



Audubon OF FLORIDA

Improved BMPs and Source Controls needed in the EAA

August 2011

Problem: There are repeated violations of long term phosphorus levels in the Loxahatchee National Wildlife Refuge (Judge Moreno’s Order, 3/31/2010).

Solution: Audubon recommends that remedies must include implementation of improved Best Management Practices (BMPs) and new Source Controls.

- The Everglades Program Rule (40E-63, FAC) for BMPs in the Everglades Agricultural Area (EAA) became effective nearly 20 years ago in January, 1992. There have been no major improvements in the EAA BMP subpart of the rule since it was first adopted.
- Enhancing the BMP program is the **most cost effective way** to reduce phosphorus inflow concentrations to the STAs, which results in much lower phosphorus outflows. There is a direct relationship between phosphorus concentrations entering the STAs and ultimate STA discharge performance. Audubon is confident that lowering phosphorus levels through Source Controls and BMPs *before water ever reaches the STAs* will be the key step to compliance with the 10 ppb standard and Consent Decree guidelines.

Water Year 2009 Data (All years show the same pattern)

(Green = Good ; Red = Bad)

STA 1 West	STA 2	STA 3/4	STA 5	STA 6
Inflow 246 ppb	Inflow 122 ppb	Inflow 96 ppb	Inflow 254 ppb	Inflow 264 ppb
Outflow 36 ppb	Outflow 18 ppb	Outflow 13 ppb	Outflow 56 ppb	Outflow 96 ppb

The phosphorus outflow concentration of the STAs is very responsive to the inflow concentration. If inflow concentrations are reduced, then outflow concentrations will also be reduced.

- Control of phosphorus in the EAA is like an emission control system on a car. In automobile emission control, devices on the engine control the burn rate and air/fuel mixture and modify the exhaust gasses leaving the engine. (This is analogous to EAA BMPs). The catalytic converter on the tail pipe (analogous to the Stormwater Treatment Areas [STAs]) removes pollutants through thermal reaction. If the emission control devices on the engine are not present or are not operating properly, then the catalytic converter will overload and fail. Similarly, if the BMPs in the EAA are inadequate, then the STAs will underperform or fail due to overloading.

On-Farm Phosphorus Removal under current BMP Rule Varies Widely

Water Year 2009 Permit Level Data Random Examples (Green = Good; Red = Bad) all years show the same pattern.

Permit No.	Acres	PPB
50-041-02	300.4	109.5
50-042-01	320.0	82.1
50-044-01	2168.8	205.4
50-045-01	281.8	1077.0
50-045-02	160.6	140.1
50-046-01	35.0	91.2

More than 200 individual farm measurements show phosphorus levels in water leaving farms ranges from less than 50 ppb to over 1000 ppb. The current BMP rule allows farmers to select among a table of different BMPs, some of which are much more effective than others. Compliance is measured by averaging the whole EAA and requires only a 25% reduction below a baseline number. (over)

Regardless of how poorly individual farm BMPs are performing, there are not specific requirements for individual farms to meet a particular threshold of phosphorus reduction so long as the EAA as a whole meets the 25% reduction requirement..

Status of Current BMP Monitoring and Enforcement: Inconsistent

At the recent hearing before Special Master John Barkett, Ms. Carmela Bedregal P.E., a SFWMD employee, testified that there are only 5 engineers to conduct BMP inspections for the entire EAA and C-139 basins, which consist of approximately 450,000 acres and 150,000 acres, respectively. Moreover, during this testimony, Ms. Bedregal stated she was not aware of any enforcement actions brought against permittees under the BMP program since she has been at the District. Ms. Bedregal and other witnesses referenced one farm that had consistently failed to achieve significant reductions in phosphorus. Despite this poor performance, the District's last on-site verification of BMPs at this site occurred in 2008. During this visit, it was determined that nutrients were being applied in excess of BMP recommendations. There was a lack of documentation for implementation of the soil test BMP for the vegetable operation. There were inconsistencies in providing onsite detention.

Experts Testify that Further Phosphorus Reductions Achievable Through Enhanced BMPs

During the recent hearing before Special Master John Barkett, Audubon introduced the testimony of Dr. G. Melodie Naja to establish that further phosphorus reductions achieved through enhanced BMPs would benefit STA performance by reducing stress upon them. Dr. Naja calculated the expected decrease in Total Phosphorus discharges if the BMP program was changed in two alternative ways. In "Option 1," Dr. Naja calculated the expected phosphorus reductions if the BMP rule was *changed to measure compliance at the individual farm-level instead of basin-wide*.¹ In "Option 2," Dr. Naja calculated the expected reductions if the *current method of measuring compliance basin-wide was maintained* but the percentage of reduction required from the EAA as a whole was increased from 25% to (a) 50%; or (b) 60%.² Dr. Naja's testimony established that further reductions at the source would benefit the STAs.

During the hearing before Special Master Barkett, testimony was also introduced from William Tooke, an agricultural scientist, which established that further phosphorus reductions could be achieved by emphasizing the most effective BMPs. He opined that further reductions could be achieved by reallocating BMP points in the point system established under Rule 40E-63 to favor particular BMPs that are more effective at reducing phosphorus.

Audubon's Recommendations:

- Dedicate resources towards a stronger BMP monitoring and enforcement effort. Pursue BMP rule changes to require more accountability and consistency of BMP implementation by individual farms.
- Reconsider the current regime of EAA-wide averaged compliance in favor of compliance by individual farm or sub-basin. In the alternative, the 25% reduction below baseline compliance threshold should be raised significantly.
- Enact BMP rule changes to increase reliance upon and requirements for the most effective BMP strategies, such as "Sediment Control" BMPs that require more intense management of on-farm ditches and canals and "Water Management" BMPs that retain water on farms and reduce discharges.
- Emphasize Source Control strategies that create smaller impoundments spread throughout "hot spots" and "problem basins" such as S5-A to retain waters with higher phosphorus loads in those basins for a head start on treatment before the water reaches STAs.

¹ Dr. Naja examined the expected results if the rule were changed to require each individual farm to achieve a reduction of (a) 15%, (b) 25%; or (c) 40%. This would likely reduce overall loading to the STAs by 13%, 14.5% and 18%, respectively.

² Implementing this change would likely reduce overall loading to the STAs by 17% and 30%, respectively.