EVERGLADES STATUS

A Report
Prepared
By The
Office
Of
Planning
And
Budgeting
Governor
Bob
Martinez
January 24,
1989
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EVERGLADES STATUS REPORT

JANUARY 24, 1989

INTRODUCTION

This is the first calendar year 1989 quarterly report on the status of the program to protect and restore the Everglades. It covers the period October 25, 1988 to January 24, 1989, it points out the activities and accomplishments during that period, and discusses the anticipated activities and needs during the next quarter.
I. REESTABLISH THE VALUES OF THE KISSIMMEE RIVER

A. Activities and Accomplishments During the Past 90 Days:

Land Acquisition:

1. A draft Memorandum Of Agreement (MOA) between the South Florida Water Management District (SFWMD) and the Department of Natural Resources (DNR) on Kissimme River Valley land acquisition policy has been reviewed by DNR and forwarded back to the District for consideration.

2. The SFWMD acquired 8,840 acres of land on the Kissimme River during the quarter. About 2,500 acres of the 8,840 acres are in the restoration project areas. Kissimme River lands now in District ownership total 27,479 acres. 28,500 acres remain to be purchased.

Restoration:

3. The SFWMD completed and has submitted to the Department of Environmental Regulation (DER) and the Corps of Engineers (the Corps), a permit application for Phase II, River Run Revitalization. DER and the Corps have requested additional information. SFWMD is responding to those requests.

4. The SFWMD organized a technical committee to develop environmental and engineering evaluation criteria for Kissimme River restoration projects. The committee includes representatives of the District staff, DER, Game and Fresh Water Fish Commission (GFC) and the U.S. Fish and Wildlife Service. It has met four times during the last three months to develop and review the criteria with the University of California, Berkeley (UCB) staff.

   a. The SFWMD executed contracts with three independent peer reviewers to review the UCB contract terms. The reviews will be completed in December, 1989.

5. The SFWMD staff met with the UCB staff to discuss the outcome of the October, 1988 Kissimme River Symposium, environmental and engineering criteria for the restoration projects, and the process to be used in evaluating alternative plans for restoration.

6. Secretary of the Army Page wrote Governor Martinez on October 28 again denying the state's request for
Corps financial assistance for the restoration projects.

B. Activities and Needs for the next 90 Days:

Land Acquisition:

1. The SFWMD will make offers to three willing sellers for additional lands during the next quarter.

2. The appraisal for the Latt Maxcy property, needed for the Tick Island Slough and Rattlesnake Marsh restoration project will be completed during the next quarter.

3. The land acquisition boundary line for the Kissimmee River restoration project will be refined by the SFWMD.

Restoration:


5. The District will complete the hydrologic and hydraulic design of the Ice Cream Slough tributary management plan in March 1989.

Need: DNR and the WMDs should expedite review and approval of the revised Memorandum of Agreement to enable acquisition in the Kissimmee Basin to proceed. DNR anticipates that the MOA will be ready for Governor and Cabinet review and approval in March.
II. PROTECT LAKE OKEECHOBEE

A. Activities and Accomplishments During the Past 90 Days:

SWIM Plan:

1. The SFWMD completed a report that concluded that phosphorus levels in the lake have increased significantly (see Appendix B).

2. The Interim Lake Okeechobee SWIM plan was released and discussed by the District Governing Board in December. The Plan advocates significant reductions in the level of phosphorous concentration in waters entering the lake. The draft Plan targets phosphorous concentrations at 1973 levels. It would require urban and agricultural areas to meet the proposed standard for phosphorous in runoff entering the lake by 1991.

The Secretary of DER wrote the District on December 27 stating that BMP's being installed pursuant to the DER dairy rule should be thoroughly tested for effectiveness in reducing phosphorous before the standard proposed in the SWIM Plan is applied. This would allow the dairies north of the lake the opportunity to construct BMP's which should enable compliance with the standard. Should the BMP's prove inefficient the DER will propose appropriate amendments to the dairy rule through the Environmental Regulation Commission (ERC).

3. The District Governing Board will take action on the draft SWIM plan in February.

Phosphorous Removal Study:

4. The District completed a one year feasibility study on the removal of phosphorous from Lake Okeechobee by harvesting hydrilla. The study found that 47.2 tons of phosphorous can be removed annually at a maximum cost of $3.6 million per year. These results will be compared with other phosphorous reduction study results (once such studies are completed) to determine whether the cost-per-ton removed is competitive with other alternatives.

