the total maximum daily load (TMDL) seagrass depth-limit (DL) targets. FDEP will explain during the meeting what analyses have been, why results are not available yet, and what the next steps will be. The stakeholders introduced themselves and the entity they represent.

Overview of Assessments for Progress towards the IRL TMDLs

Tiffany explained that when FDEP postponed the December 2010 meeting, they had hoped to have results for this meeting. However, the analyses were more difficult than anticipated and this meeting will explain what occurred. The TMDLs are based on a point in time and, therefore, there is always a time lag between the TMDL and the BMAP. In this basin, there has been enough time since the data in the TMDLs that new information is available, especially related to seagrass. The stakeholders have seen the map from the NNC process, which indicates improvement in seagrass DLs; however, FDEP needs to determine if this improvement is enough for TMDL success.

Amy Tracy stated that although there are no results to present, she wanted to give an update since there has not been a technical meeting in several months. The seagrass evaluation process is complicated so the goal is to provide some of the information now to make it easier to go through the results at the next meeting. The IRL main stem TMDLs have been adopted and the primary goal of the TMDLs is to help seagrasses to grow to 90% of the full restoration target. The TMDL targets are not full restoration because the TMDLs allow a 10% deviation. The TMDLs were established using seagrass data from 1943 through 1999. This basin has been divided into three subbasins that each will be addressed in a BMAP. The current approach is to make reductions over 15 years, with 33% of the reductions achieved in each 5-year period. FDEP wants to make sure this is the correct approach for this basin and that we are not asking for more reductions than is necessary. There have been stakeholder concerns regarding the load reductions and new available data so FDEP wanted to take a step back to ensure they are asking for the correct reductions.

There are new data available since 1999, which is the end point of the TMDL data. Stakeholders have also had concerns about whether improvements in seagrass DLs since 1999 should affect the required reductions. In addition, the St. Johns River Water Management District (SJRWMD) created a map for the NNC process that showed some success in attaining seagrass depth-limits. However, this map and analysis were not done for TMDL compliance. Although the map is encouraging, other information, including light availability and acres of seagrass, were included in the analysis and are inappropriate for TMDL evaluation. These other factors are part of the SJRWMD's overall method for assessing seagrass coverage for application in numeric criteria; however, the TMDLs are solely based on the correlation between nutrient loading and seagrass DL. Amy stated that FDEP is hopeful that the reductions can be adjusted but they need to make sure the approach they use to analyze the seagrass DL is consistent with the TMDL criteria. FDEP is working closely with SJRWMD to make sure they are using the right information and processing it correctly in the assessment. Once the analysis is complete, FDEP will use the results to revise the allocation approach. FDEP wants to make sure that they are not requiring more reductions than what are needed to meet the TMDL. Virginia Barker noted that the label on the NNC map stated that it shows what areas are meeting 90% of the target depth and she asked how this is different than the TMDLs. Amy responded that other factors including seagrass acreage and light availability were included to create this map and these factors were not part of the relationship in setting the TMDLs.

Amy reviewed the technical steps that FDEP has taken in the analyses. Amy noted that they have been working on this consistently since August 2010 but there were several challenges that were encountered. FDEP originally had concerns about the reliability of the line bathymetry data for lagoon. To address this concern, SJRWMD provided FDEP with a point line file that was created through a contract and is fairly

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accurate. This same file was also used to establish the TMDL. Another challenge is that in Geographic Information System (GIS) there are point, line, and polygon files that each represents information differently. It is tricky to use all three types of files together. To overcome this issue, a GIS intersect was used. The intersect function creates an output that combines data that overlap. For example, in the IRL, intersect was used to capture the area where the point line file overlaps with the polygon file. Another issue that was encountered was that multiple attributes were included in the intersected bathymetry point file. When the seven years of seagrass data used in the TMDL were combined, there were multiple data at a point. Before continuing with the process, there was a need to take the additional step of using a GIS function called dissolve to ensure there is only one depth at a point. The TMDL union coverage represents where seagrass grew in each of the years combined and the dissolve then provides an output of the total area. Virginia stated that it appears from studies in the IRL that water levels have risen about five inches since 1943. She asked if this process assumes that water levels have not changed. Amy responded that the bathymetry file is the most recent and accurate data available at this time. There are separate files that show the depths for each year that seagrass were mapped.

