Appendix 1-1: Peer Review Panel Comments on the *2005 South Florida Environmental Report*

These comments were provided to the public
on the District's WebBoard

With the exception of reformatting some information for better readability, the Chapter 1 appendices were not edited or spellchecked by the SFER production staff. They appear as posted on the District's WebBoard.

Topic: general remark (1 of 1), Read 24 times NEW
Conf: CHAPTER 1: Introduction
From: Ellen Van Donk e.vandonk@nioo.knaw.nl
Date: Sunday, September 12, 2004 06:06 AM

I miss a list of abbreviations at the end of each chapter

Post New Topic | Reply to: "general remark"
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Topic: Meganck Comments (1 of 1), Read 23 times, 1 File Attachment NEW
Conf: CHAPTER 1: Introduction
From: Trudy Morris -Webboard Manager tmorris@sfwmd.gov
Date: Monday, September 13, 2004 04:14 PM

The attached are comments on Chapter One from Dr. Meganck

MEGANCKCHPT1.DOC (23KB)

[Meganck Comments]

The Panel continues to support the need for this chapter and agrees that the information does present "a basic understanding of the governmental, scientific, and legal context behind the 2005 SFER." In the opinion of the Panel this chapter is also of utmost importance, given the increasing level of public interest and scrutiny regarding the Comprehensive Everglades Restoration Plan (CERP). Chapter 1 continues to serve as a "stand alone" document for many readers interested in gaining an overview of the area and its principal management issues without having to have an in-depth understanding scientific principles or the application of the research results in a complex management context.

Overall, the Panel found this chapter to be concise and very well written, and one providing an excellent summary of all major ecosystems and ecosystem components as well as the major management problems affecting each area and the general status of management actions taken to date. The chapter is well organized and a reasonably close reading provides the logic of an information to action continuum. In other words, this chapter should help ease some of the more common concerns that a diverse audience might generate.

Since first included in the 1999 report, the section describing the District and other governmental agencies has been vastly improved. It is it critical to understanding the balance of the Report.

Editorial issues/questions follow:

1. Include the size of the Arthur R. Marshall Loxahatchee NWR in the paragraph "Water Conservation Area I" on page 1-3 in the draft report.
2. The section "C-139 Basin…"on page 1-6, 1-7 , 2nd paragraph uses the word "should" in reference to the Tribal lands with the WCA. I am wondering if the "will" more accurately describes the intent of the CERP in terms of this area.
3. The last paragraph in the section "C-139" Basin…" should contain a very short statement on the plans for the long term management of the contaminated runoff noted.
4. The relationship between the Kissimmee watershed and excessive P loading in Lake Okeechobee should be noted in the paragraph "Lake Okeechobee" on page 1-7 of the draft 2005 report.
5. The note in the "Lake Okeechobee Management and Restoration" section on page 1-20 notes the difficulty of managing large water bodies when inputs are received from areas with wide ranging management regimens as well as with so many water demands. I feel that this point should be highlighted and given a bit more scientific explanation. This is a very important concept that may help the general public understand the intricacies and costs of applying research results in such a large and ecologically complex area.

Topic: D. Strayer comments (1 of 1), Read 21 times NEW
Conf: CHAPTER 1: Introduction
From: David Strayer strayerd@ecostudies.org
Date: Monday, September 13, 2004 04:26 PM

This is a very helpful overview of the report. I have just a few comments. Fig 1-1 is very useful, but shows only locations, not directions of water flows. It might be helpful to supplement it with a schematic showing hydrologic connections among the different parts of South Florida.

It was a little hard for me to keep track of and compare the goals of the different projects. Perhaps it would be worth summarizing project goals in a box or matrix.

Having a list of acronyms is very helpful. However, the list of acronyms is not complete (perhaps because of the addition of acronyms since last year's report?). Further, the list would be more helpful to a naïve reader if the acronyms were defined very briefly as well as spelled out.

Typos:

Page 1-13, 1st full paragraph, line 8: substitute "creating" for "creates"?

Page 1-14, 3 lines from bottom: "complement", not "compliment"

Topic: Jordan Comments (1 of 1), Read 23 times NEW
Conf: CHAPTER 1: Introduction
From: Jeff Jordan jjordan@griffin.uga.edu
Date: Monday, September 13, 2004 04:51 PM

I concur with the comments submitted by Meganck. In addition:

Since this can be used as a stand-alone document it may be worthwhile to add a paragraph or two at the very beginning about why this is the SFER rather than the ECR. Do they serve the same purpose (legally etc.) What is the reason for the shift? Is this a broader document or is this a change due to other factors? What is different in the 12 chapters here as opposed to the 8-chapter format of the past: why is chapter 3 now on source controls (with BMP's a smaller part) and compliance; why is the exotic species chapter a stand-alone? What about the added chapter 10-12? Specify why putting Kissimmee, the lake and coastal systems in this report. This all may be told throughout the document but it may be useful up front.

Topic: Armstrong Comments (1 of 1), Read 16 times NEW
Conf: CHAPTER 1: Introduction
From: Neal Armstrong neal_armstrong@mail.utexas.edu
Date: Tuesday, September 14, 2004 03:57 PM

The chapter could be enhanced by adding detail to Figure 1-1 so it depicts all of the geographic features described in the text and with the addition of a separate physiographic map (like Figure 5-50) showing the general flows from one portion of the study area to another as described in the text.

Page 1-1, paragraph 2: it would help to explain why Chapters 10, 11, and 12 have been added. This is done later in the report, but the point could be made with this first mention of the additional material.

Page 1-3, paragraph 4: in the paragraph starting with "Water Conservation Area 1", please clarify the phrase "the C-51 West basin that currently is discharged to tide."

Page 1-3: it is noted in the paragraph describing Water Conservation Area 1 that the USFWS manages this Area; what organization(s), if any, manages Water Conservation Areas 2 and 3?

Topic: OVERALL COMMENTS ON CHAPTER 2A by Joanna Burger (1 of 1), Read 17 times

NEW

Conf: CHAPTER 2A - Water Quality Compliance in the Everglades Protection Area
From: Joanna Burger jeitner@biology.rutgers.edu
Date: Friday, September 10, 2004 10:36 AM

The new site specific alternative criterion for dissolved oxygen is a great improvement, and takes into account natural variation.

2A-6. Are there no stations in the center of Loxahatchee?
2A-15. The middle sentence in the first paragraph of 199-2003 is unclear. Do you mean that all factors (conductivity, iron, pH, turbidity) had excursions every year, or only one of them did?
2a-23. What are the implications of pH and alkalinity for some of the fish communities (and therefor colonial birds because of their prey base)?
2a-24. what affects Absorption of CO2 from the atmosphere?
2a-30 What standard would be protective?
2a-37. Other than the effect of sulfates on methylation, what is the greatest concern of high levels?
2a-41: Are there currently any measures to limit the use of atrazine in the EAA?

Topic: sulfate and internal eutrophication (1 of 1), Read 17 times NEW
Conf: CHAPTER 2A - Water Quality Compliance in the Everglades Protection Area
From: Ellen Van Donk e.vandonk@nioo.knaw.nl
Date: Sunday, September 12, 2004 06:13 AM

Page 2A-37. The concentrations of sulfate are monitored and it is mentioned that recent research has provided evidence of a link between sulfur biochemistry in sediment and pore water and mercury methylation (see Chapter 2B). I miss in this chapter and also in chapter 6 a discussion about a possible effect of sulfate on the mobilization of phosphate. It is known that an increase in sulfate may increase the mobilization of especially phoshate from the sediments. This may be an important part of the internal eutrophication (see reference)
Lamers et al. (1998) Sulfate induced eutrophication and phytotoxicity in freshwater wetlands. Environmental Science & Technology 32: 199-205.

Topic: minor comments from D. Strayer (1 of 1), Read 13 times NEW
Conf: CHAPTER 2A - Water Quality Compliance in the Everglades Protection Area
From: David Strayer strayerd@ecostudies.org
Date: Tuesday, September 14, 2004 09:56 AM

Is there any consideration of the broader, long-term biogeochemical impacts of inputs of water high in calcium bicarbonate and sulfate? Some possible consequences might include (and I don't know that any of these will be ecologically important) enhanced precipitation of marl (and organic matter, from high P loads) resulting in long-term changes in marsh elevation (it looks like marl deposition might be something like 1 kg/m2-yr in some of the STAs – Table 4-13, for example); conversion of soils from peats to marl, with subsequent impacts on vegetation and ecological processes; enhanced rates of sulfate reduction, leading to build-up of sulfide and alkalinity in soils, etc. Perhaps these issues have been dealt with in previous years, but it seems to me that they deserve at least brief attention as possibly important.

Table 9 of Appendix 11-1 is misaligned and difficult to read.

p.2A-26: it might be useful to state what ions are primarily responsible for the high conductivity

Typos:

2A-18, several misspellings in footnotes: "mathetical", "variability", "Everlgades"

2A-33, equation: "H2O", not "H20" (oh, not zero)

Topic: Ward/Burger Comments 2A (1 of 1), Read 13 times, 1 File Attachment NEW
Conf: CHAPTER 2A - Water Quality Compliance in the Everglades Protection Area
From: Jeff Jordan jjordan@griffin.uga.edu
Date: Friday, September 17, 2004 10:18 AM

Attached are comments from Ward and Burger on Chapter 2A

WARDBRUGER2A.DOC (36KB)

Post New Topic | Reply to: "Ward/Burger Comments 2A"
Watch this TopicStop Watching this Topic

General Comments on Report

By Robert Ward -

The 2005 South Florida Environment Report (SFER) expands the coverage of the past Everglades Consolidated Reports, which addressed the Everglades Protection Area, to include information on the restoration, management and protection of Lake Okeechobee, Kissimmee River and South Florida's coastal ecosystems. Such an expansion presents the reader with a much more integrated view of water management in South Florida. To obtain a scientifically sound, consistent and comparable view, requires that the water quality and hydrological monitoring across South Florida be integrated in its design, operation and reporting. This, in turn, greatly increases the need to coordinate/integrate and consistently document monitoring efforts across projects, programs, and networks.

In trying to understand the consistency and comparability of water quality and hydrological data and information from across South Florida, this reviewer, as instructed on page 2A-4, examined the website http://www.sfwmd.gov/org/ema/envmon/wqm. The magnitude of the monitoring coordination portrayed on the website is huge – 54 separate water quality monitoring 'projects' are listed for South Florida. The website indicates sampling sites for each monitoring 'project' and briefly reviews the scope and purpose of each.

A monitoring framework (or definition template), developed by the National Water Quality Monitoring Council (NWQMC) and presented in the September 2003 issue of Water Resources IMPACT (Ward and Peters, 2003), is used to organize review comments regarding the consistency and comparability in the data and information generated by monitoring in South Florida and used in the water quality and hydrological assessments provided in Chapters 2, 5, 10, 11, and 12.

1. **Develop monitoring objectives** – in general terms the scope and purpose of the 54 monitoring 'projects' are provided on the website;
2. **Design monitoring program** – it is not clear if there is a separate, complete, and documented 'design' for each of the 54 monitoring 'projects'; however there are bits and pieces of each design presented on websites and in the SFER. For example, the sampling sites are well identified at various places in the SFER and on the website; a list of water quality constituents being measured is provided at some places in the SFER; and, for some monitoring programs, sampling frequency is mentioned. There does not appear to be a place where an interested

person can review the technical and scientific details of each of the 54 monitoring program designs (or of the methods applicable to each of the 54 monitoring programs). The SFWMD monitoring programs are described in a 1998 report by Germain, but it is not available on the website. Do the Germain descriptions cover monitoring objectives, sample and lab methods, data storage and retrieval, data analysis, and reporting? Are there other reports that contain descriptions of the monitoring programs operating in South Florida and whose data is used in the SFER? Has the monitoring descriptions been updated since 1998?

