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DREDGING OPERATIONS TECHNICAL  
SUPPORT PROGRAM

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TECHNICAL REPORT D-92-2

LONG-TERM MANAGEMENT STRATEGY (LTMS)  
FOR DREDGED MATERIAL: CORPS OF ENGINEERS  
ASSESSMENT AND SUMMARY OF THE NATIONAL  
FORUM ON IMPLEMENTATION STRATEGIES  
28-31 JANUARY 1991, BALTIMORE, MARYLAND

by

Norman R. Francingues, Melinda Lamb, Editors

Environmental Laboratory

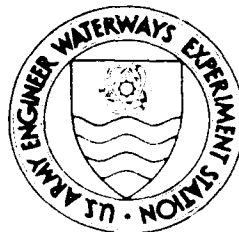
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13. (Continued).

presentations. The Forum was deemed highly successful in that all sectors of representation (Federal, state, public, and private) supported LTMS as a potentially valuable process to focus proper attention on dredged material management problems and, hopefully, to facilitate the implementation of long-range management solutions.

This report has been prepared to transfer the results of the Forum and to provide USACE's assessment of LTMS as the process relates to the national navigation dredging program.

14. (Continued).

Contaminated sediments  
Dredged material disposal  
Dredged material management

Environmental effects of dredging  
Long-term management plans  
Navigation dredging

## Introduction

Major General Patrick Kelly, Director of Civil Works, and Dr. Tudor Davies, Director of the US Environmental Protection Agency's (USEPA) Office of Marine and Estuarine Protection, presented their Agency's views on LTMS development, current status, and future direction. There were a number of panel presentations on a variety of pertinent issues, five illustrative case studies, and eight poster presentations. The Forum was deemed highly successful in that all sectors of representation (Federal, State, public and private) supported LTMS as a potentially valuable process to focus proper attention on dredged material management problems and, hopefully, to facilitate the implementation of long-range management solutions.

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## Major Corps Findings

**a. Most of the Forum participants, including the regulatory agencies, were very receptive and supportive of the LTMS concept. Many**

expressed a desire and willingness to fully cooperate in developing and implementing long-term solutions to the problem of managing dredged material.

- b.* Federal implementation instruments can only be fully effective where there is a sponsoring local agency to reflect local needs and issues (e.g., balancing development and resource conservation/protection). This will require greater consensus on what constitutes technically defensible priority habitats and values.
- c.* Procedural instruments are presently available and workable for the effective implementation of LTMS plans. There are no major procedural impediments to using existing instruments; however, there may be different geographical considerations in the use of various instruments. The LTMS process should, in fact, help to focus or serve as a catalyst to facilitate use of existing instruments.
- d.* The regulatory community must play a major role in LTMS plan implementation. The benefits will not only result in fully implementable solutions but also in reducing the overall regulatory workload.
- e.* The states often have an essential role in effective LTMS plan implementation through Coastal Zone Management (CZM), land-use planning/zoning, long-term certifications, etc.
- f.* LTMS implementation requirements and procedures are equally applicable to navigation and habitat restoration projects.
- g.* Implementation of long-term management plans specific to dredged material received less discussion and attention than was originally envisioned. This was attributed primarily to confusion concerning the apparent hierarchy of related environmental management issues that tended to overshadow the objectives of the Forum. This hierarchy of issues includes resource management (e.g., National Estuary Program, Coastal America, etc.); sediment management to include contaminated sediments and source reduction; and dredged material management for navigation and beneficial uses.
- h.* Partnerships and participation in LTMS plan development received considerable discussion concerning roles and responsibilities of various participants in the LTMS process.
- i.* Beneficial use of dredged material was identified by many as their option of first choice. In fact, this item led to considerable discussion of the Federal Standard concept versus the "least cost environmentally beneficial use alternative."
- j.* As emphasized by Forum participants, we must begin to focus specifically on establishing priority environmental resources and values. The need is critical in developing long-term resource

management plans for appropriately locating future dredged material disposal sites, guiding future beneficial-use applications of dredged material, using mitigation strategies to include related instruments such as mitigation banking, and, in light of new USACE authorities, incorporating future fish and wildlife habitat restoration projects.

- k.* Contaminated sediments received considerable discussion time. Participants were concerned about how much material was contaminated and where it was located; how to define contaminated sediments; how to test them; which procedures were acceptable; and what methods were available to manage highly contaminated sediments.
- l.* The fact that dredged material can be a valuable resource and the many potential beneficial uses of dredged material must be clearly demonstrated to the public. Unfortunately, the public has a misconception about the volume of sediment that is actually contaminated because it has been focused on noxious types of waste-dumping activities (e.g., sludges, municipal refuse, etc.).
- m.* The linkage between LTMS and USEPA's National Estuary Program (NEP) was discussed. Presently, dredged material management is not a major issue being addressed directly by existing NEP's.
- n.* The reduction and control of sources of sediment load and contamination to navigation projects was highlighted as a major need. In light of USACE's new authorities to perform environmental dredging and the potential applicability of the LTMS concept for managing contaminated sediments, USACE should play a significant role in USEPA's development of a "contaminated sediment management strategy."
- o.* There is a need for more effective communication with, and better education and involvement of, the public in finding solutions to the problem of long-term management of dredged material. Some at the Forum suggested that LTMS would be an excellent medium to use for this purpose.
- p.* It is also important to educate USACE and other Agency staff about how other long-term solutions to dredging problems have effectively involved the public to increase the probability of success on each new project(s) considering an LTMS.
- q.* Environmental and economic factors dictate that USACE proceed with development of policy and procedural guidance to implement the LTMS concept for the existing navigation program and within the existing funding authorities. However, Forum participants recommended that these policies and procedures remain sufficiently flexible to allow the pursuit of related sediment management