Amy noted that FDEP also questioned whether they were using the correct areas for DL evaluation. Some areas in the IRL are dredged and seagrass are not expected to grow there. SJRWMD provided their dredged area GIS file so that FDEP could account for those areas in the process. In addition, SJRWMD recommended that the analysis focus on depths between 0.1 meters and 3.5 meters because seagrass have not been observed growing at deeper depths. After the dissolve step, the resulting polygon is for the entire seagrass bed and the focus needs to be on just the deep edge of the seagrass bed. To do this, a buffer is drawn 7.9 meters on each side of the line, which gives an area to make sure all the seagrass points are captured.

Next Steps to Determine Success

Amy stated that the next steps will be to go through the GIS process outlined above to create the TMDL union coverage and then the same steps will be followed for the new seagrass mapping years of 2003, 2005, 2006, and 2007. SJRWMD maps seagrass about every two years. They also mapped seagrass in 2001 but the data collected do not include BRL or part of North IRL; therefore, the 2001 information will not be used in the assessment. Each new year of seagrass data will be compared to the TMDL union to determine what progress has been made towards the DL targets. Gordon England asked if the Grand Canal is considered one of the dredged areas. Amy responded that she will check the dredged shapefile and provide an answer to Gordon.

Mark Dixon noted that seagrass was not mapped in 2004 because of the hurricanes and he asked how storm damage is accounted for in the analysis. Amy responded that a negative impact on seagrass DL was not seen from the hurricanes. The analysis for TMDL compliance will be based on multiple years of data so one bad year would not necessarily affect compliance. Joel Steward added that the seagrass mapping is typically done every two years because of budget constraints and the time involved in creating the final product. SJRWMD received additional funding in 2006, which allowed them to conduct the mapping. SJRWMD did not skip 2004 because of the storms; this was just the year off from mapping. Joel noted that there is a paper describing the water quality and seagrass coverage in the IRL after the 2004 hurricanes, which did not really negatively impact the seagrass. It appears that what saved the lagoon from a damaging event was that the hurricanes came onto the coast of the Atlantic and created a storm surge. As the surge subsided, it took a lot of the material that had run off from the land out of the lagoon. There was an improvement in light and transparency in the spring and summer after the hurricanes. Mark asked how Tropical Storm Fay affected the lagoon. Joel responded that it produced a lot of rain and a lot of runoff but there was not a negative impact on the seagrass DL. The seagrass percent cover was affected, likely due to changes in salinity. Mark noted that they do not want to spend a lot of time and money on efforts to have one storm wipe out the seagrass. Amy responded that part of the

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process will be to determine an appropriate number of years such that one really good or bad year does not affect the results.

John Fergus stated that the TMDL has been established in rule and it appears that FDEP is now changing how the data are processed to redo the TMDL. Amy responded that FDEP is not changing how the data were processed. The required load reductions in the TMDL are based on the SJRWMD regressions of how total nitrogen (TN), total phosphorus (TP), and total suspended solids (TSS) affect seagrass DLs. The TMDL is based on a biological target, although it must be expressed as a concentration or load of nutrients in rule. The load reductions were established to meet that biological target and if the target is met before the load reductions are achieved, then this is still considered success for the TMDL. What FDEP is doing now is to assess the information used to establish the TMDL to ensure the allocations are correct based on where seagrass DLs are today. The stakeholders have been saying that the required load reductions are too high based on current seagrass data and FDEP is trying to determine what the appropriate load reductions in the BMAP should be. Tiffany added that the assessment is a comparison of the newer seagrass data to the TMDL to determine progress. Based on the observed progress, FDEP may adjust what they ask the stakeholders to do to meet the TMDL.

