Lake Okeechobee Sediment Management Feasibility Study

PUBLIC / INTERAGENCY MEETING #2

MEETING MINUTES

July 19, 2001

6:30 PM – 9:00 PM
Palm Beach Community College
Glades Campus
1977 College Drive
Belle Glade, FL 33430

Public / Interagency Meeting Attendees:

Lester Baird, Hendry County
Bob Barry, Palm Beach Community College
Esther Barry, City of South Bay
Brian Blackwelder, ELULC, Inc.
Linda Bolton, Village of Wellington
Mali Chamness, City of Clewiston
Angie Charles, U.S. Army Corps of Engineers
Jim Collins, EA Engineering, Inc.
Tommy Cone, City of Belle Glade
David C. Cook, South Florida Conservancy
Dennis Duke, U.S. Army Corps of Engineers
James Eiskin, Miccosukee Tribe
Todd Ellison, City of Belle Glade
Jamie C. Feddersen, Florida Fish & Wildlife Conservation Commission
Mitch Flinchum, IFAS, University of Florida
Harry Gibbons, Tetra Tech, Inc.
John C. Hess, U.S. Army Corps of Engineers
Ernest J. Hewett III, University of Florida, EREC
Clyde Hopple, U.S. Army Corps of Engineers
Mark Howell, U.S. Sugar Corporation
Eric Hughes, U.S. Environmental Protection Agency
Michael E. Jackson, City of South Bay
K.S. Butch Jones, Glades County Commission
Anwar Khan, EA Engineering, Inc.
Pepe Lopez, U.S. Sugar Corporation
Byron Maharrey, Florida Sportsman Conservation Association
Kim O'Dell, South Florida Water Management District
Mary Orsenigo, Citizen Interest
Jorge Patino, South Florida Water Management District
Max Quackenbos, St. Lucie River Initiative
Ken Schenck, City of Pahokee

Steve Schubert, U.S. Fish & Wildlife Service
Thomas Schueneman, Palm Beach County Agricultural Extension Service
Vicki Silver, Palm Beach County Planning Division
Roy Singletary, City of Pahokee
Houston L. Tate, City of Belle Glade
Curt Thompson, U.S. Army Corps of Engineers
Ken Todd, Palm Beach County Water Resources Department
Twila Valentine, Okeechobee News
Joe Walsh, Florida Fish & Wildlife Conservation Commission
Gary Warren, Florida Fish & Wildlife Conservation Commission
Eva Webb, Florida Farm Bureau
John C. Welsh, Citizen Interest
Benita Whalen, South Florida Water Management District
Charles Wilson, U.S. Sugar Corporation
Theresa Woody, U.S. Army Corps of Engineers
Bishop Wright, Jr., Everglades Coordinating Council
Herb Zebuth, Florida Department of Environmental Protection

Also in attendance via telephone conference call:

Megan Eves, Blasland, Bouck & Lee, Inc.
Alan Fowler, Blasland, Bouck & Lee, Inc.
Russell Houck, Blasland, Bouck & Lee, Inc.
Ram K. Mohan, P.E., Blasland, Bouck & Lee, Inc.
Curt Pollman, Tetra Tech, Inc.

Introduction/Purpose of Meeting

Kathy Lukasiewicz of Blasland, Bouck & Lee, Inc. (BBL) welcomed attendees and opened the meeting with introductions of the South Florida Water District Management (SFWMD) staff members in attendance and BBL consultant team members.

Ms. Lukasiewicz informed attendees that the purpose of this meeting was to discuss the development of alternatives (Task 2) for the Lake Okeechobee Sediment Management Feasibility Study, and to solicit input from the public, interagency personnel, and other interested parties. (see attached agenda)

All persons with an interest in the future of Lake Okeechobee were encouraged to involve themselves in this Feasibility Study and share their thoughts, ideas, and comments. Ms. Lukasiewicz emphasied that active participation from all members of the public attending this and future meetings is a key component of the Feasibility Study process.