3. **Collect field and lab data** – The methods used to collect samples and analyze them in the laboratory are not listed on the website or in the SFER. On page 2A-3 of the SFER the reader is notified that the SFWMD follows strict quality assurance/quality control procedures approved by the Florida Department of Health under the National Environmental Laboratory Accreditation Conference certification process. The methods are documented in the SFWMD's Quality Assurance manual and in Standard Operating Procedures (SOP) that are reviewed and updated annually. However, they are not available on the website nor is there an indication that the same procedures are being used by all agencies collecting data in South Florida, and on which the various assessments are made. For example, in Chapter 10 (page 11), it is noted that data from the LOWOD, District's ambient monitoring network USGS CERP monitoring network; and 'data from Lake Okeechobee inflow sites' is used to assess P. Then on page 12 there is another description of 'water quality data collection'. It is not clear exactly what data are collected, for what purposes, and by what methods. Furthermore, are all the methods the same, or does the reference to SOP's above only refer to SFWMD monitoring?
4. **Compile and manage data** – Is the data from all 54 monitoring projects placed into DBHYDRO? What meta data are included with the water quality data? Are the meta data different for each agency collecting water data? Do the meta data, employed in DBHYDRO, mesh with the data elements recommended by the Methods and Data Comparability Board (http://wi.water.usgs.gov/pmethods/elements;elements.html)? Where can one view the meta data employed in DBHYDRO?
5. **Assess and interpret data** – For purposes of water quality standard compliance purposes in Chapter 2, the data analysis and interpretation methods are well documented, in the 2005 SFER.
6. **Convey results and findings** – Is the SFER the only mechanism available to convey monitoring results and findings? Has there been an effort to develop an annual water quality 'report card' for use in the SFER, in a manner suggested by the National Research Council (2003), in discussing the Comprehensive Everglades Restoration Plan?

The Water Quality Monitoring Project Areas webpage indicates that information is continually being added to the website, so hopefully many of the questions noted above will be addressed in the near future. It will be particularly helpful, as the SFER expands to cover all of South Florida, to have a 'directory' to monitoring strategies, designs, and practices, along with results, to provide more transparency in the monitoring programs employed in South Florida. Greater comfort on the part of this reviewer, regarding the science behind the water data and information employed in the SFER, is gained with such documentation.

It should also be pointed out, that many features of the monitoring designs are repeated in each annual report (e.g. the water quality criteria compliance methods and location of sampling sites). This adds to the length of the report, when, if there are no changes, there is no need to repeat the design information if it is readily available on a website.

As the reporting on water quality and hydrological conditions is integrated across all of South Florida, the amount of data and information to be collected and synthesized becomes enormous. Are there efforts to introduce modern information technology, not only into data management, but also into management of the entire water information system, in much the same way information technology is being used, in a 'supply chain' mode, to manage modern businesses? The 'supply chain' here follows the flow of information, in much the same way as outlined above in the monitoring framework. The monitoring operations are coordinated and tracked using a well defined flow of water information combined with modern business operations software.

Comments and Questions regarding Chapter 2A - Status of Water Quality in the Everglades Protection Area

From Robert Ward -

While the 2005 report is titled 'South Florida Environmental Report', Chapter 2 continues to presents the status of water quality for the Everglades area alone. There are no comparable water quality status assessments for Lake Okeechobee, Kissimmee River, or South Florida's coastal ecosystems. Rather there are separate chapters on these areas focused on phosphorus, hydrology flows, and freshwater discharges, respectively. As reporting for the entire South Florida area matures in future SFER reports, there is an expectation that more balance in the coverage, and reporting strategy, for both water quality and hydrology will emerge.

Chapter 2 provides a thorough assessment of water quality criteria compliance in the Everglades Protection Area. The assessment focuses on violations of criteria and attempts to explain why violations occur and what is being done to reduce future violations.

Questions:

1. Is the water quality assessment reported in Chapter 2 based only on data collected by the SFWMD, or were data from other monitoring programs included?
2. How many separate SFWMD monitoring programs provide data in support of the water quality assessment in Chapter 2? While statements in Chapter 2 indicate a consistent quality assurance/quality control is used, it is not clear if consistent and comparable methods are used in all SFWMD water quality monitoring programs.
3. A number of times during the report (e.g. page 2A-4 and 2C-4) the reader is referred to Germain (1998) for a description of the current SFWMD monitoring programs. The 2005 SFER report suggests that a large number of new monitoring programs have come on line since 1998. Is there a more current description of the monitoring programs?
4. Chapter 2 implies that Germain (1998) contains the monitoring designs. Does Germain (1998) describe the monitoring programs in a manner that covers all topics of the National Water Quality Monitoring Council's 'Monitoring Framework'?
5. With the 2005 report including four major areas of South Florida, why doesn't Chapter 2A examine the status of water quality in all of the four areas?
6. On page 2A-10, it is noted that the 2005 SFER will be based on 18 water quality constituents for which there are criteria. Sulfate monitoring data are evaluated in Chapter 2A even though there is no surface water

criterion for sulfate. Sulfate, thus, appears to be viewed as a potential future problem, but research into its situation is being mixed with the routine tracking of constituents for which management efforts are currently underway. Does mixing research and routine management data not confuse the overall picture of management accomplishments addressing past concerns and its efforts to identify future concerns? Perhaps a subdivision in the chapter would reduce the confusion by separating routine tracking of accepted criteria from efforts to identify new criteria needing tracking.

7. Were the data collected in a rather uniform manner across the water year? Or were there times when data were not collected, i.e. values missing for a portion of the water year due to a major storm/flooding event? If there is not consistency in sampling frequencies over the water year, does this fact impact the accuracy of the compliance assessments? For example, if more samples are collected during the period of the year most vulnerable to compliance problems, the overall percent of excursions may be more an artifact of the monitoring design/operation rather than the actual quality of the water.
8. Is the data screening process the same from year-to-year, or is it modified each year during preparation of the SFER report? If it is changed, is the total data record re-screened each year in assessing changes over time?
9. When there is insufficient data to apply the binomial hypothesis in a year, the excursions analysis is based on a five-year period of record. Is the comparison of excursions across areas (e.g. refuge and WCA-2) and class (inflow and interior), when different time periods are used to support the calculations, sufficiently comparable for ranking severity of excursions? Seems this has the potential, for example, to keep an area in the 'concern' category, when there is a trend toward improvement – a trend that the sampling frequency screens from view, and vice versa.
10. On page 2A-30, it is noted that diatom community shifts may indicate that the current specific conductance standard may not be fully protective of the area. Does the community shift vary year-to-year or is there a long-term trend in the shift? Figure 2A-9 does not seem to indicate a trend in specific conductance nor do your observations at most other sites? You also note that differences in measurement methods may interfere with comparability of results over years. How do you reach the above conclusion about the specific conductance standard?
11. On page 2A-31, there is an implication of the difficulty in separating current human and natural impacts on specific conductance. Does the historical water data record provide sufficient detail to determine if the current situation has been observed in the past?

From Joanna Burger -

The new site specific alternative criterion for dissolved oxygen is a great improvement, and takes into account natural variation.

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Topic: Armstrong Comments (1 of 1), Read 15 times NEW
Conf: CHAPTER 2A - Water Quality Compliance in the Everglades Protection Area
From: Neal Armstrong neal_armstrong@mail.utexas.edu
Date: Monday, September 20, 2004 09:35 PM

In this chapter on the status of water quality in the EPA, several questions and comments became apparent:
Page 2A-10, section on Data Screening and Handling: were samples screened for sample preservation as well as contamination, holding time, etc.? Also, considering samples taken on the same day as one sample leads to a loss of diurnal variability? Is that desirable?

Page 2A-16, Water Year 2004 Results: it would help to have a table giving the water quality standards all in one place for easy reference.

Page 2A-21, Dissolved Oxygen: What is the water quality standard? Reaeration is an important mechanism of dissolved oxygen gain and loss; why it is not mentioned here? What is an excursion? For DO, this could be too little DO or too much DO – both are problems.

Page 2A-21, equation for DOL: several aspects of this equation are not given – what are the units of time? days, hrs? Are the arguments for the sine functions in degrees or radians? What are the confidence bounds around the calculated DOL? The standard error of estimate should provide some idea of the variability surrounding the estimate of DOL provided by the multiple regression equation, and it critical to know that to decide whether in fact there is an excursion based on this equation.

Page 2A-22, paragraph 3: how much consideration is given to natural conditions such as respiration at night that lowers the DO to at or near zero? In a highly productive system like the Everglades, natural productivity could produce the low DO conditions that are observed and being assigned to nutrient enrichment. Also, why is the second set of stations said to be "biologically impaired" as a result of phosphorus enrichment? What happens because of P that makes this so?

Page 2A-24, paragraph 2: Is there any evidence of deleterious effects caused by pH excursions? If there are excursions outside what is considered to be a normal range and they are considered deleterious, then there should be evidence of such deleterious effects? What are those effects and how are they manifested in the Everglades?

Page 2A-8, Figure 2A-8: how can the dramatic shifts in specific conductance from 1997 to 1998 and 2001 to 2002 at CA27 be accounted for? Similarly for the change from 2001 to 2002 at CA28?

Page 2A-30, Refuge Interior Specific Conductance: how are natural conditions defined for specific conductance in the Refuge? It would appear that natural conditions are affecting several water quality variables rather dramatically, and these effects need to be known fairly well before variations from them are considered to be excursions.

Page 2A-33, Un-Ionized Ammonia: throughout this section, it is difficult to discern when un-ionized ammonia is being discussed vs. total ammonia. Without this clarification, the discussion is hard to follow.

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From: Neal Armstrong neal_armstrong@mail.utexas.edu
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Topic: Armstrong Comments (1 of 1), Read 13 times NEW
Conf: CHAPTER 3: Source Controls in Basins Tributary to the Everglades Protection Area
From: Neal Armstrong neal_armstrong@mail.utexas.edu
Date: Tuesday, September 14, 2004 03:59 PM

This chapter provides a summary of the progress being made in controlling phosphorus in discharges tributary to the Everglades Protection Area through the use of BMPs and other means in the Everglades Agricultural Area and the C-139 basins, the largest tributary sources to the EPA. Significant progress has been made in reducing phosphorus loading leaving the EAA with the implementation of BMPs, and the District appears to be continuing an aggressive program to reduce phosphorus loads as needed to meet regulatory provisions. The BMP "equivalents" program appears to be an innovative way to incent BMP implementation to achieve necessary phosphorus load reductions. Further, the District has mounted a research program to determine the effectiveness of BMPs for phosphorus control so that the scientific basis for future decisions is strengthened.

Phosphorus load reductions have been most impressive within the EAA, but the C-139 basin is showing trends of flow-weighted TP concentrations that suggest that additional BMPs beyond those already in place will be needed. Still, the TP management approach the District is using appears to be effective.

As suggested in the review of the 2004 SFER, the District has added information about other sources of phosphorus in the source basins and phosphorus control activities for them. This information is helpful to understand the major and minor sources of TP and the priorities for dealing with them.

Specific comments are below.

SUMMARY
Page 3-1, paragraph 1: move the last sentence "Water quality data … summarized in Table 3-1" to later in the chapter. It seems out of place this early in the chapter.

SECTION I: EVERGLADES REGULATORY PROGRAM – ECP BASINS
Overview
Everglades Regulatory Program: EAA Basin
Page 3-7, paragraph 1: the BMP "equivalents" system could use some explaining. Because Appendix 3-1 is not yet available to review the BMP practices and the points available for each, it is not clear how the "equivalents" system was derived and what these numbers mean. In Table 3-3, it is not clear what Levels I&II/III/IV mean. Using Appendix 3-1 from the 2004 SFER, the equivalent points assigned to particular BMPs are listed in Table 2, but it would help to understand the rationale, for example, for Nutrient Application Control being assigned 2.5 points while Slow Release P Fertilizer is assigned 5 points. Figures 1 and 2 giving the TP concentrations as ppb and lbs/ac, respectively, are of interest because of the distribution of TP in the EAA; what are the sources causing the distribution found?

Page 3-8, paragraph 2: TP sample preservation is an issue, particularly if samples are left in the field in the automatic samplers for up to seven days. Sample deterioration may render the analytical results questionable unless proper sample preservation procedures are followed. Normal sample preservation procedure for total phosphorus (TP) is C at pH°storing the sample at ≤4 < 2 by acidifying with H2SO4 followed by C°analysis within 28 days. For ortho-phosphorus, samples should be stored at ≤4 followed by analysis within 48 hrs. In addition to sample

preservation procedures, analytical procedures should be noted in the text along with Minimum Detection Levels of the procedures. Thus, what sample preservation and sample analysis procedures were used for the phosphorus analyses?