John asked if we assume the seagrass DL targets have been met everywhere but the nutrients have not been reduced by the amount required in the TMDL, then what would happen to the TMDL. Amy responded that FDEP uses a watershed assessment cycle that evaluates each watershed every five years. Although the TMDLs include nutrient loads, those loads are meant to achieve the biological target. If the seagrass DL targets have been met across the lagoon then we can say we are meeting the TMDL, which is not full restoration. The lagoon would continue to be evaluated to ensure the targets are met or if additional reductions are needed. John asked what the procedure would be to amend the TMDL. Amy responded that the TMDL would remain in rule for a period of time while the lagoon is assessed for compliance. If the TMDL needs to be modified then the rule will be opened and amended. The TMDL would not be modified immediately because FDEP needs some certainty that the targets are being met. Tiffany added that models are not exact and if the seagrass DLs are changing differently than what the model predicted, FDEP wants to adjust the allocations to allow time to see how the lagoon is responding before the TMDL is amended. Chris Ferraro added that the BMAP document will explain all of this.

Tom McGowan asked if FDEP has a way to estimate the current nutrient loads to the lagoon. Amy responded that they currently do not know the exact nutrient loads to the lagoon. Tony Janicki noted that if there is seagrass recovery, FDEP needs to determine the associated load reductions for that recovery. It could be that the seagrass recovered without any load reductions. Joel responded that there are estimates of nutrient loads to the lagoon that show the loads have decreased.

Amy stated that after the GIS processing is complete, SJRWMD has recommended a two step process that FDEP will use to assess compliance with the TMDL targets. Step 1 involves generating a cumulative frequency distribution curve of the seagrass DLs and Step 2 uses the median DLs for each new mapping year. In Step 1, the curve will be created using the data from all four new years and then the curve will be compared to the TMDL union coverage. To be Step 1 compliant, over 50% of the new mapping year curve must be on the TMDL curve or to the right. If the data are not Step 1 compliant then the seagrass DL target for that area is not met. If Step 1 is met, then Step 2 will be used to assess each mapping year's median to the TMDL median for that area. This step ensures that one exceptional year does not overpower the other years.

The TMDL document includes ranges of median seagrass DL targets for each of the three sublagoons. The targets are a range because there is a target for each SJRWMD segment of the lagoon and multiple segments are included in each sublagoon. It is important to determine the correct evaluation scale for TMDL compliance. SJRWMD uses segments, whereas the TMDLs are written at the waterbody

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identification (WBID) number scale and can include multiple segments. In addition, for the BMAP, there are projects zones, which are areas that hydrologically similar and include multiple segments and WBIDs. FDEP also needs to determine the appropriate number of assessment years to measure improvement. SJRWMD is currently processing the 2009 data and this information will be included in the next iteration of the analysis.

The results of this analysis will be used to evaluate the allocation approach and modify it if it no longer is appropriate. Once information is available for how the lagoon is performing and what areas are meeting the seagrass DL targets, the approach will be vetted with FDEP upper management and the SJRWMD. The approach needs to meet the provisions of being fair and equitable to ensure that those stakeholders who have been doing the work do not have as much to do as those who have not made reductions. This consideration was included in the initial allocation approach and FDEP wants to make sure a new approach meets the same standards. At the next technical meeting, FDEP will have the final methodology and results, the revised allocation approach, and final BRL allocations. The North IRL and Central IRL allocations will not be ready for the next meeting.

Tony stated that another important consideration is what has happened to the nutrient loads. The TMDLs are established as loads, although the end point is a seagrass DL target. It will be important to analyze what happened to the loads during this time period to determine the correlation with seagrass. There have been times when there have been improvements in the loads but there was not an associated improvement in seagrass. Tony also noted that it is good the 2009 data will be available soon. Tiffany responded that the 2009 data will not be available in time for this assessment but they will be used in the future. As part of BMAP implementation, both the load reductions and seagrass response will be tracked. If more load reductions are needed to meet the seagrass DL targets, then FDEP will require additional reductions. If the full load reduction is not needed to meet the seagrass DL targets, then FDEP will not require this.