LOTAC II:

5. LOTAC met on November 8, December 15 and January 5 and discussed the regulation schedule for the lake, the draft lake SWIM plan and phosphorus concentrations and sources in the lake.
Corps Fertilization of Levees:

6. It was determined that the Corps of Engineers fertilization program of the levee surrounding the lake is a major contributor of phosphorus to the lake. The Corps has indicated that it will reduce phosphorous runoff into the lake by 52 tons per year by using less fertilizer and different formulations. The Corps has applied as much as 70 tons of phosphorous per year to the levees.

Aquatic Weed Control Program:

7. DNR met with the SFWMD and the Corps to negotiate the terms of an agreement regarding aquatic weed control operations by the Corps on Lake Okeechobee. The agreement would address the aquatic plant control program concerns of the DNR, DER and the GFC. The SFWMD and the Corps agreed to develop a Local Cooperative Agreement which will address management concerns for operation of the program and protection of the lake.

Best Management Practices (BMP's):

8. There are 43 dairies in the Kissimmee River Valley and Taylor Creek-Nubbin Slough Basins. BMP's on 3 dairies are complete. Two additional dairies began construction of BMP's in the Taylor Creek/Nubbin Slough and Kissimmee River Basins. Eleven designs are complete and an additional seven are in the final stages. One of the private SFWMD contractors fell behind schedule during this period but is expected to get back on track. The Soil Conservation Service and the other contractor remain near schedule.

B. Activities and Needs for the Next 90 Days:

SWIM Plan:

Need: The SFWMD Governing Board needs to adopt the Lake SWIM Plan at its earliest opportunity and forward it to the DER for its approval.

LOTAC II:

1. Revision of the 1987 Interim LOTAC report is to be completed by March 1, 1989.
Need: Brief summaries of the specific findings, conclusions and recommendations of LOTAC regarding the lake stage regulation, littoral zone rejuvenation, BMP implementation, SWIM Plan performance standards, and additional flow-through filter project site locations in the EAA should be reported on by LOTAC.

Corps Fertilization of Levees:

2. As mentioned in 7 above, the Corps will reduce its use of fertilizers on the levees and thereby reduce the amount of phosphorous by 52 tons per year.

Aquatic Weed Control Program:

3. The Corps is scheduled to submit a revised letter of operating procedure (agreement) to be signed by the SFWMD and DNR and to be approved by an inter-agency task force (DER, DNR, SFWMD, Corps, US Fish and Wildlife Service, IFAS and the GPC). The letter of operating procedure, once approved by the inter-agency task force, will be incorporated into the Local Cooperative Agreement between the Corps and SFWMD. That agreement will provide for the annual review of Corps Aquatic Weed Control Program work plans by DNR, and the contracting of the program to the SFWMD.

Need: The letter of operating procedure needs to be executed by March 1, 1989 so that the program may be officially transferred to the Corps. DNR has funding sufficient to operate the program only until March 1.

-BMP's:

Need: The DER Dairy Rule requires submission of construction permit applications by June 1989. The SFWMD and the dairies need to closely track progress of BMP design by subcontractors. Dairies need to promptly apply for permits when designs are completed and begin construction as soon as permits are issued.
III. PROTECT THE WATER CONSERVATION AREAS (WCAs)

A. Activities and Accomplishments During the Past 90 Days:

Land Acquisition:

1. The SFWMD purchased a 320 acre tract in WCA 3 in Dade County, bringing total SFWMD ownership in the WCAs to 705,247 acres. Some 84,758 acres remain to be purchased in the WCA's.

2. The DNR acquired 55 acres of land in the Rotenberger project area raising total state ownership to 18,990 acres with 10,180 acres remaining to be purchased.

Holey Land Restoration:

3. Construction of the pump stations for the Holey Land project is underway and is scheduled to be completed by August 1989. The SFWMD funded the pump construction at a cost of $3 million and is seeking reimbursement of the state's share of the cost ($2.3 million) by the Legislature.

