Final Draft

Lake Okeechobee Sediment Management Feasibility Study

Interagency and Public Meeting Minutes

January 10, 2001

Interagency Meeting
1:30 p.m.- 3:00 p.m.
South Florida Water Management District
Storch Room
3301 Gun Club Road
West Palm Beach, FL 33406

Public Meeting
6:30 p.m.- 8:00 p.m.
South Florida Water Management District
Okeechobee Service Center
205 North Parrot Avenue
Okeechobee, FL 34972

In attendance at the Interagency Meeting:

Lothian Ager, Florida Fish and Wildlife Conservation Commission
Bob Barry, Palm Beach Community College
James Barry, Palm Beach County Environmental Resources Management
Linda Bolton, Village of Wellington
Rick Brust, Florida Fish and Wildlife Conservation Commission
Laurene Capone, University of Florida
Nancy Case O' Bourke, Case Engineering
Angie Charles, US Army Corps of Engineers
Samica Daroub, University of Florida
James Erskine, Miccosukee Tribe
Don Fox, Florida Fish and Wildlife Conservation Commission
Karl Havens, South Florida Water Management District
Kevin Henderson, St. Lucie River Initiative
Ernest J. Hewitt, University of Florida, EREC
Lewis Hornung, South Florida Water Management District
Kang- Ren Jen, South Florida Water Management District
Anwar Khan, EA Science Engineering and Technology
John Mitnik, Florida Department of Environmental Protection/SED
John Morgan, South Florida Water Management District
Al Paglia, Village of Wellington
Sherry Scott, South Florida Water Management District
Sam Sharpe, Natural Resources Conservation Service
Margaret Shooshani, MSA, Inc.

Ken Todd, Palm Beach County
Bill Veach, City of Okeechobee
Joe Walsh, Florida Fish and Wildlife Conservation Commission
Ross J. Wilcox, Martin County
Carl Woelhke, South Florida Water Management District
Bishop Wright Jr., Everglades Coordinating Council
Herb Zebuth, Florida Department of Environmental Protection/SED

In attendance at the Public Meeting:

Missie Barletto, South Florida Water Management District
Jim Collins, EA Engineering, Science and Technology
James Erskine, Miccosukee Tribe
Tanya Foster, Kimly-Horn & Associates, Inc.
Carroll Head, Friends of Lake Okeechobee
Sorrel Hoover, Orion
Kevin Ingram, Chemical Lime
Frank Muricci, Fast Break
Rick Price, Lockhart Ag Technologies
T.C. Valentine, Okeechobee News
Bill Veach, City of Okeechobee
Odi Villapando, South Florida Water Management District
John Welch, Okeechobee, FL
Wellison, DRW Land Co.
Dongwei Zhu, Macvicar Fredrico & Lamb, Inc.

Introduction/Purpose of the Meetings

Karen Smith, Project Manager, South Florida Water Management District (District) welcomed the attendees and opened the meeting with self-introductions.

The District's representative made the following key points:
The Lake Okeechobee Sediment Management Feasibility Study (Study) is required by Florida Legislature House Bill 991, Amending F.S. 373.4595. The Study was approved by the District's Governing Board and recommended by the Lake Okeechobee Issues Team Action Plan. The findings of the Study will provide support for sediment management decisions by the District's Governing Board.

The purpose of this meeting is to introduce the Study, present the first task of the Study - *Project Goals, Performance Measures and Potential Impacts* for review and to invite all persons with an interest in the future of Lake Okeechobee (Lake) to get involved in this Study and share their thoughts, ideas and comments. Active participation from both governmental agencies and members of the public during this and future meetings as well as throughout the entire Study process will be a key component of the Study's success.

The purpose of the Lake Okeechobee Sediment Management Feasibility Study is to determine the best methods of sediment management within the Lake that will achieve maximum reductions in internal phosphorus loads.

The goal of this project is to find satisfactory and cost-effective ways to address the issue of phosphorus in Lake Okeechobee's sediments with the ultimate effect of improving water quality, reducing algae blooms, and protecting the fishery and wildlife resources and socioeconomic interests that are vital to the region.