The following is a summary of Ms. Lukasiewicz's presentation (a complete set of slides is attached to these minutes):

Ms. Lukasiewicz presented an overview of the project and specific information relating to Task 2 – Development of Alternatives. She explained that the project objective is to determine the best

sediment management methods for reducing internal phosphorus loading in Lake Okeechobee. Thus, the purpose of this meeting was to discuss a wide variety of technologies and process options that may be feasible for reducing phosphorus in Lake Okeechobee, and to solicit public/interagency input on these technologies and the associated sediment management alternatives.

Ms. Lukasiewicz provided a brief summary of why the Feasibility Study is needed. For example, there are an estimated 51,600 metric tons of phosphorus in the mud sediments in Lake Okeechobee, the internal phosphorus loading from these sediments approximately equals the phosphorus loading from external sources. Without measures taken to reduce internal phosphorus loads, the lake may not respond as quickly to external reductions as a result of ongoing programs such as Works of the District and the best management practices to be implemented under the Lake Okeechobee Restoration Program. The Feasibility Study was recommended by the Lake Okeechobee Issue Team Action Plan and was subsequently required by Florida Statute 373.4595(3)(f). The Feasibility Study's findings are further needed to support management decisions by the SFWMD's Governing Board.

There are five major tasks of the Feasibility Study:

Task 1 – Development of Goals and Performance Measures
Task 2 – Development of Alternatives
Task 3 – Work Plan for Evaluation of Alternatives
Task 4 – Evaluation of Alternatives
Task 5 – Stakeholder Prioritization of Alternatives

Two other studies currently underway that will play an important role in the Feasibility Study are the Pilot Dredging Project (EA Engineering, Inc. for SFWMD) and the Laboratory Sediment Core Evaluation (University of Florida). These studies will provide data specific to Lake Okeechobee that will be incorporated into the Evaluation of Alternatives (Task 4).

The project team completed Task 1 (development of Goals and Performance Measures) in June 2001. As a result, five overall goals for the project were established:

- Maximize water quality improvements
- Maximize engineering feasibility and implementability
- Maximize cost effectiveness
- Maximize environmental benefits
- Maximize socioeconomic benefits

Each potentially feasible sediment management alternative identified in Task 2 will be measured against these goals and the associated 26 specific performance measures during Task 4.

Task 2 (Development of Alternatives) is now underway and involves the development of an array of sediment management alternatives to be evaluated in detail in Task 4. There are three main steps in Task 2.

Step 1. Identify a wide array of potentially applicable sediment management technologies and process options, including a no in-lake action option. (see attached slides for a complete listing)

Step 2. Evaluate all identified technologies and process options and "screen out" those that are not feasible for reducing internal phosphorus loads in Lake Okeechobee.

Step 3. Combine retained technologies and process options into several complete sediment management alternatives.

Ms. Lukasiewicz introduced Harry Gibbons, Ph.D., a limnologist (from Tetra Tech, Inc.) working on the BBL consulting team. Dr. Gibbons presented an overview of in-lake chemical treatment options that are under consideration in the Feasibility Study. A number of options have been researched and screened for applicability to Lake Okeechobee's physical and chemical characteristics and the project goals.

Dr. Gibbons went on to discuss several other sediment management technologies under consideration, including:

In-Lake Chemical Treatment Options
Dredging (Sediment Removal) Options
Other Options (e.g., biomanipulation, capping)

After an initial screening of more than 35 possible sediment management techniques (i.e., a number of techniques were "screened out" for being ineffective, unreliable, or extremely difficult to implement), the retained technologies are used as "building blocks" to create a set of sediment management alternatives. Theretained technologies are:

No in-lake action
In-place chemical treatment/inactivation
Water column management
Dredging
Transport of materials
Sediment dewatering
Treatment of water from dredged material
Dredged sediment disposal
Dredged sediment reuse

These potentially feasible technologies and process options were then combined into a draft list of alternatives applicable to Lake Okeechobee. The six draft alternatives currently under discussion are:

Alternative 1 - No In-Lake Action with Monitoring of External Loads
Alternative 2 - Water Column Management Using Breakwaters
Alternative 3 - In-Situ Chemical Treatment
Alternative 4 - Hydraulic Dredging with Disposal in Confined Disposal Facilities (CDF)
Alternative 5 - Hydraulic Dredging with Disposal in In-Lake Sumps/Confined

Aquatic Disposal Cells
Alternative 6 - Hydraulic Dredging with Beneficial Reuse of Materials

A brief discussion of each of these alternatives, as well as a detailed assessment of all the technologies considered, may be found in the draft Development of Alternatives document, which can be viewed and downloaded from the project website: http://www.sfwmd.gov/org/wrp/wrp_okee/projects/sedimentmanagement.html

After completing the project and Task 2 overview, Ms. Lukasiewicz opened the meeting for participant discussion and a question and answer period. A summary of the open discussion involving presenters and meeting attendees follows.