4. Florida GFC and SFWMD staff met several times during the quarter to review the 1983 Memorandum of Agreement on the restoration of the Holey Land. Both agencies agree on a fluctuating water depth in the Holey Land project from 0 to 2 feet. The SFWMD Board and the LOTAC have endorsed the operation of a pumping schedule which would achieve increased nutrient removal by allowing more water to flow through the Holey Land. However the District and Commission have not reached a final agreement on the operating schedule for the Holey Land. On January 13, the GFC met and directed its staff to continue working toward an agreement. Since the pumps are not due to be completed until August 1989, there is still time to allow the GFC and the District to work toward agreement.

S.N. Knight/EAA Cleanup Project:

5. On November 10, the Governor and Cabinet approved the concept of converting 3,742 acres of state-owned land, now leased to S.N. Knight, from agricultural use to a biological filtration system to remove nutrients from runoff entering the Everglades Water Conservation Areas.

6. On December 20 the Governor and Cabinet approved a six year management agreement with the SFWMD for the
use of the S.N. Knight tract, a conceptual plan for converting the land to a marsh flow-through filtration system, and financial terms of the lease between the Trustees of the Internal Improvement Trust Fund and S.N. Knight for the remaining period of the lease.

The District and Knight agreement provides for the phase out of farming operations on the tract and the construction of the filtration system. It will be constructed in phases from March 1989 through December 1991 in conjunction with the phase out of all farming by January 1992. S.N. Knight and Sons, Inc. will construct, operate, and maintain the interim system pursuant to the District's design specifications until January 1992. The District will totally operate and maintain the system after January 1992.

The lease fees for the tract will be $100,000 for the period August 1988 to March 1989. S.N. Knight will pay an additional $22,166 for the lease. This additional revenue will go to the SFWMD to be used for the restoration project. The SFWMD will also receive $100,000 per year from the Knights in 1989, '90 and '91.

SWIM Plan:

7. The SFWMD SWIM Plan draft for the WCAs should be available in December 1989.

B. Activities and Needs for the Next 90 Days:

Land Acquisition:

1. The SFWMD plans to purchase two 320 acre tracts in Western Dade County (WCA 3).

2. The SFWMD will make offers on 4,000 acres of land in WCA 3 in Dade County.

3. DNR will continue to acquire Rotenberger tract lands.

Lake Okeechobee/Everglades Cleanup:

4. Governor Martinez will propose that the 1989 Legislature create a fund that will consist of agriculture lease revenues from state-owned land in the Everglades Agricultural Area and that those funds be applied to cleaning up Lake Okeechobee and the Everglades.
Need: The District and LOTAC should identify the location, description, and projected cost of any additional cleanup projects in the EAA as requested by the Governor and Cabinet on August 9, 1988. The SFWMD and the GFC need to reach an agreement on the operational schedule for the Holey Land not later than the next status report (April 25).
IV. PROTECT THE BIG CYPRESS SWAMP

A. Activities and Accomplishments During the Past 90 Days:

Florida/Arizona Land Exchange:

1. President Reagan signed the Florida/Arizona Land Exchange bill on Friday, November 18, 1988. Pursuant to the bill, the Collier family will obtain 68.4 acres of Phoenix, Arizona property in exchange for 108,000 acres of land in the Big Cypress National Preserve Addition, Fakahatchee Strand, and Ten Thousand Islands areas of Collier County, and a cash payment of at least $34.9 million. Some 83,070 acres of the Collier lands are in the area designated for addition to the preserve, 5,000 acres will be included in the Fakahatchee Strand National Wildlife Refuge and 19,620 acres are to become the Ten Thousand Islands National Wildlife Refuge.

Land Acquisition:

2. The DNR acquired 18,241 acres in the Big Cypress Addition for a total of 42,186 acres (state owned). Of the 103,010 acres remaining to be acquired in the addition, 83,070 are included in the Collier/U.S. Department of Interior land exchange. After the land exchange occurs, 19,940 acres will remain to be acquired in the Big Cypress Addition.

3. The DNR acquired 26 acres in the Fakahatchee Strand for a total of 46,693.

4. Some 27,307 acres remain to be purchased in the Strand.

5. The DNR acquired 25 acres in Golden Gate Estates for a total of 202 acres, and 40,798 acres remain to be acquired.

6. The National Park Service has acquired 85 acres in the Big Cypress Addition for a total federal ownership of 804 acres.

