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Subject: USEPA comments on FDEP August 17 Everglades marsh TP stations

The United States Environmental Protection Agency appreciates the opportunity to comment on the August 17, 2005 first draft ambient monitoring network for applying the 10 part per billion total phosphorus criterion to the Everglades Protection Area. We look forward to participating in future technical workshops. We offer the following technical observations:

1. Based on the Phosphorus Rule and USEPA's review and approval of the Rule, we assume that the objective for this program is to determine whether the entire Everglades Protection Area is meeting the long-term 10 parts per billion total phosphorus criterion.
2. USEPA's January 2005 approval letter for the 10 ppb criterion stated that our approval assumed that these monitoring stations would be evenly distributed with spatial coverage throughout the water body so as to protect the entire waterbody. The approval also stated that Florida will ensure an adequate monitoring network to detect the potential effects of a phosphorus gradient, particularly along the upstream fringe of unimpacted areas. This is especially important immediately downstream of structures discharging from each STA.
3. We would like to see an additional figure that shows all of the following: a) the proposed monitoring station locations; b) the location of all structures that discharge into the EPA, including future planned hydropattern restoration structures; c) the location of all permit transect monitoring stations; d) the most recent soil TP kriging showing the 500 mg/kg isopleth.
4. Once the most recent soil TP data are reviewed and a determination has been made about where the impacted zones are, station locations need to be reassessed to assure that the upstream fringe of unimpacted areas immediately downstream of STA discharges are sampled. For example, stations should be added within 200 meters downstream of LOXA105 and LOXA136. Data from the ongoing Department of Interior Refuge sampling program will be useful for locating these stations. If stations LOX137 and LOX106 have soil total phosphorus less than 500 milligrams/kilogram, then they would be likely candidate stations to add to the unimpacted network. The same approach should be applied to the EPA downstream of STA3/4 and STA2. Once an impacted site is identified in the marsh, then a paired unimpacted station should be located within 200 meters downgradient of the transition area.
5. Once the Department has pulled together the soil phosphorus data, a technical workshop on water column monitoring station locations would be extremely beneficial to all parties. A summary of soils data from various monitoring efforts could be presented, with and without floc data. Existing water quality monitoring networks could be presented (including the Department of Interior Loxahatchee network and the 404 permit and the STA permit transect networks). Period of record for each station and some results could be presented. This type of workshop would greatly facilitate understanding the delineation of impacted and unimpacted areas, identifying all existing networks that

could be drawn upon, and identifying overlap or any gaps that would need to be filled by new stations.

6. The suggested requirement that there be a minimum of 6 samples per year at a station in order for data from that station to be used could limit the application of the 10 ppb criterion within the Everglades Protection Area.

The minimum sample number requirement was not submitted to USEPA as part of the Rule package nor have we seen the technical justification for this requirement. There should be no minimum number of samples required for application of the criterion. If the sampling program is limited to only monthly sampling, then in effect the criterion will not be applied to shorter hydroperiod portions of the Park, Refuge or Water Conservation Areas in certain years. A solution might be to sample more frequently than monthly at short hydroperiod stations so there are always at least 6 samples for a given year at all stations.

7. A technical workshop should be held soon concerning implementation of the 500 mg/kg soil TP definition of impacted. All available soil TP data should be pulled together and discussed. In particular, existing data from various past and ongoing monitoring efforts continue to treat floc a variety of ways. Some studies sample floc separately, but without concurrent floc and soil core volume it will not be possible to combine floc TP and soil TP data for a station. There are a number of similar technical issues that have yet to be worked through since there are no standard methods for soil TP field sampling procedures. The paper recently prepared by DB Environmental on Everglades soil sampling methods and results is a very useful summary. Data should be kriged a variety of ways, such as including floc and excluding floc, to determine how sensitive a role floc plays in determining whether a station is impacted.

8. Although it is desirable to build on existing monitoring networks, if need be new sampling stations should be added in critical locations. No previous ongoing Everglades sampling programs were designed with the same objective as this present program: determine whether the entire waterbody is meeting the long-term 10 parts per billion total phosphorus criterion, and determine whether impacted areas are expanding.

9. The stations in the Park are not evenly distributed and there are large gaps in the interior and downstream portions of the freshwater marsh. This should be discussed with Park personnel. Also, there is an obvious gap in the Refuge between X3 and LOX 11.

10. The technical comments recently submitted by Department of Interior suggest dropping P37 and P33 from the Park monitoring, and replacing them with other new stations. This suggestion warrants further discussion before a decision is made. There are arguments to be made against dropping P37, such as 1) It is the only long-term station within Taylor Slough that is in a wet prairie; 2) This station has been sampled continuously since 1953, with monthly nutrient analyses by Florida since 1985; 3) It appears to be the most oligotrophic station in the Everglades Protection Area, with annual TP concentrations less than 4 parts per billion. Data from this station may continue to be useful for discerning how marsh water phosphorus is affected by water depth and atmospheric deposition; 4) It was included (as was P33) in the analysis by Dr. Walker of the 4-part test for the Park that was part of USEPA's basis for approving the Rule submitted by Florida. 5) The Taylor Slough Bridge station is not located in a wet prairie; 6) P37 fills a spatial void in the Park network.

Similar arguments can be made against dropping P33. Any long-term station that is contemplated for being dropped should first be discussed in a workshop session. Also, it would be beneficial if stations to be dropped are monitored concurrently for a few years with its new replacement station.

11. If the Consent Decree requirements for monitoring at the S-12 structures and the C-111 Coastal Basin are terminated, marsh stations should be added within 200 meters downstream of each Park discharge structure.

12. The evaluation of the 4-part test that USEPA relied upon during our Rule evaluation and approval applied the 10 part per billion criterion separately to the Park's Taylor Slough/Coastal Basin and Shark

Slough in order to evaluate the effectiveness of the 4-part test. Given the distinct sources of water delivered to these basins there is some merit to applying the 4-part test separately to these basins. Will the Department apply the test separately to these basins or will they be combined in a single calculation for the Park? Which approach is taken will influence the required number of monitoring stations in each basin.

13. The Comprehensive Everglades Restoration Program (CERP) Monitoring and Assessment Plan explicitly assumes that existing Park marsh water quality stations will continue to be monitored. Will this present effort and the possibility of dropping long-term water quality monitoring stations be coordinated with CERP?

14. What will the mechanism or process be for changing the station network over time? As new information is acquired and new structures begin to discharge, will there be a mechanism for adding monitoring stations if necessary?