John noted that nutrients are only one of the factors affecting seagrass and he asked how other factors, such as salinity, will be considered. John also asked since Step 2 is to ensure that one good year does not unduly influence the results, how will a bad year be analyzed. Amy responded that a bad year is assessed under the same principle. FDEP will ensure that there are enough assessment years so that one good or bad year does not affect the results. In regards to the first question, the current approach is to divide the required reductions into three, 5-year phases to see how the lagoon responds to the reductions. If the reductions are being made and there is no change in the seagrass DLs then FDEP will stop future reductions and try to determine why there is no system response.

Virginia asked if the new seagrass mapping years could be compared to the new loads before making the allocations. Amy responded that once the assessment outlined above is complete and it shows that areas of the lagoon are not meeting the DL targets, it will be difficult to defend postponing reductions. FDEP will also determine what the reductions should be for those areas not meeting the TMDL targets while waiting for further information to assess progress. Virginia stated that she appreciates that FDEP is looking at the new seagrass data and she asked what the approach will be to determine new allocations. Amy responded that FDEP is working on several approaches now but until the GIS processing is complete they cannot make a determination on the allocation approach. The new allocation approach will be brought to the stakeholders for input. Virginia noted that if the stakeholders and FDEP are working together to come up with a plan, it would be helpful for the stakeholders to give feedback on the approach before FDEP moves forward. Amy responded that she hopes this meeting demonstrates that FDEP wants to work cooperatively with everyone and that they want the reductions to be reasonable.

Steve Peene stated that it seems like the approach will be that if an area is meeting the TMDL then reductions will not be needed. There will likely be some improvements in other areas that do not fully meet the targets. He noted that he hopes FDEP looks at the loads to see why these areas are not fully

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meeting the target. Steve also stated that it appears that FDEP is not modifying the allocation approach but the TMDL method because the TMDL is based on the relationship between loads and seagrass. He asked if the same correlation used in the TMDL will be applied on a smaller scale. Amy responded that the TMDL was based on the sublagoon level and FDEP does not believe this is the appropriate scale to determine compliance in the BMAP. FDEP will look at available data to ensure they are using the best information in the analysis.

Carl Larrabee asked if FDEP is also looking at water clarity to determine why seagrass is not growing in a specific area. Amy responded that the TMDL target is based on seagrass DL not on having seagrass in a specific area. Seagrass can be very sensitive and may not grow in an area but that would not affect compliance. Carl noted that it may be that seagrass disappeared because they were eaten and not because of loads. Amy responded that the assessment will be on multiple years of seagrass data, which should help remove the impacts of mitigating factors.

The question was asked on how the 7.9 meter buffer was selected. Joel responded that the bathymetry survey was done along transects, with measurements taken approximately every 15.6 meters. By drawing a buffer 7.9 meters around each side of deep edge line it ensures that at least one or two of the bathymetric points are captured. The question was asked what the associated accuracy of the bathymetry set is because the target might not be met but it could be within the uncertainty. Joel responded that the accuracy is between 0.05 meters and 0.09 meters. Amy added that FDEP is fairly confident that this file is the most accurate information available. This uncertainty can be considered in the assessment.

Gordon asked if there is a timeline for coming back to the stakeholders with the results. Amy responded that the goal is come back for a March meeting. It will take some time to do the GIS processing, double check the results, send the findings to FDEP upper management and SJRWMD for review, and then finish the detailed allocations for BRL. Gordon asked if Amy could explain the difficulties FDEP has encountered with the efficiencies for retention projects. Amy responded that the values in the statewide stormwater rule do not match the values in the IRL model. Amy is working with Eric Livingston (FDEP) to determine the correct approach for calculations using the IRL information. The new approach should be ready for the March meeting. Chris asked if the previously scheduled meeting in February for Central IRL has been canceled. Amy responded that the February meeting has been canceled and another all basins meeting will be held in March. Tony noted it is important to be as objective as possible in setting the allocation approach before seeing the results of the GIS analysis.