Citrus Conversion and Wet Detention Studies:

7. The SFWMD has completed instrumentation and begun data collection for the study of wet detention systems used by citrus growers. This study will determine the effectiveness of the water management system in reducing pollution of receiving waters. It is due to be completed in approximately one year.
8. A Request for Proposals for the $500,000 study of the effects of citrus conversion in Southwest Florida has been completed by the District.

Golden Gate Estates:

9. In May DNR staff met with Golden Gate Estates property owners and held a meeting with an inter-agency technical advisory team. Subsequently, the DNR staff recommended to the CARL Committee that the existing project boundary not be modified. The reasons for that recommendation were because of the area's importance as panther habitat, extensive hydrologic connections to the Everglades ecosystem, and the recommendations of the Committee on the Restoration of Golden Gate Estates, which advocated restoration of the entire Golden Gate area as reflected in the CARL project boundary. The CARL Committee agreed on June 22 to evaluate the Golden Gate CARL project boundary to determine whether any modifications would be appropriate. Because of other DNR staff priorities, the evaluation of the project boundaries cannot begin until February 1989.

10. Collier County will solicit proposals for the preparation of a countywide master water management plan. One element of the plan will be a water management network for the south Estates sub-basin which may include structural and non-structural capital improvements.

11. The Collier County Commission created a Golden Gate Estates Plan Citizens Steering committee to advise the commission on future development of Golden Gate Estates for inclusion in the Comprehensive Plan. At this time the Committee's interest is restricted to areas north of Alligator Alley and the I-75 corridor.

12. The county draft Comprehensive Plan, now in public hearings, includes a Conservation Designation for all areas proposed for public acquisition, such as south Golden Gate Estates. The draft plan includes for consideration identification and mapping of vegetation types and specified development standards within each type. The standards may include the percentage of the site which could be altered, tree protection requirements, and permissible hydrologic (drainage) alterations.

13. The county Public Works Department is considering the use of Miller Boulevard, the western-most north-
south through road, as a storm evacuation route connecting U.S. 41 with I-75.

Recreational Access - I-75:

14. During the quarter, the Governor's Office discussed designation of recreational access points along I-75 in Collier County with NPS and Florida DOT staff. NPS has not yet assessed the environmental impact of the effects of Off-Road-Vehicle (ORV) access on I-75, nor are the location, type, or size of such sites detailed in the Big Cypress Draft General Management Plan. (Federal legislation establishing the Big Cypress Addition mandates the location of three sites on I-75.) The NPS expects the draft management plan to be released within eight weeks and provide a forum for resolving the issue of recreational access.

B. Activities and Needs for the Next 90 Days:

Land Acquisition:

1. DNR staff has indicated that state legislation will be required to enable it to convey state land or funds to the NPS for the Big Cypress Addition.

Need: DNR should draft state legislation as needed to authorize the state to convey land and funds to the Department of the Interior for the Big Cypress Addition.

Citrus Conversion:

2. The request for proposals for the two year citrus conversion study will be advertised during the next 90 days.

Recreational Access - I-75:

3. At a meeting between NPS and Governor's Office staff on January 14, it was agreed that the recreational access parking lot at Mile Marker 31 should be designed to accommodate cars and trailers, and include canal plugs to allow crossing of the canal.
V. RESTORE THE EVERGLADES

A. Activities and Accomplishments During the Past 90 Days:

Federal Legislation - East Everglades Land Acquisition:

1. The Florida Congressional Delegation, in consultation with state agencies and the SFWMD, began drafting legislation to expand Everglades National Park in the East Everglades as recommended by the Governor's East Everglades Land Acquisition Task Force.

C-111 Basin:

2. DNR staff reported that marine resource concerns continue because of the drainage of C-111 water into Barnes Sound and the die-off of marine organisms over an approximate 25 square mile area of the estuary. DNR will continue to review Corps C-111 operational criteria and water management district proposals for the C-111, and will make recommendations for protecting marine resources in the estuary.

3. The SFWMD sponsored three public meetings to discuss C-111 drainage and flood event issues. SFWMD staff proposed interim measures (short-term) that can be taken while a more permanent solution to the drainage problems in the C-111 Basin is developed. A status report on the interim proposals was presented to the SFWMD Governing Board on December 10.