Discussion / Question and Answer Session

A representative from the **Florida Sportsman Conservation Association** raised the following issue/question:

1. Please explain in more detail alternative #4, Hydraulic Dredging with Disposal in CDF.

   Ms. Lukasiewicz responded by describing the hydraulic dredging process, indicating there are many established/conventional and innovative dredging techniques that are being considered for Lake Okeechobee. For example, the Pilot Dredging Study will be testing an innovative technique to remove the top layer of lake sediments in a small area of Lake Okeechobee and disposing those flocculent materials into a CDF near Port Mayaca.

   Mr. Anwar Khan and Mr. Jim Collins of EA Engineering, Inc., the consultants to the SFWMD on the Pilot Dredging Study added additional information on the dredge type that has been designed for the pilot study. They also noted the CDF will be built on SFWMD-owned property adjacent to the C-44 canal near Port Mayaca.

A representative from the **St. Lucie River Initiative** raised the following issues/questions:

1. Following the completion of the Feasibility Study, is the Florida Legislature ready to provide funding for the recommended alternative?

   Ms. Benita Whalen of the SFWMD responded that a critical decision will have to be made once the study is completed and the most feasible alternatives are presented. The alternatives will have to be analyzed from an economic, engineering, and ecological standpoint. The chosen alternative may require a significant amount of money, and a decision will have to be made whether or not to fund its implementation.

2. Will permits be required by Florida Department of Environmental Protection and the U.S. Army Corps of Engineers?

   Ms. Lukasiewicz responded that there will be various permits required from several agencies prior to implementation of any chosen alternative, including Department of

Environmental Protection, U.S. Environmental Protection Agency, U.S. Army Corps of Engineers, and review by U.S. Fish and Wildlife Service and Florida Fish and Wildlife Conservation Commission. Ms. Lukasiewicz noted that ongoing participation by interagency personnel, including attendance at Public/Interagency Meetings is an important aspect of the Feasibility Study that helps to communicate project issues and coordinate activities among all involved.

A representative from the **Department of Environmental Protection** raised the following issues/questions:

1. Will the Feasibility Study evaluate the possible environmental impacts of each alternative?

   Ms. Lukasiewicz responded that each alternative will be evaluated against the Goals and Performance Measures defined in Task 1 of the Feasibility Study. One of the main goals defined is to maximize environmental benefits; therefore an alternative with comparatively low adverse environmental impact would be rated more favorably than one with greater negative impacts.

2. Will the Feasibility Study examine the chemical relationships between phosphorus and nitrogen and the biodegradation process in the Lake?

   Ms. Lukasiewicz responded affirmatively. A number of these interactions will be evaluated with the aid of computer-based modeling techniques and consultation with subject-area experts.

3. Is the Feasibility Study expected to determine a point at which the external loads are reduced to a level low enough to allow the greatest benefit of a recommended alternative for internal phosphorus reduction? Also, will the Feasibility Study incorporate the uncertainty of rates of reduction from external tributary sources (inflow vs. outflow rates)?

   Ms. Lukasiewicz and Dr. Curt Pollman (a scientist with Tetra Tech, Inc. and a member of the BBL consulting team) responded by discussing the planned modeling efforts. The Feasibility Study will incorporate a number of modeling scenarios, including the No In-Lake Action alternative. This baseline will be used to compare alternatives and simulate varying lake conditions.

   Further, Ms. Lukasiewicz and Dr. Pollman discussed structuring modeling efforts to learn the point of equilibrium of external and internal phosphorus loads and the point at which mitigation of internal loading would gain maximum benefit for the Lake. This may include a long-term option of coupling external loading reductions with active sediment management while considering long-term changes in the lake.