Status of the Tributaries TMDLs

Amy stated that we have been waiting for the tributaries TMDLs to move forward with the North IRL and Central IRL allocations since it was unknown if additional nutrient reductions would be needed. Dr. Xueqing Gao (FDEP) has been working on the TMDLs for multiple tributaries that are impaired for dissolved oxygen (DO), sediment oxygen demand (SOD), and biochemical oxygen demand (BOD). He has conducted multiple sensitivity analyses to determine the causative pollutant for the DO impairment. Based on the model results, it does not appear that nutrients have much of an influence on DO concentrations in the majority of the impaired tributaries. Algal biomass does not seem to contribute to SOD, and the water residence time analysis showed that most of the tributaries do not have long enough residence times to allow for significant algal biomass to contribute to SOD. Therefore, FDEP does not believe that nutrients are an important factor that controls DO in most of the tributaries. The main stem TMDL includes the tributaries and those reductions still need to be made; however, additional nutrient reductions are not needed in most tributaries. The C-25 East Segment and Fort Pierce Farm Canal are located outside the main stem model boundary. Chlorophyll-*a* does seem to be a factor in these tributaries so nutrient reductions will be needed. The draft TMDLs should be available in the spring, although the TMDLs for those tributaries that do not appear to be impaired for nutrients may come out

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later. The stakeholders will have time to review the TMDLs and provide comments and a public workshop will be held where Xueqing will explain the science behind the TMDLs.

Steve asked if those tributaries not impaired for nutrients will be reclassified. Amy responded that FDEP is still looking to determine what is causing the low DO so these waterbodies will not be reclassified until there is a better understanding of what is happening. Bob Ulevich noted that in order to meet the TMDLs, stormwater discharge will need to be reduced and/or the quality of the discharge needs to be improved. The Flood Control Act specifies certain levels in the canals and at some point a determination will need to be made if flood control will be affected by trying to meet discharge criteria. This is a balancing act. Bach McClure noted that FDEP's draft 305(b) report includes a discussion of the number of miles of impaired streams and he asked if FDEP has a GIS layer that shows these streams. Amy responded that Bach can contact her and she will make sure he receives the layers he needs.

David Gunter stated that the water control districts (WCDs) have been waiting for months for feedback from FDEP on what their authorization (Chapter 298) allows WCDs to do in terms of allocations. This information is needed before the allocations can be completed. Amy responded that she has not forgotten about having another meeting but the TMDL compliance evaluation has taken longer than planned. The WCDs have submitted some projects for the BMAP and Amy met with FDEP upper management about WCDs and their projects, which are different than standard stormwater practices. Bob added that there is also a difference between Chapter 298 WCDs and Chapter 189 improvement districts because improvement districts have a lot of the same abilities as a city. Amy offered to send the information she pulled together on both types of districts.

Virginia asked since the tributaries' impairments do not seem to be from nutrients if this limits where projects can be located for the main stem reductions. Amy responded that the main stem TMDL model boundaries extend to the tributaries and the project zones also include the tributaries so projects can still be done in those areas. Steve asked if Xueqing is coordinating with the U.S. Environmental Protection Agency (EPA) on his findings. Amy responded that he plans to share all his results with EPA. Bach asked if Xueqing compared the nutrient concentrations in the streams to the EPA NNC. Amy responded that she does not know but she will ask Xueqing this question.

Public Comments and Wrap Up

Tiffany stated that the next meeting will be March 11, 2011 if FDEP has the necessary information together. FDEP will keep the stakeholders updated on the meeting date and location. Bob asked how the new Executive Order affects the BMAP. Amy responded that BMAPs are adopted by FDEP Secretarial Order and not by rule so they are not directly affected by this order but that could change in the future. TMDLs might be affected by the order and this could impact the adoption date for the IRL tributaries TMDLs.

Gordon asked when a date would be set for submitting BRL projects. Amy responded that the stakeholders could continue to submit their projects. Mark noted that while all these analyses are helpful, there could be a lot of changes in the future with budget cuts and firings. Amy responded that FDEP understands the current economic conditions but no funding does not mean that no reductions will be required. There are studies that show improving the lagoon will help the local economy. Troy Rice stated that Amy Adams provided a list of grant opportunities and there is also the potential for National Estuary Program (NEP) and license plate funding.

Adjourn

The meeting was adjourned at 11:57 AM.