Page 3-8, paragraph 5: The information provided about the base period is confusing. In this paragraph, the base period is referred to as WY1980-WY1998, as May 1, 1979 to April 30, 1988 (thus, it is WY1998 or WY1988?). In Figure 3-7, the base period is shown to be WY1980 through WY1989. Thus, some clarification is needed. Would Table 3-6 not be more complete if the base period numbers were added?

Page 3-9, paragraph 2: the TP loads data in Tables 3-4 and 3-5 do not appear to match. In Table 3-4, the WY2004 TP load from the EAA is given as 82.3 mt, but in Table 3-5 the EAA Total Outflows load is given as 127.78 mt. Should not these numbers correspond? If not, what is the relationship of Table 3-5 to Table 3-4?

Page 3-10, paragraph 4: sample presentation appears to be a problem again unless the samples are preserved properly upon collection and before compositing. What are the sampling, sample preservation, and sample analytical methods (with MDL) used for these samples?

Update on BMP Research

Everglades Regulatory Program: C-139 Basin
Page 3-17, paragraph 2: as above, sample handling, preservation, and analysis need to be clarified.

Page 3-18, paragraph 1: as above, correspondence of the loads in Tables 3-8 and 3-9 needs to be clarified.

Topic: CHAPTER 4 COMMENTS BY J. BURGER (1 of 1), Read 25 times NEW
Conf: CHAPTER 4: Performance, Compliance and Optimization of the Stormwater Treatment Areas
From: Joanna Burger jeitner@biology.rutgers.edu
Date: Friday, September 10, 2004 10:51 AM

This chapter on STA performance, compliance and optimization is critical to our understanding of the Everglades system. The summary fairly describes the findings for the chapter, and lists the physical parameters that are addressed. Table 4.1 and 4.2 were particularly useful.

Questions:

page 4.2. I assume that load reduction is multi-year?
4.4. What are the issues with the permits?
4.5. How is Floating aquatic vegetation controlled?
**burning prior to flooding usually results in an increase in mercury following flooding. Has this been considered?
4.7. At what point are measures instituted to protect Lake Okeechobee - does it have to do with a given water level in the Lake?
Are the management activities instituted to manage the overload event the same that are in place for other STAs?
4.9. Are you sure the conditions will not prevail in Lake Okeechobee again?
4.11. Have the effects of the use of diquat been examined (on fish as well as invertebrates)?
What is nuisance vegetation (if it is not floating vegetation?)
Are contaminants (like mercury) regularly monitored in the STAs?
4.20. The results of the dye study will be interesting
4.22. How frequent are drydowns?
**It might help to have one table that lists the vegetation to be controlled in each STA, and how much diquat and Glyphosate were used.
4.25. Could you comment on the general level of total phosphorus leaving the system (it looks constant regardless of the inflow). Does this imply that it can only remove so much, that there is a limit to efficiency?
4.35. Does this imply that no surface aquatic vegetation exists, or that it was not controlled. How large are the woody invasives - remaining from a long time ago? How are they being controlled?
4.43. What is the source of ametryn and atrazine?
4.46. Are shrubs a problem in this one.
4.48. At the bottom where you refer to field observation of obstructions. Isn't there routine monitoring of all such outflows, with appropriate corrections?
4.51. Isn't the US F&WS part of the interagency group for the RWMA?
4.72. Again, I think it would be useful to summarize some of the control measures for all the units in one place to get an overview of the use of diquat and other chemicals, and for the amount of different types of vegetation controlled.

Topic: D. Strayer comments (1 of 1), Read 22 times NEW
Conf: CHAPTER 4: Performance, Compliance and Optimization of the Stormwater Treatment Areas
From: David Strayer strayerd@ecostudies.org
Date: Monday, September 13, 2004 04:44 PM

A clear description of a very interesting project. I have very few comments.

It appears that the STAs require occasional herbicide treatment. Are the herbicide treatments followed by water-quality problems (drops in DO or spikes in nutrients)? Why is Hydrilla being controlled in the STAs (p. 4-23)?

Table 4-6 and Fig. 4-8 refer to a mesocosm treatment that appears not to be described in the text – add some text or remove from the Table and Fig.?

Several of the STAs are scheduled for modifications – it would be nice to have diagrams showing the planned improvements.

Why so little outflow from Rotenberger WMA (p. 4-53)?

It might be useful to use a distinctive symbol for WY04 data in Fig. 4-33, so we can see the consequences (if any) of high water loads.

Will measurements of P in peat be precise enough to measure accumulation usefully?

Typos:

Page 4-12, line 5: should read "in the inflow than in the outflow"

Table 4-14 is an exact duplicate of Table 4-13 and should be eliminated.

Topic: Ping Hsieh Comments on Chapter 4 (1 of 1), Read 17 times, 1 File Attachment NEW
Conf: CHAPTER 4: Performance, Compliance and Optimization of the Stormwater Treatment Areas
From: Trudy Morris -Webboard Manager tmorris@sfwmd.gov
Date: Tuesday, September 14, 2004 04:48 PM

The Attached are comments from Ping Hsieh on Chapter 4

CHAPTER 4.DOC (29KB)

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[Hsieh Comments]

Questions and Comments for Chapter 4 STA Performance, Compliance and Optimization (Ping Hsieh)

Chapter 4 of this year's report is much comprehensive and well written than last years report. The summary is a good synopsis of the chapter which is very important for a report of this nature. Following are some questions:

1. Vegetation management seems to be increasingly important in the STAs. The presentation on vegetation management seems a bit too general. Also practices were given (e.g. use of herbicides, fire etc.) but not the results. For example, did control of FAV achieve expected results? Or, how does the start-up of SAV become? (By the way, why SAV is important to the performance of STAs?)

2. Vegetation distribution in the STAs is very important and valuable information. It may be used to evaluate the effectiveness of vegetation management practices and help to interpret STA performance. Did you get the vegetation distribution information by remote sensing technology? How frequent has vegetation survey been conducted? The vegetation distribution maps presented in Chapter 4 are all outdated (year 2000). They should be updated (There is more current information in Appendix 4-12). Comparison of current and archived maps can give valuable vegetation distribution information pertaining to the operation and performance of the STAs.

3. Hydrology residence time (HRT) is an important element in the operation and performance of STAs. Include HRT information may help to understand the performance of STAs. Flow pattern analysis of STAs may also be valuable for the interpretation of the performance.

4. Is Rotenberger WMA a part of STA? A statement of why RWMA appears in chapter 4 would help readers to understand the context.

5. What are the criteria for stabilization and post-stabilization phases of STAs?

6. What do you meant in p. 4-62 "In addition to linear regression analysis, a logarithmic relationship was analyzed to examine whether the removal rate dropped off at a higher loading rates?" I can not see any advantage of doing the logarithmic analysis.

7. p. 4-68. Again, I can not understand why do you want to do the statistical analysis using log10-transformation of the data? Is it not the linear data more sensitive and non-problematic?

Topic: Armstrong Comments (1 of 1), Read 15 times NEW
Conf: CHAPTER 4: Performance, Compliance and Optimization of the Stormwater Treatment Areas
From: Neal Armstrong neal_armstrong@mail.utexas.edu
Date: Wednesday, September 15, 2004 02:52 PM

The STAs are essentially wet detention ponds being used to remove phosphorus from flows leaving the EAA and other areas. For phosphorus, these systems rely on physical, chemical, and biological mechanisms to achieve removal. The mechanisms are affected by flow and volume management in the ponds, dissolved oxygen conditions at the sediment/water interface, and other factors. There is considerable literature information on the principles of detention ponds design and operation, their application to stormwater treatment. It would be useful to add to this chapter the design principles the District used to establish these STAs originally and the operational principles being followed to insure their continued performance at levels and efficiencies expected.

While these STAs are being operated, it seems that information such as hydraulic, organic material, and nutrient areal loading rates , dissolved oxygen concentrations within the STAs, water depths, detention times, and other operational information could be gathered and related to phosphorus removal. Such information would enhance the design and operational basis for these ponds and future ones and assist the District in managing these ponds effectively. If this is being done, please provide such information.

Topic: CHAPTER 5: Comments by J. Burger (1 of 1), Read 27 times NEW
Conf: CHAPTER 5: Hydrology of the South Florida Environment
From: Joanna Burger jeitner@biology.rutgers.edu
Date: Friday, September 10, 2004 10:51 AM

As usual, this chapter is fairly straightforward in reporting hydrology for the Everglades, comparing it to previous years. I wonder if there should be some overall conclusions section that draws all the data together, indicating the implications for other issues (like sulfates, mercury, invasives) and for management.

5.4. What percent of the water entering the Everglades comes from the EAA (Everglades Agricultural Area)? (a range)
5.6. Would it be possible to put standard errors on figure 5.3?
5.8. Again, SE need to be on fig. 4.5

Topic: D. Strayer comments (1 of 1), Read 20 times NEW
Conf: CHAPTER 5: Hydrology of the South Florida Environment
From: David Strayer strayerd@ecostudies.org
Date: Tuesday, September 14, 2004 02:51 PM

A very useful chapter, essential for interpreting the rest of the report. I have only a few minor comments.

Fig 5-3: Consider rescaling the y-axis to a range of 40 to 70 to emphasize differences across regions.

Page 5-7: I have the impression that there is a lot of year-to-year variation in the hydrology of south Florida, and this variation has large ecological consequences. It would be useful to add a figure that shows year-to-year variation in rainfall and runoff at a selected station.

The data included in the narrative of rainfall amounts (bottom of p.5-7) and ET (bottom of p. 5-16) would be easier to read and compare if it were put into a table, which might also include long-term averages for these variables at the met stations.

Typos:

Page 5-2: substitute “consists of” for “comprises of” (2 times)
Page 5-16, 10 lines from bottom: should be “from”, not “form”?
Page 5-17, paragraph 4, line 4, should be “Gentry”, not “Mary Jane”

Topic: Chapter 5 (Ping Hsieh) (1 of 1), Read 18 times NEW
Conf: CHAPTER 5: Hydrology of the South Florida Environment
From: Ping Hsieh yhsieh@famu.edu
Date: Friday, September 17, 2004 08:21 AM

1. Treating hydrology as a separated chapter in this year's report is a significant improvement over the last year's report. Hydrologic data is fundamental to the study and management of EPA and, therefore, should be presented in a most convenient and user-friendly format such that every user can make the best usage of it. The presentation is straight and clear. The comparisons among historical and last year's record are very informative and very useful for research and management purposes. As noted by the authors that due to the extent of data collection, only limited analysis and synthesis are presented in this year's report.

2. Is it possible to predict the inflow/outflow volume of each hydrologic unit based on the rainfall, potential ET and water level of lakes? This kind of forecast would be extremely useful for research and management purposes.

3. What are those "+" and "-" rainfall of WY2004 in Fig 5-5 to Fig. 5-19?

4. Why the inflow and outflow of a river such as St. Lucie Canal and Caloosahatchee River are not balanced?

5. Do you have any pre-development hydrologic data for comparison?

Topic: Ward Comments (1 of 1), Read 22 times, 1 File Attachment NEW
Conf: CHAPTER 5: Hydrology of the South Florida Environment
From: Jeff Jordan jjordan@griffin.uga.edu
Date: Friday, September 17, 2004 10:21 AM

Attached are comments by Ward on Chapter 5

WARDBURGER5 5.DOC (26KB)

Post New Topic | Reply to: "Ward Comments"
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Comments and Questions Regarding Chapter 5 – Hydrology of the South Florida Environment

From Robert Ward –

Chapter 5 addresses the hydrology in all four areas now covered by the South Florida Environmental Report. The hydrology of the Everglades Protection Area has been well documented in previous Everglades Consolidated Reports. Are there similar descriptions of the hydrology associated with Lake Okeechobee, Kissimmee River system, and the coastal areas? Could these be placed on the web with links noted in the SFER report – for those SFER readers seeking deeper insight into the hydrology for all of South Florida? Will such descriptions be combined in the future, if they are not already?

The graphical means of presenting data and information, regarding rainfall, potential evapotraspiration, water levels, inflows and outflows, summarizes considerable data in an effective, short hand, manner. It would be helpful, for some key sites, to graph annual measures of each of the above hydrological categories of data, to give the reader insight into the annual variation. The current system masks such understanding by lumping all data prior to 2003 in one number.