SWIM Plans:

4. The SFWMD has contracted for the production of data to assist in the development of the Everglades National Park/Florida Bay/WCA SWIM plans. A public and private sector advisory group has been appointed to assist staff in identifying issues and management options, and strategies for the overall SWIM plan.

Experimental Water Delivery to Everglades National Park:

5. The Water Resources Development Act of 1988 included authority to extend for three years the Experimental Water Delivery Program to Everglades National Park. The Act also instructed the Corps to study the need for an internal drainage system in the Frog Pond agricultural area. The resulting reconnaissance report must be submitted to Congress within one year.
General Design Memorandum for Northeast Shark River Slough:

6. Coordination required by Section 7 of the Endangered Species Act between the Corps and the U.S. Fish and Wildlife Service continues regarding proposed water regulation schedules in the Northeast Shark River Slough and the effects of the schedules on alligators, wood storks, and the Everglades Kite. At a November 9 meeting among the Corps, Everglades National Park, SFWMD and the USFWS, the Corps agreed to conduct additional modeling of certain water regulation scenarios. The Corps expects to complete the review of data and publish an approved General Design Memorandum (GDM) by June 1989. Approval of the GDM and the implementation of flood protection for the 8.5 square mile area is important to the overall goals for restoring Northeast Shark River Slough to functioning Everglades habitat and restoration of the Park.

Everglades Symposium:

7. An Everglades Symposium sponsored by Everglades National Park and the SFWMD is being planned for October 22-27, 1989 at the Sheraton Hotel, Key Largo. The conference will focus on Everglades ecosystem health and stability, restoration goals, conflicts, limitations and wading bird ecology.

Dade County Comprehensive Plan - The Frog Pond:

8. The recently adopted Dade County Comprehensive Plan designates the Frog Pond as an agricultural area and it restricted specific land uses. The plan prohibits additional drainage, allows one rural residence on 40 acres, or one unit per 20 acres if part of an established agricultural use.

9. The Trust for Public Lands identified the East Everglades as an area of interest for its acquisition program.

B. Activities and Needs for the Next 90 Days:

SWIM Plan:

1. The District staff will work to develop a preliminary strategy for the WCA/Everglades National Park/Florida Bay SWIM Plan for review by the advisory committee and the Governing Board.
C-111 Basin:

2. The interim proposals for the C-111 will be coordinated through public and interagency technical meetings in January and February 1989. Approval from the Governing Board will be sought in February.
VI. PROTECT THE FLORIDA PANTHER AND OTHER ENDANGERED WILDLIFE

A. Activities and Accomplishments During the Past 90 Days:

NPS-GFC Deer/Panther Research:

1. The deer herd research now being jointly conducted by the NPS and the GFC in the Big Cypress Preserve is progressing very well. Capture efforts have been conducted in the Monument and Stair Step Units with effort in the Deep Lake unit scheduled for this month. The herd appears to be abundant and in excellent health. This is the first year that a complete sample has been collected. For example, the collection of three or four deer required three weeks last year. This year, six were collected in three nights.

Panther Research:

2. The GFC sponsored a Panther Population Viability workshop in Naples during January. It was attended by well known scientists and addressed population dynamics and models, genetics, captive breeding, etc. The GFC will conduct additional modeling of panther population dynamics using varying combinations of factors such as highway mortality, kitten survival, food abundance, etc. Results of the modeling will be analyzed for use in the Panther Recovery Plan.

3. Of five Texas Cougars released in the Osceola-Okefenokee Study area in June, one was found dead in the Suwannee River and two were found dead of gunshot wounds. The GFC has initiated a reward fund that now totals $6,000 for information leading to the arrest of the perpetrators. The goal for the fund is $10,000. The sub-adult male Florida panther hit near the Southwest Florida Regional Airport has recovered from his broken scapula and the GFC hopes to release him soon.

B. Activities and Needs for the Next 90 Days:

1. The GFC will continue to work with NPS on the joint deer/panther research and expects to have completed the additional panther population viability modeling by the end of this quarter. The results will be presented to the Florida Panther Inter-Agency Technical Sub-Committee.
VII. THE EVERGLADES COALITION

The Everglades Coalition held its Fourth Annual Conference at Port of the Islands, Collier County from January 12-15. The conference was attended by over 200 people, including national and state conservation leaders, local, state, and federal government officials, members of Congress, and citizens.

