

Lake Okeechobee Basin Management Action Plan (BMAP)

Webinar Summary

Wednesday, March 27, 2019

1:00 pm – 2:26 pm

Participants

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Eric Shea, FPL
Jerry Smith, Citizen
Jason Storrs, DEP
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The full webinar recording and supporting materials are posted to the Florida Department of Environmental Protection (DEP) file transfer protocol (FTP) site at http://publicfiles.dep.state.fl.us/DEAR/BMAP/LakeOkeechobee/Meetings/16%20TechWebinar_Mar2019/.

Questions and Answers

Question: Is there a total maximum daily load (TMDL) for total nitrogen (TN) in Lake Okeechobee?

Answer: Currently there is not a TMDL for TN, just for total phosphorus (TP).

Question: Could you please provide the link to the web-board postings?

Answer: The South Florida Water Management District (SFWMD) will do that, but it will likely not be posted until mid-April. It will be on the District's website and DEP's website, and SFWMD will send an email blast. As soon as DEP gets that information, we will use the same stakeholder distribution list that we have for these BMAP meetings to notify everyone.

Question: Was any analysis done for the overall (total) inflow TP loads and flow-weighted mean concentration (FWMCs) going into Lake Okeechobee?

Answer: The analysis for the Tier 1 stations shows this information about what is going into Lake Okeechobee. These are the stations that are flowing into Lake Okeechobee.

Question: Was any trend analysis performed for concentrations within the lake, TN:TP ratios, and TP sedimentation rates?

Answer: No, we just focused on watershed stations including the tributary ambient stations and the structure stations for flows coming into the lake. No analyses were conducted on in-lake stations. As a reminder, the BMAP focuses on activities within the watershed itself. We are concerned about what is happening in the lake and try to monitor that but the analysis that is part of the 5-Year Review is focused on the watershed because that is what the BMAP focuses on.

Question: Could you elaborate on what is meant by more than 50 % data availability?

Answer: We received data that sometimes were more than on a monthly frequency, and these were then aggregated into a monthly frequency (monthly time series). Then, for those data on a monthly time series, there were a total of 120 months that could be used for the analysis. If we had 50 % of that, then we would be able to use the data for trend analysis. That is based on a couple of U.S. Geological Survey (USGS) papers that we have, and we can share if anyone is interested. If we had less than 60 months of data, then we would not have enough data to be confident that the results were viable.

Question: Why were data analyses conducted on a calendar year versus something more relevant like water year?

Answer: We did it on a water year, but the figures show the beginning of the calendar year prior to the water year starting. The trend analyses were conducted on a water year. The USGS program used considers everything on a calendar year, which is why we plotted it that way.

Question: Along with trends at individual stations it is also important to look at the trends in total TP loads going into Lake Okeechobee.

Answer: The data from the structure stations around the lake can be aggregated to get that load. There are a lot of analyses already reported in the South Florida Environmental Report (SFER), so we worked

to try to not overlap with those analyses and to focus on things that would help with the BMAP within the watershed. If there is something you feel is missing from what we did, check the SFER. If you still do not see it, let Sara Davis know and that is something we can consider doing in the future, but we tried to fill all the needs between that report and our analyses.

Question: What are the TP FWMCs at individual stations in the pre-drainage condition?

Answer: I cannot tell you that off the top of my head, but we do have TP model simulation results throughout the sub-watersheds. The annual FWMCs coming into the lake from the sub-watersheds are about 40 parts per billion (ppb) plus or minus maybe 2-5 ppb so about from upper 30s ppb to lower 40s ppb.

Question: Was attenuation calculated into the pre-drainage loads by basin shown in the pie charts?

Answer: Yes, that is the attenuated load. The way WAM works is that we create a grid for the entire sub-watershed and, on those grids, we generate loads that we call source cell loadings, leaving each one of those grid cells. As those travel overland and then into the hydrology network they are attenuated as they go through the network. We looked at what literature was available for pre-drainage, undisturbed, pristine attenuation. Basically, pristine values for concentrations of phosphorus and nitrogen and then we used those to develop all of our attenuation coefficients in the stream network.

Question: Could you please present details of the base WAM run, e.g. goodness of fit measure summary, flows and loads going into Lake Okeechobee?

Answer: That information was in the 2017 recalibration report along with the sensitivity analysis. We included extensive goodness of fit and statistics along with the data. We can send anyone that report, and it is also posted on the DEP FTP site. At one of the previous meetings, SWET presented some information on this and the notes from that meeting as well as the report are on the FTP site. This presentation on the sensitivity analysis and some of the modeling was done in 2017. There is a lot information in the reports. If you have trouble finding those reports or information on the FTP site, email Sara Davis and she can provide a direct link.

Question: Are the base scenario TN and TP loads at individual basin outlets or at Lake Okeechobee?

Answer: We reported the loads at the exit of each sub-watershed and also at the lake. For example, the Lower Kissimmee and Upper Kissimmee sub-watersheds are reported at the exit point at the S-65 structure, and we come up with an annual average for the loads there. Then, when we have the loads entering the lake from the Lower Kissimmee sub-watershed, we subtract off the loads from the Upper Kissimmee sub-watershed on an annual average basis. The same is true for Indian Prairie and Lake Istokpoga since there is a lot coming in through S-68.

Question: Could you please elaborate on both fertility and water management best management practices (BMPs) that were modeled? e.g. what the fertilizer application rates are relative to no BMP, what were the changes in management calendar, type and size of systems, etc.