General discussion describing the Pilot Dredging Study commenced.

Ms. Lukasiewicz, Mr. Khan, and Mr. Collins explained that the pilot dredging study will involve construction of a confined disposal facility, or CDF, on the north shore of the C-44 canal, east of Port Mayaca on SFWMD-owned property. The proposed CDF will be 250' wide and contain 2 cells (each 200' long by 100' wide by 12' deep each), all lined with a PVC-like material to avoid seepage back into the lake. The cells will be approximately 15' high. Hydraulically removed sediments will be transported via a hopper barge and processed in the CDF cells. Sediment processing will remove phosphorus to 40 ppm and will include a dewatering process, atmospheric evaporation and physical separation.

Ms. Lukasiewicz reminded the meeting attendees of the difference in magnitude of the small (6000 cubic yards) Pilot Dredging Study compared to the volume of phosphorus-containing sediments targeted in this study (261 million cubic yards or 193 million cubic meters.

An attendee requested further information concerning the hydraulic dredging process.

Ms. Lukasiewicz explained that dredging is often a long-term procedure that sometimes becomes a maintenance dredging program continuing for many years.

The top 10 cm of sediments are known to be most active in distribution of phosphorus in the water column. When the top 10 cm are removed in a given area, flocculent sediments from surrounding areas are gravitationally drawn into the 'sump'. Maintenance dredging of a sump area may continue for up to 50 years in a lake of this size before the sump can be permanently closed. The University of Florida Study (the Reddy Study) will analyze sediment core samples and is expected to reveal more specific details about the content and dynamics of the sediments in Lake Okeechobee.

A representative from the **Miccosukee Tribe** raised the following issues/questions:

1. What is the expected water quality after pilot study processing/treatment?

   Ms. Lukasiewicz, Mr. Khan, and Mr. Collins responded that the final phosphorus concentration will be 40 ppm. Also, the process is designed to remove all solids, including all particulate phosphorus, from the fluid sediments. Chemical precipitation, may be used to bind the phosphorus and allow it to be removed from the water.

2. Will the study indicate the quantity and concentrations of alum that will be used/needed to reduce internal phosphorus loads in the lake?

   Ms. Lukasiewicz responded affirmatively. Dr. Gibbons added that the Feasibility Study will use data and information from numerous case studies that have used alum for the purpose of reducing phosphorus in lakes. The Feasibility Study will take into account the need to adjust the dose of alum in order for this treatment to be effective on the large, complex scale Lake Okeechobee.

3. Will the Feasibility Study consider the uncertainty of hurricanes and other storms?

   Ms. Lukasiewicz responded that the Feasibility Study will evaluate each alternative according to its long term ability to perform during and after severe weather. Those alternatives that would not retain their effectiveness through the type of storm events frequently occurring in South Florida would be rated less favorably.

   Dr. Ram Mohan of BBL described ongoing projects in the Chesapeake Bay and the correlation to this Feasibility Study. He stated that a cost/benefit analysis is often undertaken to determine the feasibility of engineering projects of this magnitude. Also, physical barriers such as rip-rap constructed of various materials, including metal and cement, may be used to stabilize any containment facility.

A representative from **The City of Belle Glade** raised the following issues/questions:

1. Have there been any studies or research done to determine any possible effects on Lake Okeechobee from the phosphate mine in Bartow, Florida (approximately 60 miles north)?

   Ms. Lukasiewicz noted that this issue has come up in the past and is an issue that may be considered in the Feasibility Study. Further discussion pursued with Ms. Lukasiewicz explaining that typically, groundwater movement does not correlate with surface water movement and that the groundwater flow of this particular watershed typically flows west towards Tampa, although some relationship may exist.

2. Who will fund the implementation of the Feasibility Study recommendations, the State of Florida or the SFWMD?

   Ms. Lukasiewicz responded that a funding source has not been determined. *(See response to the representative from the St. Lucie River Initiative on page 5.)*

A representative from **The City of Pahokee** raised the following issue/question:

1. If dredging to remove the first 10 centimeters of sediment will reveal native sand as indicated in the discussions, wouldn't the remaining flocculent materials again soon cover the sand after removal?