The SFWMD hydrometeorologic monitoring design details are provided in a reference that is not linked to the SFER. There appear to be a number of hydrologic monitoring systems operating in the area covered by the SFER (listed on page 5-4). Are the monitoring systems documented? Such documentation would help answer questions such as: are all the monitoring programs using the same methods? Are the data, from these other monitoring systems, stored in DBHYDRO in a common format? Is the meta data common?

On page 5-42, it is noted that due to the extensive coverage of this year's report, the extent of data analysis is limited at this time. What are the planned data analysis procedures when there is more time? What hydrologic information should the reader expect to receive in next year's report? What information the year after? In general, what hydrological information is deemed critical to water management in South Florida?

From Robert Ward -

1. There is an implication that all rainfall data used in the SFER was obtained by the SFWMD's Operations and Maintenance Department (page 5-7). Is there not data from other networks used in the SFER?
2. What model is used to estimate ETp (page 5-16)?
3. I did not see a summary of flows in the Kissemmee River in Chapter 5. When reading Chapter 11, it is noted that water levels in the Kissemmee River ranged between 2 and 10 feet prior to implementation of the C&SF project, and 2 to 3 feet afterwards. With the river restoration project underway, will future 'hydrology chapters' include data and information on Kissemmee River flows? If so, have 'expected conditions', for future hydrologic data interpretation purposes, been defined?
4. While Chapter 5 presents a summary of Lake Okeechobee water levels, Chapter 10 provides an interpretation of what the levels mean and what objectives, regarding future lake levels, will be sought. A reader is constantly switching between Chapters 5 and 10 to obtain an understanding of Lake Okeechobee lake levels. How will future SFERs combine the basic lake level data summaries with an interpretation?

From Joanna Burger –

As usual, this chapter is fairly straightforward in reporting hydrology for the Everglades, comparing it to previous years. I wonder if there should be some overall conclusions section that draws all the data together, indicating the implications for other issues (like sulfates, mercury, invasives) and for management.

5.4. What percent of the water entering the Everglades comes from the EAA (Everglades Agricultural Area)? (a range)

5.6. Would it be possible to put standard errors on figure 5.3?

5.8. Again, SE need to be on fig. 4.5

References

National Research Council. 2003. Adaptive Monitoring and Assessment for the Comprehensive Everglades Restoration Plan. The National Academy of Sciences, Washington, D.C.

Ward, R.C. and C.A. Peters (Editors). 2003. *Seeking a Common Framework for Water Quality Monitoring.* Volume 5(5) Water Resources IMPACT, 41 pages, September.

Topic: CHAPTER 6: Comments by J. Burger (1 of 1), Read 17 times NEW
Conf: CHAPTER 6: Effects of Hydrology on the Everglades Protection Area
From: Joanna Burger jeitner@biology.rutgers.edu
Date: Friday, September 10, 2004 10:52 AM

This is a useful chapter, but I would like to see the section titles reflect the topic being discussed. They do not discuss wildlife, but mainly nesting wading birds. Overall the report is clear and concise, but the initial summary paragraph should give some indication of the major studies (such as wading bird nesting success, tree islands,...).

6-1. The initial paragraph of the summary should have some additional information listing the major studies.
6.3. The introduction is very good, useful, and concise.
6.4. The second Paragraph of the wading bird monitoring section is confusing. How can the number of wading bird nests equal 45,885 (a very exact number), and yet later in the same paragraph, the statement is made that nest numbers of other wading birds (other than ibis) "have yet to be ascertained"?
6.4-5. I am wondering about the statement that Wood Storks are more sensitive to reversals later in the season. Doesn't it depend entirely upon exactly when in their breeding cycle these occur, and upon the duration of the reversal?
Were the White Ibis nesting in the same places as the Wood Storks?
6.5. Is the appropriate group looking at the target numbers for Wood Storks. Historically the numbers were much higher, and a higher target may now be appropriate as the Everglades recovers?
6.6. It might be useful to state what the management goal is for the Rotenberg WMA. What is the target vegetation?
6.8. Are there data that examines the effect of different distances between tree islands on plants themselves and on wildlife that use them.
If there are fewer now overall than in the past, is there a landscape level problem with their distribution?
Are there more tree islands in the southern part of the Everglades?
6.8. How long is the greenhouse study? Are there any preliminary results?
What phosphorus/nitrogen regime is being used (that typical of the north or more southerly parts of the Everglades)?
6.17. Just for understanding the entire ecosystem, would it be possible to add mercury levels to Table 6.2?
6.19. These periphyton experiments are extremely interesting and useful to both understanding ecosystem functioning and to developing biomonitoring schemes.
6.21. How will the information on litterfall be used? in management?
I did not find that the description of how the hydrological environments were determined was clear. Perhaps this needs a little expansion.
6.23. Do the 4 contribute more because they are more common, or produce more leaves proportionally? Presumably the islands did not have equal tree species composition?
6.23. Again, to evaluate both this research and its management implication, it is necessary to have a statement or two about the relative distribution of the tree islands over the Everglades.
6.24. The belowground work is crucial - will it continue for a few years to assess differences due to water level differences?
6.26. What is the long range objectives of this study?

Topic: experiments with periphyton (1 of 1), Read 15 times NEW
Conf: CHAPTER 6: Effects of Hydrology on the Everglades Protection Area
From: Ellen Van Donk e.vandonk@nioo.knaw.nl
Date: Sunday, September 12, 2004 06:16 AM

Page 6-15. It is not clear for me whether the experiments, to examine how the softwater periphyton assemblages in the refuge might change as a consequence of mineral content, are performed in flow-through systems

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Topic: Comments by D. Strayer (1 of 1), Read 15 times NEW
Conf: CHAPTER 6: Effects of Hydrology on the Everglades Protection Area
From: David Strayer strayerd@ecostudies.org
Date: Monday, September 13, 2004 02:45 PM

This is a useful, but uneven, chapter, with both strong and weak sections. The sections on wading birds and landscape ecology seemed fine (are wading birds the only aspect of "wildlife" to be considered?), but I found the sections on plant ecology and ecosystem ecology to be less satisfactory.

It would be helpful to open the plant ecology section with a little more contextual information – a map of the Rotenberger WMA (showing hydrologic connections), and an explanation that it will receive water from an STA would help set the stage and make the text easier to understand. Near the bottom of page 6-6, it would be helpful to give some numbers showing how high "elevated" P concentrations are. Do tree seedling studies (p. 6-8) include exotic species? It would seem useful to know the responses of exotics to changes in the water regime.

The work on effects of hard water on periphyton is very interesting. Will this work be extended to consider the broader, long-term biogeochemical impacts of inputs of water high in calcium bicarbonate and sulfate? Some possible consequences might include (and I don't know that any of these will be ecologically important) enhanced precipitation of marl (and organic matter, from high P loads) resulting in long-term changes in marsh elevation (it looks like marl deposition might be something like 1 kg/m2-yr in some of the STAs – Table 4-13, for example); conversion of soils from peats to marl, with subsequent impacts on vegetation and ecological processes; enhanced rates of sulfate reduction, leading to build-up of sulfide and alkalinity in soils, etc. Perhaps these issues have been dealt with in previous years, but it seems to me that they deserve at least brief attention as possibly important.

The section on "Tree Island Ecological Process" was hard for me to follow – perhaps it simply needs to be explained more fully. First, of all the ecological processes that occur on tree islands, why focus on litterfall and root biomass? The choice of these variables needs better justification right at the beginning of the section. There seems to be an implicit assumption that litterfall = primary production and "health" (see legend to Fig. 6-10). I don't know whether this is true in the Everglades, but litterfall does not equal primary production in many ecosystems (either in amount or timing) because of losses other than litterfall (herbivory, fire) and biomass accumulation (in wood, roots, etc.). The conclusions of the litterfall section (p. 6-23) do not seem well supported. The comments about which tree species do best under which hydroperiods seems to ignore the possible importance of biological interactions like herbivory or competition in affecting tree performance. The authors have little support for the contention that litterfall is influenced by "hydrology, air temperature, rainfall, and wind…". How many tree islands were included in the litterfall study? Finally, the authors use "short", "medium", and "long" or "short hydrology", medium hydrology", and "long hydrology", when "short hydroperiod", medium hydroperiod", and "long hydroperiod" are meant.

In the section on roots, why was it thought that hydroperiod would affect root biomass? Why was root biomass studied at all? What does root biomass tell you about system function? More explanation would be helpful. The study is not very well replicated (one site in each of four hydrologic regimes), limiting its ability to support inferences. Did colloidal silica provide a reliable separation of live and dead roots? Provide a reference or data from your own study showing that this is a good method.

(Dead roots are so abundant that a small amount of contamination of the live root samples by dead roots could greatly change the pattern shown in Fig. 6-11, top).

Page 6-34, top paragraph: note that water redistribution will newly expose areas to high calcium, sulfate, etc., as well as P.

In Table 6-1, the column labeled “Base Low/High” needs a little explanation.

The statement (p. 6-3) that “All of these impacts are caused directly or indirectly by an altered hydrology” seems to strong. Surely some of the problems faced by the Everglades have primary causes other than hydrology (e.g., movement of exotic species, fertilizer inputs, land use conversion).

Typos:

Page 6-6, last line of first paragraph, replace “facilitate” with “emphasize”, “underscore”, “heighten”, or some similar word?

Page 6-6, 6th line from the bottom: replace “dominate” with “dominant”

Page 6-11: a reference is missing from the 7th line from the bottom.

Page 6-22, legend: should be “miscellaneous”

The reference to Jones et al. (1999) is duplicated in the literature cited.

Topic: Comments of D. Strayer (1 of 1), Read 14 times NEW
Conf: CHAPTER 6: Effects of Hydrology on the Everglades Protection Area
From: David Strayer strayerd@ecostudies.org
Date: Monday, September 13, 2004 02:50 PM

This is an admirably clear summary of limnological conditions and plans and progress for recovery of Lake Okeechobee. In most cases, I found the text to be clear, the graphs and tables to be appropriate and useful, and the conclusions to be reasonable and well supported. I was struck by the paucity of information on two key subjects: the status of fish populations and the condition of the lake before 1900 or so. Fish populations are important to the substantial fisheries on the lake, and may feed back strongly onto phytoplankton and other water quality issues, but receive little attention in the chapter. It would seem to me that information on the function of the lake and the structure of its habitats before heavy human intervention would be helpful in interpreting present-day data and guiding restoration efforts. Again, the chapter contains little information on the natural state of Lake Okeechobee. I assume that these omissions reflect the priorities of the SFWMD program rather than omissions by the authors. If the authors have more information on these topics, it would be welcome.

On p. 10-2, the authors say that it may take the lake 20-30 years to respond to reductions in P loads. Where does this number come from? Are the authors confident that the number is accurate, or are they making the point that internal recycling may cause a substantial delay in the response of the lake (in which case it might be better to substitute "decades" for "20-30 years")?

Is there any evidence of toxic cyanobacteria in the lake? Are algal toxins being monitored?

How bad is the Hydrilla infestation in Lake Okeechobee? Does it serve substantially the same ecological functions as native SAV? What are the prospects for its spread and plans for control in the future?

What is the source of the figure for atmospheric deposition of P onto the lake? Is this actually measured? How much of this is locally derived and therefore potentially controllable?

Concentrations of TP in the nearshore zone are given as 30-60 ìg/L on p. 10-13, but 77 ìg/L in Table 10-6.

Mass-balance calculations for the lake, and subsequent calculations such as sedimentation coefficients, are based on data from eight pelagic stations. TP is markedly lower in the littoral and nearshore zones than in the pelagic zone, so this procedure should overestimate the mass of TP in the lake. Does this bias affect any of the important conclusions of this chapter? Would is be possible or worthwhile to revise the mass balances using the lower TP concentrations in the shallows?

Have there been any attempts to verify the estimates of very large amounts of P burial in the sediments (p. 10-15) by independent means, such as paleoecological analyses or sediment traps?

Is there evidence that SAV occurs in a band that is continuous from the shoreline to its deepest occurrence, rather than as discontinuous bands or patches? If the SAV is discontinuous, then the survey procedure used to map the extent of SAV in the lake

(sampling from the shore outward, until bare sediment is encountered, p. 10-19) will underestimate the extent of SAV to an unknown degree.