The Study is needed because an estimated 51,600 metric tons of phosphorus are in Lake Okeechobee's mud sediments. Along with new phosphorus arriving from the surrounding watershed, this internal load of phosphorus is seriously undermining the Lake's water quality and capacity to support healthy ecosystems.

The District, under a contract with the consulting engineering firm of Blasland, Bouck and Lee, Inc. (BBL), will conduct this three-year Study. The District and consultants enter this project with no preconceived notions about what sediment management strategy is best for Lake Okeechobee and the viability of our region. This study, with interagency and public input, will consider a wide array of possible options in light of each option's potential benefits and costs to the people and wildlife of South Florida.

The phosphorus problem and its potential economic and ecological implications are daunting. The Study seeks to find what can be done, how it would be done, how much it would cost, and what impacts (positive and/or negative) it should have.

Discussion of the Problem

Dr. Karl Havens, Chief Environmental Scientist with the District, presented an overview of the phosphorus problem in Lake Okeechobee. Key issues discussed include the legacy of high phosphorus load effects on internal cycling, the increasing trend in total phosphorus in the lake, and seasonal (wind and wave generated) variations in phosphorus levels in the sediment throughout the lake. Data collected indicates an increase in phosphorus levels over time. The processes affecting sediment/water phosphorus exchange were illustrated.

Dr. Havens noted that identified alternatives may not have negative (short-term) impacts on the ecology of the lake, but in the long-term, the reduced turbidity of the water might have great benefits.

Dr. Havens questioned the future condition of the Lake if nothing is done to manage the trend of increasing phosphorus levels. He suggested that measures both internal and external to the lake should be carefully considered.

Discussion of Draft Goals, Performance Measures and Potential Impacts

Kathy "Luke" Lukasiewicz, P.G., representing BBL, made the following key points:
The major tasks of the Study are:

1. Develop goals, performance measures and potential impacts that will be used to evaluate alternatives for managing phosphorus levels in the Lake's sediment;
2. Explore all feasible alternatives;
3. Evaluate those alternatives;
4. Facilitate ranking and prioritization of the alternatives; and
5. Present findings to the District's Governing Board, and others.

Active participation by all interested parties - including the public, groups and organizations, Indian Nations, media, and government agencies are integral to this evaluation process. The Study process is to be interactive with the public, other organizations and agencies. BBL asks the public for help and input on developing the goals and performance measures of this project.

There are no preconceived judgments about the outcome of this Study. BBL wants to conduct the Study in a balanced, objective way and see where that leads. Some of the sediment management technologies have the potential to be very costly, time consuming and disruptive to wildlife, so all the pros and cons of each option will be weighed by the District before moving forward with a proposed strategy.

One option that will be evaluated is called "natural recovery." Natural recovery may be described as allowing the Lake's own natural healing powers to improve the system over time. As external inputs of phosphorus decrease in response to the ongoing actions of the District and the Florida Department of Environmental Protection (DEP) in the watershed along with the continued cooperation of landowners, we may see that the Lake begins to improve without further intervention. This option will be carefully weighed against other options such as chemical treatment, capping, dredging, combinations of alternatives and other approaches identified during the Study.

No decisions will be made about which alternative will be recommended until the Study is completed. The goal of the Study is to understand the problem, then to determine the most practical ways to solve it.

Table 3 *Summary of Draft Goals, Performance Measures and Potential Impacts* was introduced and discussed.

The Study's five goals are:

1: Treat, remove, or manage sediments to reduce internal phosphorus loading;
2: Minimize time to achieve substantial water quality improvement;
3: Minimize project costs, both in the short term and long term;
4: Minimize potential impacts of sediment management; and
5: Satisfy all applicable regulatory permitting and legal requirements.

The Study will include identification of alternatives (technologies or approaches) for mitigating the phosphorus problem in the lake. The alternatives will be evaluated using

performance measures, each with specific targets used to evaluate the relative performance or each alternative in achieving project goals.

Attendees were invited to review and discuss the draft goals, performance measures, and potential impacts.

There will be ongoing opportunities to comment on the Study throughout the process. The *Draft Goals, Performance Measures and Potential Impacts* document is available on the Internet at the District's website: (www.sfwmd.gov/org/wrp/wrp_okee/projects/sedimentmanagement.html).