   Ms. Lukasiewicz responded affirmatively, noting the potential need for a very long term commitment to a maintenance dredging program to address this issue.

Representatives from **The City of South Bay** raised the following issues/questions:

1. Will any of the project alternatives, including dredging, have an adverse impact on municipalities that depend upon the lake as a source of municipal water supply?

   Ms. Lukasiewicz responded by referring to the project Goals and Performance Measures. Each alternative will be evaluated against specific performance measures defined in Task 1 of the Feasibility Study. One of those performance measures is that there must be no

negative impact to municipal water supply. Any alternative that is expected to have an adverse impact on the water supply would be rated unfavorably.

2. Could the Feasibility Study determine that more than one alternative is feasible?

   Ms. Lukasiewicz responded affirmatively. The final outcome of the Feasibility Study may be any of a number of results, including one sediment management alternative, a combination of alternatives, or no in-lake action.

A representative from the **Florida Fish and Wildlife Conservation Commission** raised the following issues/questions:

1. Has the use of alum been studied in relation to the impact on biotic communities in the Lake?

   Ms. Lukasiewicz and Dr. Gibbons responded that the use of alum in eutrophic lake systems is common. 90% of the case studies show that alum is safe and effective in treatment of eutrophic lakes due to chemical bonding of phosphorus and aluminum. Chemical treatment has a long, established track record. Discussion continued on the magnitude of other studies in relation to the actual size of the water bodies and that of Lake Okeechobee. Ms. Lukasiewicz added that the Feasibility Study will evaluate each alternative taking into account potential impacts on biotic communities.

A representative from the **Okeechobee News** raised the following issues/questions:

1. Is there any concern that the U.S. Army Corps of Engineers may delay implementation of the resultant recommendation from the Feasibility Study due to permitting issues?

   Ms. Lukasiewicz responded that interagency participation is an integral part of this Feasibility Study. The project team is reaching out to all agencies, including the U.S. Army Corps of Engineers to solicit active participation. Ms. Lukasiewicz noted that several representatives from the U.S. Army Corps of Engineers were in attendance at the meeting.

   Also, the project team has been working cooperatively with other agencies including the Florida Fish and Wildlife Conservation Commission and the Florida Department of Environmental Protection to encourage ongoing interaction throughout the study period, with the goal of streamlining the future permit application and approval process and reducing the chance of delays.

A representative from the **U.S. Fish and Wildlife Service** raised the following issues/questions:

1. The previous use of alum has had a negative impact on some benthic communities. Studies show alum may have adverse effects on density and diversity.

Ms. Lukasiewicz requested continued efforts to coordinate available case studies; also noting that if an alternative is found to have adverse impacts to biotic communities, it would not be rated favorably and may encounter problems during the permitting process.

2. Any project proposed would necessitate a review for compatibility with the Endangered Species Act.

   This point was acknowledged, and there was general agreement.

3. Has a draft permit application for the pilot dredging study been submitted to the Department of Environmental Protection?

   Mr. Khan responded that the SFWMD is expected to submit an application in 3 – 4 weeks.

4. The U.S. Fish and Wildlife Service usually requires 90 days to review permits.

A representative from the **U.S. Environmental Protection Agency** raised the following issues/questions:

1. Class I (drinking water supply) bodies are required to monitor for a number of specific water quality criteria. The Feasibility Study should be certain to consider this.

   Additionally, the Feasibility Study process should include analysis of the results from alum/sulfate interaction. Case studies have indicated problems with mercury methylation in other areas.

   Ms. Lukasiewicz responded that part of the process includes weighing alternatives against all local, state and federal regulations. The Florida Administrative Code sets specific criteria for drinking water (62-302 F.A.C.) and soils (62-777 F.A.C.), which will be included in the evaluation process.

   Dr. Pollman indicated that Lake Okeechobee does have a mercury methylation problem, but that it does not seem to negatively affect the fish populations. Mercury flowing south from the Water Catchment Area is an issue that is currently under separate study.