Where were the 22 sites used for sampling largemouth bass (p. 10-22)? Randomly placed over the whole lake, just in the vegetated shallows, just in certain regions of the lake? The conclusion that "a structurally diverse aquatic plant community…is essential for successful bass recruitment in this lake" seems too strong, in view of the relatively short run of data presented in Fig. 10-24. There are only four years of data, and bass recruited in just one year, which happened to be the year with diverse vegetation. This is certainly a logical conclusion that is consistent with the data, but not one that I would support with great confidence. Until more data are available, I'd soften this conclusion.

It's impossible to evaluate the sediment management feasibility studies (p. 10-23) without more information.

Water releases to the St. Lucie Estuary in Dec-May 03-04 were said to be pulsed to mimic natural runoff events. Do natural runoff events in South Florida really look like the hydrograph shown in Fig. 12-4? Is such a regularly pulsed hydrograph really beneficial to the estuarine biota?

The Lake Okeechobee Habitat Restoration project (p. 10-25) is relying on "anecdotal information" about the natural vegetation cover of the islands at the south end of the lake. Is there no other information that could be gathered about the prior state of these islands from paleoecological studies, etc.?

The ongoing or proposed work on SAV responses to light and measuring the ecological value of SAV both seem valuable. Are the experimental tanks used for SAV studies realistic enough to provide reasonable parameter values for an SAV model?

Will the declining sedimentation coefficient of the lake mean that lower loadings than anticipated will be needed to restore the lake, or that recovery will be prolonged? Are there plans to investigate the reasons behind the decline in sedimentation coefficient? Does the model being used to project long-term responses of the lake include a dynamic sedimentation coefficient, including possible interactions with declining calcium? This seems like an important point with respect to the long-term prospects for restoring the lake.

Typos:

p. 10-8: under "Annual Progress Report", line 3 should read "annually" not "annual"
p. 10-13: line 4 of paragraph 2 should read "water quality and physical…"
p. 10-15: line after equation 1 should read "Min", not Min"
Table 10-3: under 4th St. Boat Ramp Project, should be "retarding" not "regarding"?

Topic: Ping Hsieh (1 of 1), Read 8 times NEW
Conf: CHAPTER 6: Effects of Hydrology on the Everglades Protection Area
From: Ping Hsieh yhsieh@famu.edu
Date: Friday, September 17, 2004 06:22 PM

Have you tried to identify the end member of hardwater found in northern Everglades? Is it from seawater or ground water?

How do you determine whether it is conductivity or mineral content that changes the structure of refuge periphyton?

Fig. 6-11. How about root length? Roots may be enlarged when under oxygen stress.

Topic: Meganck Comments (1 of 1), Read 18 times, 1 File Attachment NEW
Conf: CHAPTER 7: Update on RECOVER Implementation and Monitoring for the Comprehensive Everglades Restoration Plan
From: Trudy Morris -Webboard Manager tmorris@sfwmd.gov
Date: Monday, September 13, 2004 04:18 PM

The Following are comments from Dr. Meganck on Chapter 7

MEGANCKCHPT7.DOC (26KB)

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[Meganck Comments]

The Panel supports the logic of the overall purpose and methodology utilized by the RECOVER team. The Assessment-Evaluation-Planning and Integration continuum is logical and can be applied to most management decisions taken. The adaptive management program is clearly stated and should be easily understood by all readers. Progress made in the work by the RECOVER team in refining its objectives and in applying and evaluating scientific and technical information in support of the CERP was noted by the Panel. Overall this is a highly readable and understandable chapter. The Summary section is excellent and clearly identifies responsibilities and sequencing of the work to monitor progress made in implementing the CERP. The overall purpose of this chapter is clearly stated in the RECOVER mission statement.

The Panel also noted the effort to address the long-term and integrated nature of CERP by giving priority to projects that will allow tracking of CERP performance by establishing interim targets. This implies the iterative and cyclical nature of the 30-year period for implementing the CERP which is presented in the RECOVER-WIDE section of the chapter.

The discussion of RECOVER-WIDE Conceptual Ecological Models was most interesting and noted by members of the Panel. Appling system-wide performance measures for evaluating alternative plans will undoubtedly also help in understanding the results of specific studies. Last year the Panel noted that while it did not undertake such an analysis, it was clear that parameters used in any system wide analysis could "give rise to different conclusions from a management point of view as to what could be expected." The concern of the Review Panel is that applying the results of such models in a system-wide test may impact one of the principle purposes of the RECOVER program in being able to track each project. On the other hand the planning and integration objective could be strengthened in the long-term if consensus can be reached regarding the scientific and technical priorities for the CERP. The fact remains that management of complex areas is an inexact science and one where we must define long-term goals and strive in the general direction of such goals, even while meeting very specific scientific objectives (e.g., water quality measures; volume levels, etc.) the validity of which may change in a landscape level analysis over time.

The reports in this chapter on the various methodologies utilized to track the effectiveness of RECOVER activities comply with what the Panel suggested in the

2004 SFER Scientific Review and Public Workshop. The CERP goals included in table 7-1 follow-up both the project and system-wide goals.

The note that the 30-year implementation period of CERP will require an "integration function" and a process to incorporate changing conditions, new information, and other factors that may affect CERP performance should continue to be emphasized. There is reason to build consensus and support for this fact overtime. The CERP update is a step in this direction, but the report must be put into a context and written in such a way that the general public understands the implications of such an effort as well as the relationship between CERP and RECOVER.

The Panel continues to support the long-term goal of a total ecological model to evaluate the interactions among the regional models and the upstream and downstream effects of management actions. Further the Panel continues to support the concept that the RECOVER process, developing and implementing an adaptive management program for the CERP, is a critically important part of the overall CERP program, and must be based on a well-designed and well-supported program of monitoring, assessment and research. So far, most of the development efforts appear to have focused on identifying ecological indicators, although the Panel noted progress in data analysis during this reporting period.

The institutional implications of the third RECOVER objective – consensus building - noted in the 2002 and 2003 Consolidated Reports continues to be critical to acceptance by the general public to future management of the region. This should be given priority from the outset so as to catalyze joint ownership of the program, between the agencies and the public.

The Panel voiced strong support for the Regional Evaluation and Report Process section of the chapter and in particular the adaptations made to team structure and in attempting to maintain consistency in data collection methods etc.

Editorial issues/questions follow:

1. How did you determine the number of methods to test and how did you determine that a particular suite of tests (RECOVER program-wide) would satisfy the CERP mandate? Is it true that at this point in time you cannot make that determination?
2. Can you clarify in which stage (assessment, evaluation, planning/integration) the methodologies discussed are currently? Which are clearly experimental and which are established as sound methodologies on which management can rely?
3. What variance from previous studies or baseline studies necessitated the redrawing of landscape subunits noted in the section of "Greater Everglades Regional Aquatic Fauna Baseline characterization"? What changes are anticipated as a result?
4. What parameters are being assessed in the crayfish population dynamics studies?
5. Do systematic reconnaissance flights for wading bird distribution surveys provide reliable data? There is at least one recent European study that questions this technique.
6. How are exogenous forces in the South Florida region (such as population growth, economic changes, land use changes, sea level rise, etc.) incorporated into the identification of indicators and the establishment of goals?

Topic: Jordan Comments (1 of 1), Read 12 times NEW
Conf: CHAPTER 7: Update on RECOVER Implementation and Monitoring for the Comprehensive Everglades Restoration Plan
From: Jeff Jordan jjordan@griffin.uga.edu
Date: Monday, September 13, 2004 04:58 PM

Since the assessment of CERPs progress is dependent on the process and models designed by the RECOVER team, it is vital that this chapter be clear and complete. It is also vital that the modeling, sample design and studies shown on pages 7-9 through 7-16 be widely accepted. I would suggest that the RECOVER team may want to think about how an outside review process may be designed to look specifically at these issues.

Also, has there been an outside review (excluding published articles using the models) of SFWMM, NSM, and LOWQM? This should be noted in the text.

If RECOVER is an acronym, please specify.

Topic: Meganck Comments (1 of 1), Read 17 times, 1 File Attachment NEW
Conf: CHAPTER 8: Implementation of the Long-Term Plan for Achieving Water Quality Goals in the Everglades Protection Area
From: Trudy Morris -Webboard Manager tmorris@sfwmd.gov
Date: Monday, September 13, 2004 04:15 PM

The Attached are comments from Dr. Meganck on Chapter 8

MEGANCKCHPT8.DOC (23KB)

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[Meganck Comments]

The Panel supports the decision by the District to update many of the Long-Term Plan projects in other chapters of the 2005 SFER rather than continue to report them in this chapter.

The fact that additional measures are necessary to achieve the overall Everglades water quality goal should come as no surprise to anyone following this complex process for the last several years. That fact notwithstanding the Panel noted progress made to date in achieving reduced TP levels in water discharged into the EPA as required by 31 December 2006 by the Everglades Forever Act. In referring to chapters 3 and 4 of the 2005 report, the Panel also noted that the best management practices implemented in the Everglades Agricultural Area and the impact of the Stormwater Treatment Areas have had a positive and measurable outcome in terms of reducing P loads into the Everglades system.

The organization of the Long-Term Plan into Pre 2006, Process Development and Engineering, and Post 2006 is a logical one given the 31 December deadline for complying with the terms of the EFA. It is very likely that additional water quality improvement measures will be required after 2006.

The Panel agrees with the rationale utilized in preparing the Long-Term Plan objectives – adaptive management, continued investigations, and measurement of performance and economic benefits realized by implementing water quality measures – as logical given the iterative nature of this planning and restoration process as well as the reality of changing variables (input totals and sources) from the many contributing sources to water entering the EPA.

Several challenges to achieving long-term water quality as defined in the law were noted in the report including regulatory issues, uncertainty in terms of the long-term performance of new technologies, and unknowns related to the CERP. The Panel noted these concerns. The report also stresses the point that many CERP projects are still in the early planning stages and therefore unclear as to how they will impact water quality. However, now that the final decision has been made supporting the ERC's adopted phosphorus rule, the District can at least put that particular debate behind it as planning and implementation activities proceed.

A review of the Long-Term Plan continues to raise the issues related to monitoring as a way of gathering new data and improving the Plan itself. In Sections 5 "PDE" and

8 "Operation, Maintenance and Monitoring" of the 2004 SFER the operational aspects of monitoring progress towards attaining water quality goals were noted, but neither that report nor the 2005 SFER provides insights as to how such information will be treated either legally or scientifically as implementation of new projects proceeds, in the opinion of the Review Panel.

Editorial issues/questions follow:

1. Who has the responsibility for updating the baseline data sets noted on page 8-7, the District or the FDEP?
2. What is the basis for the assumptions presented in the "comparison of WY 2004 P Loads to the 1979-1988 Baseline" section of the report over the long-term? As I understand the results of research to date, no basis for long-term predictions exists considering the important outstanding challenges that have been raised in other parts of the report.

Topic: D. Strayer comments (1 of 1), Read 13 times NEW
Conf: CHAPTER 8: Implementation of the Long-Term Plan for Achieving Water Quality Goals in the Everglades Protection Area
From: David Strayer strayerd@ecostudies.org
Date: Tuesday, September 14, 2004 03:20 PM

I have only one comment on this chapter.

Table 8-3 shows that atmospheric deposition accounts for the majority of TP inputs to the Everglades, yet atmospheric deposition is scarcely mentioned anywhere in the South Florida Environmental Report, as far as I can see. Are atmospheric inputs of P (and N) to the Everglades routinely measured? Are there temporal trends in deposition rates? Is there a lot of spatial variation in deposition rates? What is the source of P to the atmosphere? Is a significant amount of the P locally derived (e.g., from farm fields) and therefore subject to local control efforts? The paucity of information on atmospherically derived P is in sharp contrast with the very rich body of information on sources, loads, and concentrations of P in other parts of the ecosystem that is presented throughout the report. If the SFWMD already has a lot of information on atmospherically derived P, it might be worth adding it to the report. If they don't have the data, it might be worth doing some pilot studies.