Tentative plans were made to hold the fifth annual Everglades Coalition Conference in January, 1990.
APPENDIX A: EVERGLADES LAND ACQUISITION SUMMARY  
FIRST QUARTER, 1989 (AS OF JANUARY 27, 1989)

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<th>EVERGLADES PROJECTS</th>
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<th>ACRES REMAINING TO BE PURCHASED:</th>
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*1. SFWMd Acquisitions of Kissimmee Project lands include some Save Our Rivers purchases beyond the boundaries of this project. The District is re-evaluating the project boundaries and will provide results in the next report.

*2. Includes the 143,085 Fakahatchee National Wildlife Refuge.

*3. The original Big Cypress legislation authorized a total of not more than 570,000 acres for the Preserve. Several sections of land south of Alligator Alley are larger than the standard 640 acres. The Preserve is now calculated at 574,434 acres, but that amount is not legislatively authorized. The National Park Service indicated that 45 tracts of privately owned land (about 2,000 acres) are in federal condemnation proceedings. The difference in figures (574,434 and 534,742) is represented by the 1,993 acres of private land that remain to be acquired and about 37,699 acres within the Big Cypress National Preserve boundaries that belong to the state and counties.

*4. Includes the lands in the C-311 Basin and the East Everglades Wildlife Management and Environmental Conservation Area.
1. Introduction

- Lake Okeechobee is a COMPLEX system and single-factor answers can be deceptive. Because of the complexity of Lake Okeechobee, the SFWMD is spending several millions of dollars to arrive at a more complete understanding of this system. However, there is presently a large body of scientific information which strongly indicates that Lake Okeechobee is receiving excessive amounts of phosphorus and that these inputs need to be substantially reduced.

2. Perspective on the SFWMD Approach to Calculating Critical Loads for Okeechobee

- Vollenweider formulated a general model to relate in-lake concentrations to external loading using an estimate of sedimentation since nutrient budgets were almost non-existent and true sedimentation was unknown. This work served as the basis for the 1972 International Agreement between the U.S. and Canada to limit phosphorus inputs to the Laurentian Great Lakes, a problem of similar magnitude to that of Okeechobee.

- Lake Okeechobee reacts similarly to other lakes in terms of lake concentrations and algal biomass relative to its loading. Therefore, nutrient reduction is justified as a biological control measure. By controlling total inputs, we CAN alter the average nutrient levels and significantly influence major aspects of eutrophication.

3. The Connection between Nutrient Loading and Phosphorus Concentrations in Lake Okeechobee

- Average total phosphorus concentrations in the open waters of Lake Okeechobee have demonstrated a statistically significant increasing trend over the past 15 years and have more than doubled since the early 1970's.

- With the 15 years of nutrient budget data available for Lake Okeechobee, we have developed a system-specific, multiple regression model that can explain over 80% of the variation in lake phosphorus concentrations. This is likely the best model of this sort that we can formulate at present.

- We do not have the final answers. Multiple regression is only one step beyond simple regression analysis; it tells us which factors are important, but reveals little about the mechanisms involved. For this reason, we have contracted major scientific studies of the lake which, over the next few years, will greatly enhance our understanding of the internal processes in this system.

4. The Influence of Lake Levels (Mean Depth) on In-Lake Phosphorus Concentrations

- Higher in-lake phosphorus concentrations occur at higher lake stages. This implies that lower lake levels may help to partially ameliorate the situation. This will not permanently reduce phosphorus concentrations unless external loading is controlled.
5. The Effect of Resuspension and Turbidity on Phosphorus Concentrations

- Over the short-term, wind resuspension is a major factor affecting phosphorus concentrations in Lake Okeechobee.

- Over the long-term, wind resuspension (indicated by turbidity levels) has not shown any significant increase, however, the amount of phosphorus associated with resuspension events has increased.

- The long-term upward trend in phosphorus is driven by excessive phosphorus inputs. The phosphorus dynamics/circulation study will determine the role of lake sediments in accumulating phosphorus and contributing to its recirculation.