2. Because the Pilot Dredging Study will require review under the 404 Program, an attendee suggested scheduling a pre-application meeting including the Environmental Protection Agency, U.S. Army Corps of Engineers, Florida Department of Environmental Protection, U.S. Fish and Wildlife Service, Florida Wildlife Conservation Commission, and the South Florida Water Management District. This proactive permitting procedure may be beneficial to all parties.

   Ms. Lukasiewicz agreed and encouraged the affected parties to set up pre-application meeting. Mr. Khan indicated that two pre-application meetings had been held with the FDEP. Mr. Jorge Patino of the SFWMD suggested that representatives from agencies

interested in the permitting process get together after the meeting to coordinate a multi-agency meeting for the Pilot Dredging Project.

A representative from the **South Florida Conservancy** raised the following issue/question:

1. In order to reduce internal phosphorus loading, external sources such as the Kissimmee River and Disney World should be mitigated. The attendee suggested the construction of cleansing stations such as created wetlands.

   Ms. Lukasiewicz responded that although the Feasibility Study is directed to internal phosphorus loading in Lake Okeechobee, external loading from various sources is an issue that is important to this Feasibility Study and the SFWMD.

Other questions/issues raised by meeting attendees include:

1. What is the time line for permitting and implementation of the Pilot Dredging Study?

   Mr. Khan responded that the permit will be submitted in 3 to 4 weeks and dredging is anticipated to take place during the months of October through December, 2001.

2. Why wait until external loading is reduced to a minimum before implementation?

   Ms. Lukasiewicz responded that a timeframe for implementing measures to address internal loading of phosphorus has not been established and suggested that SFWMD may not wait for external reductions. She further indicated that a variety of alternatives are under consideration, and all would have varying implementation time frames, including the possibility of very long-term (50 years estimate) maintenance dredging within a phosphorus/sediment sump area. This three-year study will determine the feasibility of all alternatives.

3. An attendee commented that the removal of any phosphorus-laden sediment would be beneficial to Lake Okeechobee's recovery.

4. Will the SFWMD have to wait 2 -3 years after the Feasibility Study is complete for an Environmental Impact Statement (EIS) to be produced by the U.S. Army Corps of Engineers?

   Ms. Lukasiewicz responded that although a time line is difficult to determine at this time, it is certain that an EIS would be required

5. A suggestion was made that phosphorus being produced by agricultural areas surrounding Lake Okeechobee should be studied in detail. The Kissimmee River was also raised as a potential source of external phosphorus loading.

6. If a phosphorus sump is constructed, what is the expected size and depth?

Ms. Lukasiewicz responded that details of a sump size, depth, and location would be determined later in the study.

7. An attendee raised a concern about any possible saltwater intrusion problems resulting from dredging or other technologies.

8. An attendee asked how much sediment is expected to be transported during dredging operations.

   Ms. Lukasiewicz responded that details on dredging have not been formulated to date.

9. An attendee inquired as to the procedure for providing additional input at this phase and how the public and agencies can follow the progress of the Feasibility Study.

   Ms. Lukasiewicz responded that there are a number of vehicles for continued participation:

   - *Contact the SFWMD project manager Jorge Patino at (561) 682-2731 or via e-mail at jpatino@sfwmd.gov*
   - *Visit the project website at: http://www.sfwmd.gov/org/wrp/wrp_okee/projects/sedimentmanagement.html*
   - *Attend future Public/Interagency Meetings (at least two more are planned); watch for future mailings and project update notices*
   - *Review project documents on the project website and respond to the SFWMD, or call Ms. Lukasiewicz directly at (561) 750-7334 x115.*

Ms. Lukasiewicz thanked all attendees for taking the time to participate in the meeting. With no further questions or comments, the Task 2 Public/Interagency Meeting was adjourned at 9:00 PM.

After the meeting was adjourned, a representative of the **Environmental & Land Use Law Center, Inc**. handed SFWMD staff the following typewritten list of comments:

Questions Concerning Lake Okeechobee Alternatives Feasibility Study – Public Meeting of July 19, 2001, Belle Glade, Florida for the Environmental and Land Use Law Center, Inc. by Brion Blackwelder, of Counsel.