objectives (e.g., management of highly contaminated bottom sediments). This should be done in conjunction with individual LTMS studies where it is in the best public interest and cost-effective to do so, and where supplemental funding sources can be identified and are provided.

# Preface

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The National Forum on Implementation Strategies of Long-term Management of Dredged Material was sponsored by the US Army Corps of Engineers (USACE) through the Dredging Operations Technical Support Program, which is executed by the US Army Engineer Waterways Experiment Station's (WES's) Environmental Effects of Dredging Programs, Vicksburg, MS. This meeting addressed implementation strategies for the Long-term Management Strategy (LTMS) national initiative of USACE. Participating agencies included USACE, the US Environmental Protection Agency (USEPA), the US Fish and Wildlife Service (FWS), the National Marine Fisheries Service, the National Oceanic and Atmospheric Administration (NOAA), and numerous state agencies.

The LTMS National Forum Steering Committee consisted of the following members:

Will Berson, American Association of Port Authorities  
Mike Chezik, FWS  
Shannon Cunniff, USEPA  
Peter deFur, Environmental Defense Fund  
Maggie Ernst, NOAA  
Norman R. Francingues, Jr., WES  
John Goodin, USEPA  
Raymond Hall, USEPA  
Susan Hitch, USEPA  
David Mathis, USACE  
Kirk Stark, USACE  
Craig Vogt, USEPA  
Tom Wall, USEPA

The summary of proceedings' abstracts with questions and answers was compiled by Mr. Charles B. Pace, Ms. Deanna F. Neubauer, and Dr. Richard K. Peddicord, from EA Engineering, Sciences, and Technology, Inc., Sparks, MD. Mr. David Mathis, Office of Environmental Policy, Headquarters, USACE, and Mr. Norman Francingues and Ms. Melinda Lamb, both of the Environmental Laboratory, WES, were technical editors of this report. Editing for publication was done by Ms. Janean Shirley, Visual Production Center, Information Technology Laboratory, WES.

The National Forum meeting and compilation of the summary of USACE findings and summary of the Forum proceedings were conducted under the general supervision of Mr. Jimmy Bates, Chief, Policy and Planning Division, CECW, Mr. John Elmore, Chief, Construction, Operations, Readiness Division, CECW, and Dr. Robert Engler and Mr. Thomas Patin, Environmental Effects of Dredging Programs, WES.

Major General Patrick J. Kelly was the Director of Civil Works, USACE, Washington, DC. At the time of publication of this report Director of WES was Dr. Robert W. Whalin. Commander and Deputy Director was COL Leonard G. Hassell, EN.

This report should be cited as follows:

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# Conversion Factors, Non-SI to SI Units of Measurement

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Non-SI units of measurement used in this report can be converted to SI units as follows:

Multiply	By	To Obtain
acres	4,046.873	square metres
feet	0.3048	metres
miles (US statute)	1.609347	kilometres

# **1 Introduction**

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## **Background**

The US Army Corps of Engineers (USACE) needs long-term dredged material solutions to properly and efficiently manage the Federal Navigation Program. Locating and retaining environmentally and economically acceptable dredged material disposal sites is a major management problem facing the National Dredging Program today (US Congress, Office of Technology Assessment 1987).

Presently, USACE Headquarters has received from its field offices a considerable number of high priority funding requests to develop individual long-term management strategy (LTMS) plans for Federal navigation projects with strong national economic implications. The broader scoped regional or geographically based studies, such as San Francisco Bay and Upper Chesapeake Bay/Baltimore Harbor, are the focus of attention because of their scope, controversy, and economic and potential environmental impacts. The need also encompasses the Nation's future ability to maintain a number of recently constructed deep-draft harbors. The need is equally evident for several national defense ports, where, unfortunately, emergency dredging is the norm rather than the exception due to the present inability to establish feasible long-term dredged material management solutions. However, the greatest need relates to providing dredged material disposal site capacity for individual project reaches. In many cases, this has resulted in the inability to achieve the maximum intended project benefits, and, in some cases, continued project viability itself has been jeopardized.

To respond to this need, USACE began a major new initiative to develop the appropriate management process, procedures, and policy guidance for incorporating the concept of LTMS as a management tool into the USACE National Dredging Program (Francingues and Mathis 1989).