Topic: Armstrong Comments (1 of 1), Read 13 times NEW
Conf: CHAPTER 8: Implementation of the Long-Term Plan for Achieving Water Quality Goals in the Everglades Protection Area
From: Neal Armstrong neal_armstrong@mail.utexas.edu
Date: Tuesday, September 14, 2004 04:11 PM

This chapter is a summary of the Long-Term Plan and how it is being implemented and how it is presented throughout the 2005 SFER. The chapter includes sections dealing with the Plan's overview, revisions to it, challenges to achieving long-term water quality goals, and conclusions. The importance of the Plan is clear because its purpose is to guide the achievement and maintenance of water quality standards in the EPA, including the new phosphorus criterion. The complexity of the area is a significant challenge for a Plan like this, but it incorporates the basic elements of water quality management and adaptive management that can make the Plan successful.

SUMMARY

The numerous and diverse regulatory requirements that have been implemented over the years present unique challenges to the regulators and well as those regulated. The 2005 SFER, like those before it, have addressed these requirements and how the District has responded to them. In doing so the District has brought together in the SFERs the various initiatives and projects underway, the results achieved so far, and the conclusions that can be reached and lessons learned to take to the next level of activities. There is, however, in this process a certain fragmentation in a report like this that is inherent because of the many regulatory requirements that must be responded to.

The Long-Range Plan is one that can integrate the regulatory requirements with the water quality management activities undertaken and planned and identify the scientific studies needed to underpin management actions. This chapter provides some information about those regulatory and management plans, but it could be enhanced considerably with an elaboration of the management process, the overall results to date, and progress in achieving the water quality goals.

INTRODUCTION
Page 8-5, paragraph 1: the Long-Term Plan was developed in response to legislation, but the paragraph does not indicate who developed the Plan and any particulars of it. Having this information would help the reader know the players.

OVERVIEW OF THE LONG-TERM PLAN

Page 8-5, paragraph 2: a brief explanation of the Plan would be helpful at the start of this section. The three primary components of the Plan are strategies to achieving the goals of the Plan, but the Plan itself is a management plan that incorporates these strategies and the caveats listed in paragraph 2 of page 8-6.

Page 8-6, paragraph 6: a brief explanation of how the eight project-level activities are integrated would be helpful. In other words, why these eight? How are they linked together? What critical information are they providing?

Page 8-7, paragraphs 1 and 2: water quality models are a critical part of any water quality management plan, The DMSTA model is apparently one that models reservoirs, is versatile in that it can be used for the STAs as well as reservoirs in the

area. A description of the hydrodynamic and water quality capabilities of the model, its construction (e.g., CSTR, finite element, etc.), expected performance capabilities, and expected uses should be described.

Page 8-7, paragraph 4: will the updated baseline data sets distinguish between pre-TP controls and post-TP controls? One should expect a shift in any flow-water quality relationship in such cases.

Page 8-8, paragraph 2: what is the plan to extend these studies of basins with limited current data? Given the results in C-51W, its appears that work in other basins would be very worthwhile.

REVISIONS TO THE LONG-TERM PLAN

CHALLENGES TO ACHIEVING LONG-TERM WATER QUALITY GOALS.

Page 8-11: at the start of this section, some information on the TP concentrations found in the EPA and whether they are exceeding the 10 ppb criterion would be useful. Given all of the TP control activity in place, it is assumed that this criterion is being exceeded, but some idea of how much and where would help the reader understand the nature and severity of the problem.

Page 8-11, paragraph 4: regarding regulatory issues, it would be helpful to include someplace in the 2005 SFER some background information on the 10 ppb criterion for TP, its basis, and any site-specific modifications that can be made under the law, if any.

PHOSPHORUS LOADS TO THE EVERGLADES PROTECTION AREA

Page 8-12, paragraph 5 and Tables 8-3 and 8-4: TP loads to the EPA are not given in a way that is easily comprehendible. Since the focus of this section is the phosphorus loads to the EPA, Table 8-3 needs to be rearranged to so it depicts the TP mass balance for the EPA. TP loads going from areas into STAs need to be separated so that only loads into and out of the EPA are included. Also given the magnitude of TP loads to the WCAs from atmospheric deposition, what is the estimated atmospheric load of TP to the EPA? The headings in Table 8-3 “Portion of Surface Inflows” and “Portion of Total Inflows” need to be clarified; are these referring to water flow or to the loads associated with flow? It is not clear what the purpose of Table 8-4 is; some explanations of the significance of the information presented would be helpful. Finally, can a figure be added showing the EPA and surrounding areas with the TP loads from those areas shown? Such a visual presentation will clearly indicate the major sources of TP to the EPA as well as help explain the TP concentrations found in the water within the EPA.

Page 8-15, paragraph 3: how is the TP atmospheric deposition load figured in to the baseline load? It is assumed to be equal during the baseline period and later periods?

Page 8-16, paragraph 4: the TP loads quoted in this paragraph cannot be easily deduced Table 8-3. Some explanation of the numbers would be helpful.

Page 8-17, paragraph 1: the significance of the load reductions and flow-weighted mean concentrations is difficult to understand without some context. Why is this particular information being presented, and what is its significance? Also, given the reductions in TP load, has a comparable drop in TP concentrations in the EPA been observed, at least in the regions of the load reductions?

Topic: Jordan Comments-chapter 8 (1 of 1), Read 13 times NEW
Conf: CHAPTER 8: Implementation of the Long-Term Plan for Achieving Water Quality Goals in the Everglades Protection Area
From: Jeff Jordan jjordan@griffin.uga.edu
Date: Wednesday, September 15, 2004 10:44 AM

After a number of years dealing with the phosphorus issue it is clear that the water quality standard of 10ppb, with moderating provisions and methods for achieving that criterion, is an important step in attaining long-term water quality goals. When the Panel met last year, the significance of this agreement was not yet clear. This year's report, particularly pages 8-12 to 8-17 and especially tables 8-3 and 4, provides a snap-shot of the progress being made. One note of clarification: in the discussion of comparisons to the baseline period the report states that loads to the EPA and to the Refuge where significantly lower from the previous year (WY2003) and slightly lower to the WCA's from the EAA. Could the authors elaborate on this one-year change? Is it permanent? What was the cause?

Topic: CHAPTER 9: Comments by J. Burger (1 of 1), Read 18 times NEW
Conf: CHAPTER 9: Comprehensive Review of Exotic Species in the South Florida Environment
From: Joanna Burger jeitner@biology.rutgers.edu
Date: Friday, September 10, 2004 10:53 AM

Overall the chapter is an excellent qualitative description of the problem, but I wonder if some numbers can be put on some of the problem. Also, the use of exotic plants by wildlife should be addressed.

9.1. Is the statement correct that "213 are listed primarily or exclusively due to losses caused by invasive exotic plants" or should it be invasive exotic plants and animals?
9.1. Can I get a copy of the Priority Invasive Exotic Plant Species list?
9.2. Shouldn't there be an "Adaptive Management" strategy for exotic plants that is iterative?
9.2. I assume the 26 % refers to the number of species, not to the numbers of each species?
9.4. Overall, Florida seems ahead of most states in conducting a coordinated effort to deal with invasive species.
9.6. While I agree that for much of the Everglades, invasive plants are the dominant problem, it seems that the problem may be equally severe for fish communities?
9.7. How well have efforts been coordinated between the Everglades groups and those in adjacent regions that serve as seed sources for the plants in the Everglades?
9.13. Has there been any use of herbivores in the Everglades?
9.13. Could there be a table of herbicide use and amounts (within areas) of the Everglades?
9.13-14. Can you give some indication of how often each of these techniques are used in the Everglades?
9.16 and following discussion: Some indication of the potential effects on wildlife should be included for the exotic plants. Are they used as foraging or nesting places by some birds, for example. This is an especially important question for Casuarina.
9.28. I thought there was major discussion about whether Armadillo arrived in Florida naturally.
What do you do with Cattle Egret that arrived on its own in the 1940s? Is the distinction between immigrant, exotic, and invasive clear? And who is to make the decision about which species to control, and are there clear criteria that are understandable to a range of stakeholders?
9.29. Again, with respect to management, the costs to other wildlife of removal of some vegetation needs to be discussed (particularly, some trees provide nesting sites for sensitive species). This is recognized in one sentence on the bottom of 9.29, but deserved more.

Topic: D. Strayer comments (1 of 1), Read 14 times NEW
Conf: CHAPTER 9: Comprehensive Review of Exotic Species in the South Florida Environment
From: David Strayer strayerd@ecostudies.org
Date: Monday, September 13, 2004 03:54 PM

This chapter generally is a clearly written and compelling description of problems arising from exotic species in the greater Everglades area. I have just a few comments and questions.

It might be useful to add a 3rd paragraph to the introduction that explains specifically why exotic species are a problem for protection and restoration of the Everglades, naming some of the species and the ecological problems they cause.

The section on biological control seems too rosy, given the considerable recent concern about non-target effects of biocontrol. The statement that none of the 300 insect biocontrol agents has ever become a problem also seems too broad. I think recent misgivings about biocontrol should at least be acknowledged. See, for example, Henneman, M.L., and J. Memmott. 2001. Infiltration of a Hawaiian community by introduced biological control agents. Science 293: 1314-1316; Strong, D.R., and R.W. Pemberton. 2000. Biological control of invading species – risk and reform. Science 288: 1969-1970; Louda, S.M., and P. Stiling. 2004. The double-edged sword of biological control in conservation and restoration. Conservation Biology 18: 50-53; Louda, S.M., et al. 1997. Ecological effects of an insect introduced for the biological control of weeds. Science 277: 1088-1090; and several others.

What is known of the biogeochemical consequences of exotic species control, especially for P, over the short-term (death of exotics) or long-term (replacement of exotics with natives)? Does exotic species control increase or decrease problems with P in the Everglades?

On page 9-7, what is the reference for there being 40 species of marine exotics established in South Florida?

On page 9-30, the authors rightly lament the ineffective patchwork of regulations for keeping new exotics from establishing themselves in North America. Does the SFWMD work with other regional authorities to push for national and international controls on the movement of exotics, or must SFWMD wait until an exotic is well established and moving into the District before investing its resources in control? A lot of natural resource managers are stuck managing exotics on their property, although it might be much more effective to work on tightening regulations to reduce establishment rates of new species.

Typos:

Page 9-28, near middle of page: it's "Dreissena", not "Dresseina"

Topic: Meganck Comments (1 of 1), Read 17 times, 1 File Attachment NEW
Conf: CHAPTER 9: Comprehensive Review of Exotic Species in the South Florida Environment
From: Trudy Morris -Webboard Manager tmorris@sfwmd.gov
Date: Monday, September 13, 2004 04:19 PM

The Following are comments from Dr. Meganck on Chapter 9

MEGANCKCHPT9.DOC (23KB)

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[Meganck Comments]

The Review Panel strongly supports the need for continued investment in research programs and control of invasive exotic species of plants and animals in South Florida, and particularly those areas that directly impact the EPA. In addition, the Panel understands the need for implementation of several control methods at points of entry, distribution and landscape levels if the long-term restoration goals are to be achieved. The summary of invasive plant management tools beginning on page 9-11 was noted by Panel members and is appreciated.

Without question issues surrounding management of exotic plant and animal species affecting natural areas should be a priority for the District under the leadership of the U.S. fish and Wildlife Service. The research objectives outlined in this chapter on page 9-3 are sound and must be understood by management as an on-going need for the foreseeable future. However, it is apparent that while the problem is understood in a general sense, the complexity and cost of proposed solutions is still not fully understood. And as the hydrological regimen and salinity levels are altered over time, new questions will be raised with relation to exotics and their dissemination that are not fully contemplated today as is intimated on page 9-4 of the 2005 SFER. Therefore we stress the long-term nature of this research effort.

The Panel is convinced that the District's efforts to sort out and apply selected control measures are satisfactory at this point in time, but additional effort is obviously needed to control exotic animals. In fact, incremental and what may appear to be isolated management measures to control noxious animals may be the only logical way to proceed, given the degree of uncertainty as to the long-term effectiveness of large investments at the landscape scale.

The Review Panel notes the long-term effort by the District to coordinate vegetation management with other agencies operating within the EPA and the results from this program. As financial resources are limited, assigning priority to plant research understandable, but in the not too distant future a concerted effort to better understand exotic animals is mandatory if a comprehensive program is to become a reality.