The document may also be obtained in hard copy upon request. Comments regarding the draft document should be submitted to the District Project Manager, Karen Smith.

This is the largest scale project of this type ever proposed. Findings from other new studies will be incorporated into this Study. These other new and concurrent studies include a Pilot-Dredging Project being conducted by the District in Lake Okeechobee and a Laboratory Sediment Core Evaluation being conducted by the University of Florida.

At the end of the presentations, the floor was opened for attendees to ask questions, offer comments, and voice concerns. These questions, comments, and concerns are summarized below. Where appropriate, a summary of the response offered follows the question.

Question and Answer Session at the Interagency Meeting

Representatives for the **Florida Department of Environmental Protection** raised the following issues/questions:

- What technologies will be tested during the Study?
  Ms. Luke responded: Due to time and cost constraints, dredging is the only technology to be tested within the scope of this Study. The Pilot Dredging Study, under a separate contract with the District, will provide data for the Sediment Management Feasibility Study.
- Will sediments and effluent be tested for pesticides or other toxic components such as metals?
  Ms. Luke responded: The sediment will be tested for specific constituents during the Pilot Dredging Project, but further testing of the sediment is not currently in the scope of this study.
  Ms. Smith commented: There are on-going studies within the lake that have been collecting data on sediment composition. Certain areas, known as "hot spots," contain higher concentrations of some elements.
  A DEP representative noted: DDT has been found in five to ten of the samples DEP examined in their lab.
  Ms. Smith suggested that DEP provide any data concerning sediment constitution to the District for incorporation into this Study.

Representatives for the **St. Lucie River Initiative** raised the following issues/questions:

- Will the Study include findings of where the sediments are coming from, and their composition?
  Dr. Havens responded: A past study performed by Pat Gleason et al. using 13-C dating suggested that a large amount of the material may have originated in the watershed. However, there are some concerns expressed by paleolimnologists regarding the use of 13-C dating in a lake with sediments very rich in calcium carbonate. He noted that the dredged material would be tested for some constituents.
  An attendee offered: Another study that may be considered is an ongoing study by Tom Kristman of the origins of sediment in the lake.
  Ms. Luke added: To the extent possible, the Study will incorporate all studies and data that are made available to us.
- Will the Study consider other uses for the sediment if it were dredged?
  Ms. Luke responded: Other uses and disposal of the sediment will be considered in this Study.
- The goals of the Study are biased toward phosphorus being the sole causality damaging the Lake. Habitats and substrata should be included in the Study. The St. Lucie River Study is looking at high turbidity and anoxic affects from sediments. These issues are just as important as nutrients. The St. Lucie Study considers these issues as fundamental matters of habitat systems.

Representatives of the **Florida Fish and Wildlife Conservation Commission** raised the following issues/questions:

- What technology is available to potentially cap only portions of the Lake?
  Ms. Luke responded: Partial capping will be evaluated as part of the study.
- What about the pollution in the sediments, and what impacts would be realized in the surface water when the material is dredged?
  Dr. Havens responded: Current and new data will be considered during the Study.
  Ms. Smith added: There are data from ongoing water quality monitoring programs within the Lake that will be considered.
- Historically, there was never vegetation in the areas that are now high in phosphorus. There is concern regarding the impact of dredging on a system. The Environmental Protection Agency (EPA) has a "surgical" method.
- Scott Welch was doing a dredge-cut study along with a dredging project in Lake Panasoffkee. His data may be useful to this Study.
  Ms. Luke responded: Findings from the separately funded dredge-cut study could be important for this Study and will be explored, if made available.

Representatives of the **Village of Wellington** raised the following issue/question:

- The Village of Wellington has an action team to improve water quality. Does this Study have any connection to the 2006 Clean Water Mandate?
  Dr. Havens responded: This Study is a different issue, but in fact, the Everglades Forever Act does not yet have final levels determined.