Can use of phased-in test of approaches and inclusion of rapid response address unforeseen adverse consequences?

The channelization of the Kissimmee River (for example) rapidly became recognized as a mistake, but a long time was required to engineer, approve and fund the de-channelization to correct the mistake. The alternatives for sediment management should have phased-in approaches, and as part of their authorization the "un-doing" of any restoration actions found to exceed criteria of harmful consequences should be included.

What other features of the provenance and characterization of the sediments would assist full evaluation of the alternatives?

The "BBL/SFWMD" draft of June 15, 2001 does not fully state the provenance (origin) of the sediments. The key nutrient (P) is described. However, what is the specific source or sources of the ash (p. 2-2) which composes 50% of the sediment to be removed? Is the 25% carbonate content of the sediment of mineral precipitation from solution origin or through biomineralization (Fig. 14)? Is the organic matter a product of algal blooms, is it aggregated enough to require "cutter" dredges to suction dredge, or is it derived from management of aquatic weeds in the lake or shorelines? Does the sediment contain other chemical or biological traits that would influence choice alternatives, such as especially mercury, or aquatic weed treatment or agricultural chemicals (DDT for instance) that may require special consideration? (There are no detailed profiles of such pollutant parameters included in the discussion.)

What secondary effects are implicit in the alternatives?

For instance, removal of lake sediment in Florida can result in a change to the light absorption/reflection/root formation of aquatic plants (an experience at Disney World in its development that they addressed) which in turn strongly influences water temperatures and algal blooms. Blooms do not depend solely on nutrient levels. The effect of the resulting sediment on the lake waters and biota is not a simple "restoration" situation.

In the discussion of dredging, selection of the dredge type is a crucial factor, which in turn determines the disposal area (dewatering) site size. What dredge types and disposal sites and sizes are the alternatives?

Discussion of special purpose dredges suitable for soft sediment removal in shallow lakes is contained in Restoration and Management of Lakes and Reservoirs, 2nd Edition, Cooke et al, Lewis Publishers, 1993. The process option of hydraulic dredging discusses many of these at 2-47 and other sections of the EEL/SFWMD draft. However, because apparently pilot studies are needed, the calculations and locations of disposal sites are not described. Some organic dredged

sediments are even suitable for sale to support the sediment removal costs. At this point, there are still substantial uncertainties as the draft recognizes at 2-55.

Additional questions asked following the conclusion of the meeting:

An attendee handed in the following written question: "Is there a/or few page document that gives a profile analysis of various spots on the bottom of the lake - with a range of acceptable levels? Like your blood chemical analysis report. If so, please send to me."

> *Recent sediment quality data is currently under peer review and will be released in the near future in the SWIM plan update and in a separate report. Tom James of the SFWMD may be contacted for additional information (561-682-6356).*

Agenda

South Florida Water Management District
Lake Okeechobee Sediment Management Feasibility Study
Public Meeting #2

Thursday, July 19, 2001
6:30 – 8:00pm
Glades Campus, Palm Beach Community College
Lecture Hall, Room 122
Belle Glade, FL

Meeting Purpose: To discuss and gather input on the development of alternatives for addressing internal phosphorus loading in Lake Okeechobee.

Time	Topic	Speaker
6:30 – 6:35 (5 minutes)	Welcome/Introduction	Kathy Luke, BBL for SFWMD Representative
6:35 – 6:40 (5 Minutes)	Purpose of the Meeting/ Meeting Ground Rules	Kathy Luke, BBL for SFWMD Representative
6:40 – 6:45 (5 Minutes)	Project Objectives	Kathy Luke, BBL for SFWMD Representative
6:45 – 6:55 (10 Minutes)	Project Overview/Work Completed to Date	Kathy Luke, BBL
6:55 – 7:10 (15 Minutes)	Development of Alternatives	Kathy Luke, BBL Harry Gibbons, Tetra Tech Ram Mohan, BBL
7:10 – 7:55 (45 Minutes)	Question & Answer and Discussion/Public Comment	Led by Kathy Luke, BBL
7:55 – 8:00 (5 Minutes)	Thank You/Next Steps	SFWMD Representative and Kathy Luke, BBL