Finally the panel noted with interest the section of chapter 9 dealing with information gaps and future needs.

Editorial issues/questions follow:

1. Is there any indication when Governor Bush will accept the plan prepared by the Invasive species Working Group?
2. What is the relationship between the ISWG plan and the conceptual plan for invasive species control authorized by the USACE and referred to on page 9-5 of the report?
3. In the comments on the 2004 SFER the panel expressed an opinion that the District Governing Board should consider assigning a higher priority to funding an expanded research program on the control of exotics as it is certain that with implementation of the STAs and the CERP, the hydrology of the region will change with unknown impacts on both native and non-native plants and animals. In addition, we noted the changing agricultural and urban development patterns, intensity and technologies for dealing with the nutrient rich runoff and other effluents and the potential for unpredictable impacts on the EPA as well as the STAs and surrounding areas in terms of exotic invasive species. Was this idea ever considered by the Governing board?

Topic: Hsieh comments (1 of 1), Read 13 times NEW
Conf: CHAPTER 9: Comprehensive Review of Exotic Species in the South Florida Environment
From: Ping Hsieh yhsieh@famu.edu
Date: Wednesday, September 15, 2004 01:49 PM

1. The title of this chapter suggests that this is a comprehensive review of invasive exotic species in the South Florida environment. The chapter actually also reports the District's effort to control some priority species and management strategy. May be a title similar to that of last year's report would be more appropriate, i.e. "Invasive Exotic Species in the South Florida Environment." In fact, reporting the effort and results of invasive exotic species control and management strategy probably should be emphasized in this chapter. Nonetheless, this reviewer appreciates the extensive review of the subject matter.

2. The summary should also include more results of the District's effort to control priority species in EPA other than just mention melaleuca.

3. I do not quite understand the statement in 9-3,4 "Overall, the major issue is the lack of meaningful information concerning the effect of invasive exotic species in South Florida" How about the information described in 9-16-27?

4. 9-5. What are the specific problems in the NEWTT developed comprehensive strategic plan?

5. 9-22. What do you mean by "To date, 8% of the Brazilian pepper forest has been restored"? Restored to the native species?

Topic: several remarks and questions (1 of 1), Read 22 times NEW
Conf: CHAPTER 10: Lake Okeechobee Protection Program - State of the Lake and Watershed
From: Ellen Van Donk e.vandonk@nioo.knaw.nl
Date: Sunday, September 12, 2004 06:18 AM

It is mentioned (page 10-12) that the LOPA required that tributary sediment trapping was investigated as a phosphorus reduction technology and that the results of this study indicate that very little particulate phosphorus can be removed by this method due to the extreme small particle size. Also on 10-8 (Internal phosphorus management program) it is stated that it was determined that sediment removal from the lake would not be effective in reducing internal phosphorus loading. In the Netherlands we have the same problem in our eutrophied shallow lakes: bottom sediments enriched in phosphorus can be physically suspended into the water column by wind-induced waves. In this way phosphorus that is loosely bound to sediment particles or dissolved in the sediment porewater can become available to phytoplankton.
In Lake Loosdrecht (The Netherlands) a new measure will be applied to solve this problem. They are planning to make some deep pits (around 10-15 m depth) in the lake bottom, situated there where, according to calculations, the loose sediment will physically move to. The loose sediment will be trapped in the pits and will not come anymore into the water layer. It is also possible to cover the pits with sand or clay after they are filled with the loose sediment..
Perhaps a possibility to reduce the internal loading from the sediment of Lake Okeechobee ???

Page 10-18.
Is it not possible that the macrophytes are responsible for the N limitation of the phytoplankton in the littoral zone because they take up nitrogen for the water and also because denitrifying bacteria are abundant in sediments in which macrophytes growth??

On this page it is stated that there is a striking difference between the pelagic and littoral zones. I the pelagic the chlorophyll-a concentrations are two or three-fold lower than in the littoral. It is mentioned that from a resource use perspective this is not a concern because the littoral zone provide nearly all of the ecosystem services (drinking water, wildlife habitat etc.). My question is: What about bloom forming cyanobacteria?? They often form floating layers that may move by wind to the littoral zones. Is this not a problem in Lake Okeechobee??

Page 10-19
On the top of this page the mechanisms are cited by which submerged macrophytes in shallow lakes may influence the biomass of phytoplankton and the transparency of water. I miss in this summing-up 1) competition for nutrients 2) allelopathy and 3) stimulation of denitrification by bacteria.

Page 10-23
I agree that the reduction of the external P-load with additions of alum is not a preferable method. In the Netherlands, however, we have positive results with the chemical treatment of the external P-load with iron addition. There were no environmental problems when applying this chemical.

Page 10-27
Large above-ground tanks were used to study the effects of light on SAF growth.
I wonder how the temperature was regulated. How high was the temperature in the

tank and were there fluctuations in temperature???

Topic: D. Strayer comments (1 of 1), Read 17 times NEW
Conf: CHAPTER 10: Lake Okeechobee Protection Program - State of the Lake and Watershed
From: David Strayer strayerd@ecostudies.org
Date: Monday, September 13, 2004 04:34 PM

This is an admirably clear summary of limnological conditions and plans and progress for recovery of Lake Okeechobee. In most cases, I found the text to be clear, the graphs and tables to be appropriate and useful, and the conclusions to be reasonable and well supported. I was struck by the paucity of information on two key subjects: the status of fish populations and the condition of the lake before 1900 or so. Fish populations are important to the substantial fisheries on the lake, and may feed back strongly onto phytoplankton and other water quality issues, but receive little attention in the chapter. It would seem to me that information on the function of the lake and the structure of its habitats before heavy human intervention would be helpful in interpreting present-day data and guiding restoration efforts. Again, the chapter contains little information on the natural state of Lake Okeechobee. I assume that these omissions reflect the priorities of the SFWMD program rather than omissions by the authors. If the authors have more information on these topics, it would be welcome.

On p. 10-2, the authors say that it may take the lake 20-30 years to respond to reductions in P loads. Where does this number come from? Are the authors confident that the number is accurate, or are they making the point that internal recycling may cause a substantial delay in the response of the lake (in which case it might be better to substitute "decades" for "20-30 years")?

Is there any evidence of toxic cyanobacteria in the lake? Are algal toxins being monitored?

How bad is the Hydrilla infestation in Lake Okeechobee? Does it serve substantially the same ecological functions as native SAV? What are the prospects for its spread and plans for control in the future?

What is the source of the figure for atmospheric deposition of P onto the lake? Is this actually measured? How much of this is locally derived and therefore potentially controllable?

Concentrations of TP in the nearshore zone are given as 30-60 ìg/L on p. 10-13, but 77 ìg/L in Table 10-6.

Mass-balance calculations for the lake, and subsequent calculations such as sedimentation coefficients, are based on data from eight pelagic stations. TP is markedly lower in the littoral and nearshore zones than in the pelagic zone, so this procedure should overestimate the mass of TP in the lake. Does this bias affect any of the important conclusions of this chapter? Would is be possible or worthwhile to revise the mass balances using the lower TP concentrations in the shallows?

Have there been any attempts to verify the estimates of very large amounts of P burial in the sediments (p. 10-15) by independent means, such as paleoecological analyses or sediment traps?

Is there evidence that SAV occurs in a band that is continuous from the shoreline to its deepest occurrence, rather than as discontinuous bands or patches? If the SAV is discontinuous, then the survey procedure used to map the extent of SAV in the lake

(sampling from the shore outward, until bare sediment is encountered, p. 10-19) will underestimate the extent of SAV to an unknown degree.

Where were the 22 sites used for sampling largemouth bass (p. 10-22)? Randomly placed over the whole lake, just in the vegetated shallows, just in certain regions of the lake? The conclusion that "a structurally diverse aquatic plant community…is essential for successful bass recruitment in this lake" seems too strong, in view of the relatively short run of data presented in Fig. 10-24. There are only four years of data, and bass recruited in just one year, which happened to be the year with diverse vegetation. This is certainly a logical conclusion that is consistent with the data, but not one that I would support with great confidence. Until more data are available, I'd soften this conclusion.

It's impossible to evaluate the sediment management feasibility studies (p. 10-23) without more information.

Water releases to the St. Lucie Estuary in Dec-May 03-04 were said to be pulsed to mimic natural runoff events. Do natural runoff events in South Florida really look like the hydrograph shown in Fig. 12-4? Is such a regularly pulsed hydrograph really beneficial to the estuarine biota?

The Lake Okeechobee Habitat Restoration project (p. 10-25) is relying on "anecdotal information" about the natural vegetation cover of the islands at the south end of the lake. Is there no other information that could be gathered about the prior state of these islands from paleoecological studies, etc.?

The ongoing or proposed work on SAV responses to light and measuring the ecological value of SAV both seem valuable. Are the experimental tanks used for SAV studies realistic enough to provide reasonable parameter values for an SAV model?

Will the declining sedimentation coefficient of the lake mean that lower loadings than anticipated will be needed to restore the lake, or that recovery will be prolonged? Are there plans to investigate the reasons behind the decline in sedimentation coefficient? Does the model being used to project long-term responses of the lake include a dynamic sedimentation coefficient, including possible interactions with declining calcium? This seems like an important point with respect to the long-term prospects for restoring the lake.

Typos:

p. 10-8: under "Annual Progress Report", line 3 should read "annually" not "annual"
p. 10-13: line 4 of paragraph 2 should read "water quality and physical…"
p. 10-15: line after equation 1 should read "Min", not Min"
Table 10-3: under 4th St. Boat Ramp Project, should be "retarding" not "regarding"?

Topic: Armstrong Comments (1 of 1), Read 18 times NEW
Conf: CHAPTER 10: Lake Okeechobee Protection Program - State of the Lake and Watershed
From: Neal Armstrong neal_armstrong@mail.utexas.edu
Date: Thursday, September 16, 2004 09:23 AM

Lake Okeechobee has received considerable study by the District and others over many years, and the understanding of this system, particularly the eutrophication processes, is growing. Some questions of interest are:

Does the District believe it has accounted for all of the major nutrient sources to Lake Okeechobee? Has it identified the sources of nutrients within the drainage basin, sources that contribute phosphorus and nitrogen via surface water? What are the groundwater and atmospheric contributions of phosphorus to Lake Okeechobee? Has the District developed ways to estimate off-site phosphorus loads such as the import of nutrients via fertilizers into the drainage basin?

While in-lake processes are being investigated to understand phosphorus sources within the lake, it appears that inadequate attention is being given to the role SAVs in cycling phosphorus from the sediments to the water column. Work by Barko at the Corps of Engineers Experiment Station in Vicksburg has shown conclusively that the primary source of nutrients for SAVs is the sediment. Further, others have shown that SAVs are nutrient "pumps" moving phosphorus from the sediment to the water column through metabolic processes as well as the normal shedding of leaves and stems from the lower, light limited portion of the plants. This shedding contributes organic material and nutrients to the sediment within the SAV bed producing a high organic content, nutrient-rich soil that can then exchange phosphorus with the water column – especially under low DO conditions which occur commonly at night in the midst of SAV beds. Given the areal coverage by SAVs in Lake Okeechobee, what is the estimated internal phosphorus load created by the SAVs and is it significant compared to other sources?

Some water quality modeling efforts are being performed to provide a better understanding of how the Lake Okeechobee ecosystem functions and to be a basis for long-term projections of phosphorus concentrations. What are the District's plans to incorporate sophisticated models for this purpose?

Topic: D. Strayer comments (1 of 1), Read 21 times NEW
Conf: CHAPTER 11: Kissimmee River Restoration and Upper Basin Initiatives
From: David Strayer strayerd@ecostudies.org
Date: Tuesday, September 14, 2004 02:19 PM

A lot of good information is presented here about the large body of restoration and assessment work in the Kissimmee River basin, but it is not always easy to take in. I have two major suggestions for improving the readability of this chapter. First, there really ought to be a good map (or multiple maps) of the area that shows all of the locations and structures in the basin that are mentioned in the text or figures. It's really hard to make sense of data from Pool A, Pool B, etc. when you have no idea where Pool A and Pool B are. A great many locations and structures mentioned in the text are not shown in Figs. 11-2 or 11-7. Second, I thought that the sections from "Kissimmee Chain of Lakes Long Term Management Plan" (p. 11-8) to "Tributary Restoration Projects" (pp. 11-12 to 11-13) were out of place and interrupted the natural flow of ideas. The opening sections (up to p. 11-8) set the stage for a discussion of restoration work on the Kissimmee. I think it would be natural to proceed straight to "Kissimmee River Restoration Project", which is the meat of this chapter, then close the chapter with the series of short sections describing projects that (as I see it) follow from or complement the KRRP/KRHPP. Also, it could be made clearer how each of these projects relate to the main KRPP/KRHPP. For instance, how are the data collected in the Ambient Water Quality Monitoring Project used?