6. The Connection between Phosphorus Concentrations and Algal Blooms in Lake Okeechobee

- Algal blooms are only one symptom of high nutrient concentrations in Lake Okeechobee. The impact of high nutrient concentrations on other aspects of this system (e.g., phytoplankton community composition, littoral zone vegetation, food-web structure) are unknown, but are being investigated. We have long recognized that algal blooms in this lake are NOT governed by nutrient concentrations ALONE and we also recognize that visible algal blooms were likely a feature of this eutrophic system before any significant human activity occurred, although not of the magnitude currently being experienced.

- We CAN demonstrate that the average levels of algal abundance (chlorophyll a) in Lake Okeechobee correspond with those in other lakes with similar total phosphorus concentrations. Additionally, our analyses DO demonstrate significant relationships between phosphorus concentrations and algal abundance (either mean chlorophyll a or “bloom” frequency) in the near-shore waters of Lake Okeechobee.

7. The Urgency of the Eutrophication Problem in Lake Okeechobee

- There has been a decline in the nitrogen/phosphorus ratio due to the increase in lake phosphorus concentration that may predispose the lake to more blue-green algal blooms.

- There are indications that the lake’s ability to trap phosphorus in the sediments is declining. Delays in reducing Lake Okeechobee phosphorus inputs will probably exacerbate the symptoms of eutrophication in the lake and substantially prolong the time required for recovery after corrective measures are taken. This is in part due to the “memory effect” of over-enrichment for long time periods and the rather slow flushing rate of the lake (about 25% per year). At that rate, the full effect of corrective measures (i.e., loading reduction) would not be realized for about 12 years.

- If nothing is done and loading continues at excessive levels, the lake will most likely deteriorate at an accelerated rate due to an increased internal recycling rate of phosphorus. That means that excessive loading may result in hypereutrophic effects within 4 to 5 years.

- It is necessary to accelerate remedial actions now if the effect of corrective actions are to be felt within the next decade.
5. The Effect of Resuspension and Turbidity on Phosphorus Concentrations

- Over the short-term, wind resuspension is a major factor affecting phosphorus concentrations in Lake Okeechobee.

- Over the long-term, wind resuspension (indicated by turbidity levels) has not shown any significant increase, however, the amount of phosphorus associated with resuspension events has increased.

- The long-term upward trend in phosphorus is driven by excessive phosphorus inputs. The phosphorus dynamics/circulation study will determine the role of lake sediments in accumulating phosphorus and contributing to its recirculation.

6. The Connection between Phosphorus Concentrations and Algal Blooms in Lake Okeechobee

- Algal blooms are only one symptom of high nutrient concentrations in Lake Okeechobee. The impact of high nutrient concentrations on other aspects of this system (e.g., phytoplankton community composition, littoral zone vegetation, food-web structure) are unknown, but are being investigated. We have long recognized that algal blooms in this lake are NOT governed by nutrient concentrations ALONE and we also recognize that visible algal blooms were likely a feature of this eutrophic system before any significant human activity occurred, although not of the magnitude currently being experienced.

- We CAN demonstrate that the average levels of algal abundance (chlorophyll a) in Lake Okeechobee correspond with those in other lakes with similar total phosphorus concentrations. Additionally, our analyses DO demonstrate significant relationships between phosphorus concentrations and algal abundance (either mean chlorophyll a or “bloom” frequency) in the near-shore waters of Lake Okeechobee.

7. The Urgency of the Eutrophication Problem in Lake Okeechobee

- There has been a decline in the nitrogen/phosphorus ratio due to the increase in lake phosphorus concentration that may predispose the lake to more blue-green algal blooms.

- There are indications that the lake's ability to trap phosphorus in the sediments is declining. Delays in reducing Lake Okeechobee phosphorus inputs will probably exacerbate the symptoms of eutrophication in the lake and substantially prolong the time required for recovery after corrective measures are taken. This is in part due to the “memory effect” of over-enrichment for long time periods and the rather slow flushing rate of the lake (about 25% per year). At that rate, the full effect of corrective measures (i.e., loading reduction) would not be realized for about 12 years.

- If nothing is done and loading continues at excessive levels, the lake will most likely deteriorate at an accelerated rate due to an increased internal recycling rate of phosphorus.

- It is necessary to accelerate remedial actions now if the effect of corrective actions are to be felt within the next decade.

*Corrected page - 1/20/89