Answer: What we attempted to do for the fertility BMPs was to look at existing fertilizer practices because there are a high level of fertility BMPs already being applied and how much more we can do is somewhat limited. This is one reason that while the fertility BMPs are still cost-effective to go in you are limited in how much more you can do. What we were focusing on was essentially reducing slightly more of the rates, which was mostly being achieved by the more advanced fertigation practices and more spoon-feeding type practices to be able to reduce levels and still be able to maintain crop

production and levels to where it would still be viable for the farmer. Ultimately, in the model, that got reflected as a slight reduction in the application rates but a redistribution of the application of nutrients over the cycle of the growing season. For the water management BMPs, they were primarily application of retention systems at the bottom of the agricultural areas or for more intensive agriculture, such as row crops, they already had retention systems and the only real way to get more reductions through those was to expand those but that is the reason that the cost factors on those were quite high.

Question: In addition to the pre-drainage condition considered in this study, did you analyze TN and TP loads in and out of Lake Okeechobee in current condition?

Answer: That was the topic of the 2017 report where we had done all the sub-watersheds as the current conditions. Once we had those simulations, we basically used those setups as the basis for all the various other projects, including both the pre-drainage and the various scenarios (1, 2, 3, and 4). With the slide showing the primary GIS datasets that we altered to reflect pre-drainage conditions, we went in and swapped out those datasets from the existing conditions run.

Question: On slide 62 of the SWET presentation, where did the annual operation and maintenance (O&M) costs come from?

Answer: They were provided from SFWMD from the reports and from the folks that developed those projects with the exception of Istokpoga Marsh, which did not have an O&M estimate. As shown on the footnote, we made the general assumption that we typically do with a lot of these projects that O&M is going to be about 20 % of the annual capital cost for the project.

Question: What is the total TP removal under Scenario 1, 2, 3a, 3b and 4 (sum of all)? Is this enough to meet TMDL?

Answer: We simulated the water management and fertility management separately, as well as the different scenarios. We have not done the combined analysis and what you will find is that if you did sum them all up, for example even just Scenario 1 and Scenario 2 (fertility management and water management BMPs), the total removals will be less than the sum of the two because it is not quite as effective once you have a fertility management BMP operating to then add a water management BMP. If you wanted to look at the fertility management or the water management BMPs in concert with the different projects in Scenarios 3a, 3b, or 4, it would be a little less than the sum. For example, Brighton Valley, which is one of the projects in Indian Prairie, is a dispersed water management project that is a big BMP. You would just use the removals from the project, so you would not quite see a summation of removals from those. Overall, if you could implement them all it would not quite be the sum of them, but it might be close.

Question: Do these estimates include management or control of legacy phosphorus?

Answer: The existing condition model was calibrated and had all of the legacy phosphorus in there so when we apply these practices, they are representing the legacy phosphorus. Legacy phosphorus is definitely represented in here and the reason is that when we apply these practices, they are only going to start effecting things associated with what is going to come out of these soils based on the legacy phosphorus.

Question: 40 parts per billion (ppb) TP FPMC from individual basins indicates that concentrations were similar from all directions; however, the TMDL does not consider this aspect. Basically, pre-drainage WAM results indicate that we need sub-basin TMDL load allocations based on 40 ppb FPMC.

Answer: At the lake there was probably about 35-45 ppb, but individually you can look in different areas and it did vary more than that as far as potential loading rates coming out. Some areas could have been as high as 55 ppb. All the sub-watersheds were not coming in at the same concentration. There was variance between them based on different soils and wetland conditions in those basins.

Question: Why is the Brady Ranch Stormwater Treatment Area (BRSTA) cost per pound of TP so much lower compared to the Lakeside Ranch Stormwater Treatment Area (LRSTA), even though they are at similar location and similar sizes?

Answer: As shown on Slide 62, the cost given for Brady Ranch is \$2.5 million and the cost for Lakeside Ranch is \$11.5 million so there is a significant cost based on amortized values. I assume that the Lakeside Ranch project has already been paid out and Brady Ranch may be an estimated cost, but I would ask SFWMD folks about that.

Question: Understood that we cannot simply add load reductions from scenarios, but still based on your expert judgement will the combined scenarios 1, 2, 3 and 4 be able to reduce the TP loads to TMDL target?

Answer: The last comment on the last slide was saying that all the things we simulated would not be enough to meet the TMDL so there is going to have to be some additional regional projects or other projects done beyond what we simulated. There are other projects going on beyond these, we only did these large projects so there is probably some reduction occurring from other projects that did not get represented in this. The bottom line is there is going to be more work needed to meet the TMDL. We simulated seven projects from the LOWCP and earlier it was mentioned that there were over 80 projects that were not all constructed projects, a lot are programs, but we have not simulated those. This is the LOWCP that is being currently evaluated and there are components of that that SWET was asked to model for this work.

Question: Will the PowerPoint presentation be available?

Answer: The PowerPoint presentation along with the handouts and the recording from this webinar will be posted to the BMAP FTP site and you will be getting a notice from Sara Davis once all that information is posted.

Question: Can we provide additional questions/comments at a later time?

Answer: If you have any additional questions or comments you can reach out to Sara Davis.

Question: Will all WAM runs/results be available on the DEP website?

Answer: The deliverables that are finalized are on the FTP site. We are posting the deliverables there when we get them. If you look on the FTP site and do not see something, email Sara Davis and she can let you know what we have available.

Question: Will the Statewide Annual Report (STAR) be posted for stakeholders to view?

Answer: Yes. We expect to post that on or before July 1, 2019 publicly. You can go to the DEP BMAP webpage and there is a paragraph that explains a little about the STAR. You can click a link to get to the STAR webpage and the various documents that make up that report are there because it does include information other than just about BMAPs. It has TMDL information and minimum flow and level (MFL) information. You can always get to that from BMAP webpage and it will be posted on or before July 1, 2019.