Before moving on to specific places where this chapter could be improved, I want to mention some parts of the chapter that were especially well done. The summary and especially the conclusions are compact and clear – very nice. I commend the authors on developing and explaining procedures to produce defensible reference conditions for the Kissimmee system, a system for which good historical data are not always available. Further, the authors do a good job presenting convincing data on the hydrology, geomorphology, vegetation, and macroinvertebrates of the Kissimmee River showing that the system has begun to make substantial progress, even at this early stage of the restoration.

The narrative of pre-channelization conditions in the Kissimmee is not well referenced – where did this information come from? Is it solid or conjectural?

How will future management of water levels in the lakes affect Hydrilla? Will increase or decrease the problem? What are plans (if any) for control of Hydrilla in these lakes? (It might be worth including a section on Hydrilla in Chapter 9, as the species seems to be a problem in several parts of the SFWMD).

What were the "alternative storage areas" mentioned on page 11-8? Better to be specific than to use a vague term here, I think.

The figure legend for Fig. 11-2 ought to explain what the triangles are.

The authors write (p.11-16) that DO during and after construction was "similar" in reference and treatment reaches, but the data shown in Fig. 11-11 suggest that construction had a significant and possibly ecologically interesting effect on DO.

Fig. 11-12 would be a lot easier to read if the y-axis were stretched a little.

There are so many data points on Fig. 11-14 that it's impossible to read (e.g., to check if the relationships are linear, to look for outliers, etc.). Better to plot each site

on a separate panel.

Why were stage hydrograph and stage recession evaluated at just a single station (and different stations for each variable, at that)?

Fig. 11-16 would be more interpretable if you added a reference line with a slope of -0.3ft/month, so that readers could make visual comparisons of observed and target recession rates.

On page 11-20, the authors say that they have no estimates of baseline mean channel flow velocity. Wouldn't it be possible to calculate this number from discharge data and the cross-sectional area of the canal? Aren't these data available?

Have the authors looked at the outlier on Fig. 11-17 to see if it's in error?

The data suggest that a huge amount of organic matter and marl was flushed from the newly opened channels (~10 cm in 9 months). Have the authors calculated how much material in total was flushed out? What was this material like? Where did it go? Did it have ecological effects in the places where it ended up (Lake Okeechobee?)?

Why should restoring flow increase DO?

On pages 11-24 and 25, I'd like to see an explanation of assumptions 1, 3, and 4 (a reference is given for assumption 2). These are key assumptions for estimating pre-channelization levels of TP, which is the basis for setting restoration targets. It's not evident to me that these assumptions are true (in fact, they seem likely not to be completely true), so it would be good to see references or reasoning defending the assumptions.

Why are current levels of TP so high? Are they completely a result of mysterious source X of TP in southern Lake Kissimmee? At face value, the data suggest a huge source of TP in the lake. What does SFWMD plan to do to track down and characterize the source of all this P?

What are the error bars in Figs. 11-9, 11-10, 11-11, 11-22, and 11-23?

In the section on macroinvertebrates (p. 11-31), the authors note that several lotic species have already begun to appear. Some of these taxa (unionids, Corbicula) have long life-cycles – is it really reasonable that these species have become more abundant already?

Large woody debris is an important habitat for invertebrates in sandy southern rivers. Was large woody debris added back to the Kissimmee as part of the restoration process?

Are any actual data on macroinvertebrates available to support the narrative of rapid recovery (p. 11-31)?

Typos:

Page 11-8, 1st full paragraph, line 7, elevation should be "14.87 m", not "14.87 ft"?
Page 11-11, line 4: should be unionized ammonia?
Page 11-11, paragraph 3 is garbled and uninterpretable.
Page 11-20, 2nd full paragraph, line 7: should this read "less than or equal 5%"?
Page 11-20, 4th full paragraph is duplicated from page 11-18 and should be deleted.
Page 11-20, 5th full paragraph should be moved to page 11-18.
Page 11-31, 3rd paragraph, line 4: "mussels", not "musssels"
Page 11-37, 3rd full paragraph, line 3: reference should be to "National Audubon

Society”
Fig. 11-4: The y-axis needs a label.
Fig. 11-8, x-axis of middle panel should be labeled “S-65A”, like the other graphs, not “Upstream”

Topic: D. Strayer comments (1 of 1), Read 36 times NEW
Conf: CHAPTER 12: Management and Restoration of Coastal Ecosystems
From: David Strayer strayerd@ecostudies.org
Date: Tuesday, September 14, 2004 09:36 AM

This is a well-written summary of an impressive program of work on the estuaries and coastal waters that ring south Florida. The summary clearly lays out the major threats to south Florida's estuaries. The modular structure of the chapter, in which each estuary is treated in turn, makes the chapter easy to read, and the maps of each study system are useful.

Several aspects of the program are especially well developed, and will be essential in understanding and restoring these estuaries. The hydrology and salinity regimes of the estuaries are being monitored and modeled, which will allow the SFWMD to understand the ecological consequences of changes to hydrology, a vital driving variable in these ecosystems. Key biological resources (especially seagrasses and oysters, which provide valuable habitat and ecosystem functions) are being monitored and have been identified as the targets of restoration. At the same time that the SFWMD is developing the scientific understanding needed to best manage these ecosystems, they and their partners are moving ahead with a diverse array of on-the-ground projects to stabilize hydrology, reduce loadings of sediments, nutrients, and toxins, and restore habitat. SFWMD and its partners also are engaged in planning for future projects on south Florida's estuaries. These activities are most impressive and, if pursued to their logical conclusions, should lead to improved ecological conditions in south Florida's estuaries.

There are some areas that are not so well developed. I suspect that the authors will be able to address many of these issues by adding text to the report, but in other cases it may be necessary for the SFWMD to consider changes to their program.

What are the restoration endpoints or targets for these ecosystems? This is potentially a difficult point, because data on the historical conditions in these estuaries are apparently not readily available. Worse yet, several of the estuaries have been irreversibly altered from their natural conditions (for example by opening channels to the ocean), so that the historical conditions would be unattainable even if they were known in detail. What would the SFWMD (and other concerned parties) like these estuaries to look like? How will the District know when the estuary is fully restored, or assess how close to full restoration they are, or how effective various management practices are in improving the condition of the estuary? It would be useful to describe the restoration endpoints or targets, and explain the rationale for these choices.

There are a couple of other obvious candidates for ecological restoration that are not addressed in much detail: fishes and habitats other than seagrass and oyster beds. People care about fish, and fish may play important roles in the ecosystem, so they are a logical target of ecological restoration. Are they not given a central role here because other agencies have jurisdiction, because seagrasses, oysters, and hydrology are thought to be adequate surrogates for fishes, because they're too difficult to measure, or because of some other reason? It might be worth adding a little text explaining what's going on with fish. I don't know much about south Florida estuaries, but here in the Northeast, destruction of nearshore and shallow water habitats has been an important effect of humans, so restoration often tries to ameliorate this destruction. Are ecologically important habitats other than seagrasses and oyster beds under threat from human activities and therefore the target of

restoration? Are there efforts to map or inventory remaining habitats in south Florida's estuaries?

The report identifies three chief threats to south Florida's estuaries (p. 12-2): freshwater inflows, nutrient inputs, and loss of habitat and biological communities. The body of the report addresses very well the first and third (as far as seagrasses and oysters) of these threats, but I am less sure about how well nutrients (especially nitrogen) are addressed. There seems to be a fine program of research on N and P in Florida Bay. For the other estuaries, how severe is N loading, and what are the prospects for reducing it to acceptable levels? Even if freshwater inflows are improved, will excess N loading compromise the condition and recovery of south Florida's estuaries? I raise this issue especially because many of the programs for nutrient removal are much more effective for P than for N.

Is there any coordination or balancing of the programs on the different estuaries, or are they treated as independent programs? Are there opportunities or needs to coordinate or compare the programs on the different estuaries?

Some more specific points.

I think it's great that detailed hydrology/salinity/water quality models are being developed for the estuaries – these could be great management tools. I didn't get a sense, though, how well these models perform. Are they working well now, are they under development but expected to work well in the future, or is their performance suboptimal? It would be helpful to give the reader a sense of model performance.

How were the salinity envelopes for key species (p. 12-14) developed? Please provide details or a reference.

How are live oyster beds mapped? Are the methods consistent over time? How old are "dead" oyster beds (recent or subfossil)? We have dead oyster beds in the Hudson River that are thought to be 4000 years old.

What do the long-term trends in seagrasses in the SLE look like (p. 12-16)?

In Table 12-3, what is RER?

Fig. 12-13 would be more useful if key features were labeled (North, Northwest, and Southwest Forks, C-18).

The authors say that sediment is a problem in the Loxahatchee – what data are available? How is sediment monitored? What is the evidence that it's causing undesirable ecological changes?

I know it's hard to recognize jargon in your own field, but this chapter does contain some jargon-filled passages, which will be hard for an outsider to interpret. For instance, I found the paragraph on the Northern Palm Beach County Comprehensive Water Management Plan to be nearly incomprehensible, and had to consult materials on the website to figure out what the "improvements" and "structures" were. If it's possible, it would be better to use words like "reservoir", "canal", etc.

The current conditions and monitoring programs in the Lake Worth Lagoon are not as well described as those for the other estuaries, and could be fleshed out a bit.

Table 12-6 is useful, but doesn't tell us how bad the water quality violations are. Perhaps supplement with a little text, or alter the table.

What is thought to be causing declining P concentrations in Florida Bay (p. 12-73)?

Fig. 12-28 would be easier to interpret if a panel were added showing hydrology or salinity.

It seems like the causes of seagrass die-off in Florida Bay aren't fully clear. What about the role of disease?

I had several questions about the seagrass model (Figs. 12-32 and 33). Is it reasonable to think that the controls are independent and multiplicative? How well does the model actually perform compared to real data? Please provide a description or reference for the source of the functional relationships between seagrass growth and controlling factors. Does the model include any carrying capacity, competition among species, or feedback between seagrass biomass and available light, nutrients, or space? The results shown in Fig. 12-33 look like transients (the system has not equilibrated) – what kinds of conclusions can you reach from such short runs?

What is the source for statements about the past status of Naples Bay (p. 12-87)?

What is the basis for estimates of attainable oyster populations in the estuaries (pp. 12-95, 12-106, 12-114)?

Figs. 12-38 and 12-39 might be easier to understand if combined into a single graph.

Table 12-15 is not needed (the single datum in the table is given in the text).

On p. 12-108, what is meant by the growth of transplants not being "as expected"? Please elaborate.

Are snags being removed as part of channel cleaning in Lee County (p. 12-110)? These may provide valuable habitat for invertebrates.

It appears that there is only one monitoring site in Charlotte Harbor (p. 12-115). Is this enough to characterize such a large, complex estuary (or is there really more than one site)?

Typos:

12-14: paragraph 2, line 3: no comma after "marine"
12-22, 2nd paragraph from the bottom: "WY2004", not "WY20004"
12-23, 6th line from the bottom: "bidirectional", not "bio-directional"
12-49, line 6: the URL is incorrect; should be "palm-beach", not "palmbeach"
12-51: "Lake Worth", not "Lake Work"
12-72, line 1: should be "magnitude of total…"
12-77: line in center of 2nd paragraph from bottom is garbled; perhaps should read "…decomposed by microorganisms to humics that…"?
12-77, last line: "bioavailability" not "bioavailable"
12-78: there are incomprehensible markings along the x-axes; also, explain what black lines represent

Despite this long list of comments, I emphasize that I am impressed by the work that is being done on south Florida's estuaries and by this report.