Representatives of **Martin County** raised the following issues/questions:

- Why will the Study take so long? Can it be compressed to a shorter time frame?
  Ms. Luke responded: Three years are necessary for a comprehensive study of all of the issues of this complex phosphorus problem. Further, the closely linked Lake Okeechobee Pilot Dredging Project will require 1 1/2 to 2 years to complete once the final Work Plan is determined. This information will be incorporated into the alternative evaluation phase of this Study.

A representative of the **University of Florida** raised the following issues/questions:

- Other studies conducted by the District should be incorporated into this Study. Specifically, Susan Grey is currently conducting an alum study.
  Ms. Luke responded: Thank you. Yes, this information is important. Those studies' findings will be incorporated, if made available.

The following issues/questions were also offered by attendees:

- Would dredging a maintenance area be part of the Study?
  Dr. Havens responded: Yes.
- Will the evaluation assume external loads have been reduced into the Lake?
  Dr. Havens responded: Yes. Different external loads will be tested at various levels using computer models.
- How thick are the Lake sediments?
  Ms. Luke responded by referring to a map in the hand-out packet, and noted the varying thickness of sediments in the Lake, adding that water depth varies as well.
- Is alum present in the sediments?
  Ms. Luke responded: This is not known at this time, but ongoing studies will be incorporated.
- It was suggested that the "fluffy" sediments could be pumped-out and tested.
- Are biotic evaluations part of the Study?
  Ms. Luke responded: Biotic evaluations are not within the Scope of Work of this Study.
- Will the short-term benefits of dredging be explored in the Study?
  Ms. Luke responded: Yes, short-term effects will be evaluated.
- Will the Study explore the short-term improvement of invertebrates?
  Ms. Luke responded: The study of invertebrates is not within the Scope of Work of this Study, but if anyone knows of available data, you are encouraged to bring it forward for exploration.
- What is the public process by which recommendations will be chosen by the District?
  Ms. Luke responded: Public and interagency participation will be ongoing throughout the study process.

With no further questions or comments, the Interagency Meeting was adjourned.

Question and Answer Session at the Public Meeting
Attendees at the Public Meeting offered the following issues/questions:

- How does the study address:
  - Future external loading of phosphorus into the lake;
  - Other studies such as Lower East Coast Water Supply Study, Dairy Buy-Out Program and other complex problems within the area;
  - Lake Okeechobee water regulations; and
  - Interagency coordination?

  Ms. Luke responded: Each of these topics will be explored during the Study.
- How do we measure the effect that the phosphorus problem has on the economy such as sports fishing, boating, etc.? Is this impact known? Is it measurable?
  Ms. Luke responded: The Study includes a socioeconomic study of the Lake region.
- Will the Study's goal be to avoid adverse effects to the current conditions of the lake (which are poor) or will it look towards previous, healthier conditions?
  Ms. Luke responded: Computer modeling of the current and projected conditions of the Lake will include multiple scenarios.
- What is the mud thickness within the lake? Is there a correlation between mud thickness and lake water depth? A diagram showing this information would be helpful.
  Ms. Luke and Dr. Havens responded: Both sediment thickness and water depth may be depicted using contour lines on maps. The map used during the presentation only illustrates sediment thickness, but additional maps may be produced during the study.
- Low water levels have had an adverse effect on tourism, especially when associated with fishing tournaments.
- Turbidity is directly associated with the quality of fishing experience in the lake. Lower lake stages have had a positive effect on water clarity.
- Concern was expressed regarding the Kissimmee River outfall.
- Wind and wave action are main causes of reduced water clarity.
- Algae blooms may be misinterpreted as sediment and particulate suspension.
- How much sediment should be removed from the lake to restore its health?
  Ms. Luke responded: This issue will be evaluated during the Study.
- It was suggested that coffer dams be built within the lake.
- Nitrogen has a direct relationship with phosphorus. The current ratio in the lake is conducive to algae blooms. Efforts should be made to address this issue.
- Will the study examine increasing fisheries habitat? Increased vegetation? Creating barrier islands/breakwaters?
  Ms. Luke responded: Alternatives designed to reduce internal phosphorus loads and increase water quality will be evaluated. Currently, project goals, performance measures and potential impacts are being drafted.
- Lower Lake water levels have a direct correlation to biomass accumulation and reintroduction of phosphorus.

With no further comments or questions, the Public Meeting