## **LTMS National Forum**

The National Forum on Implementation Strategies of Long-term Management of Dredged Material was held in Baltimore, MD, on 28-31 January 1991. It was sponsored by USACE. The meeting was organized by EA Mid-Atlantic Regional Operations, EA Engineering, Science, and Technology, Inc., Sparks, MD under contract with the US Army Engineer Waterways Experiment Station (WES), Vicksburg, MS. The meeting was attended by approximately 170 representatives of a very diverse cross section of Federal, state, and local governmental agencies, port authorities, environmental groups, private consultants, and concerned citizen groups.

The objectives of the Forum were to exchange information, views, experiences, and lessons learned concerning LTMS, and to identify innovative procedures and instruments and any impediments to implementing LTMS plans.

Major General Patrick Kelly, Director of Civil Works, and Dr. Tudor Davies, Director of the US Environmental Protection Agency's (USEPA) Office of Marine and Estuarine Protection presented their agency's views on LTMS development, current status, and future direction. There were a number of panel presentations on a variety of pertinent issues, five illustrative case studies, and eight poster presentations.

## **Overview of LTMS - The Process**

The LTMS process developed and presented by USACE at the Forum consists of five phases to help guide LTMS studies and plan development and implementation. Each phase consists of essential activities before proceeding to the next appropriate phase. The process is described in detail in USACE Technical Note EEDP-06-10 (Francingues and Mathis 1990), which was provided to each meeting participant at registration. Brief descriptions of the five phases follow:

Phase I is basically a comparison of disposal needs versus available capacity, and is extremely important in defining the needs and required scope of the study and LTMS plan.

Phase II is the systematic development and retention of all viable long-term management options that meet the specific study goals and objectives developed during Phase I. This includes, where appropriate, in-water, upland, ocean, and beneficial-use options.

Phase III is the selection of the most practicable LTMS plan consisting of one or more alternatives for implementation and provision of the necessary in-house documentation needed to support this selection.

Phase IV, plan implementation, and Phase V, periodic plan review and update, are specific steps that have been lacking in many previous applications of the LTMS concept. These phases require the dredging manager to face head-on the major unknown question with the LTMS concept; how to effectively implement an LTMS plan once agreed to by all parties concerned, while simultaneously providing appropriate review and updating to ensure the continued long-term viability of the established plan. These two components are intrinsically interrelated, and both are essential for effective LTMS plan implementation.

### **LTMS objectives**

Some of the objectives for LTMS include:

- a.* Reduction of cost and time for operations and maintenance (O&M) dredging;
- b.* Increased regulatory and permit efficiency;
- c.* Improved long-term planning;
- d.* Potential for local sponsor agreements;
- e.* Avoidance of crisis management.

### **Scope and criteria for LTMS**

The scope of individual LTMS plans should be flexible and may involve single projects or project reaches, and/or groups of projects with common dredged material management needs and/or geographical boundaries. The following national criteria have been established for developing an LTMS:

The LTMS must include all foreseeable Federal new work, operations and maintenance, and non-Federal program-related dredging activities. The basic premise is that it is not in the best public interest to construct a Federal project if there are no reasonable assurances that the project can be maintained and intended project benefits accrued over the long term.

Whenever possible, the LTMS should be for the anticipated project life. The target goal is to plan for 50 years into the future: but in no case for less than 10 years.

The LTMS should fully address both structural and non-structural alternatives for maintaining navigation. Every effort should be made to seek means of reducing dredging requirements and costs for the individual navigation projects.

The LTMS must consider all practicable dredging and dredged material management alternatives. No one option can be considered a panacea for dredged material disposal, nor can it be ruled out a priori in the initial planning process for other than sound economic, environmental, and engineering reasons.

Beneficial uses of dredged material are to be incorporated whenever practicable.

Site management, both upland and open-water, is essential and required for successful implementation of LTMS plans.

The LTMS plan must provide for periodic review, revision, and update, and must incorporate, whenever appropriate, new improvements in dredging equipment and dredged material management technologies.

### **What Is LTMS?**

Essentially LTMS is a process for providing reasonable assurances that navigation projects can effectively be maintained and anticipated benefits can be accrued over the long term (e.g., economic life of the project). Such plans shall address all anticipated long-term dredged material management needs of the project (i.e., construction, maintenance, and intended project beneficiary needs) to ensure the continued viability of the navigation project. In short, LTMS can be viewed as:

- a.* A USACE process rather than a program, and not a process funded separately from new work construction or O&M navigation dredging.
- b.* A five-phase process that incorporates long-range solutions to navigation dredging needs consistent with existing USACE planning, engineering, construction, and O&M programs.
- c.* A potential mechanism to focus and/or facilitate the use of existing and innovative procedural and regulatory instruments (e.g., special area management, advanced identification of sites, general and regional permits, etc.) for implementing comprehensive dredged material management plans.
- d.* A potential mechanism to provide information/technology transfer to other agencies and the public.
- e.* A forum to assist better coordination, foster cooperation, and provide consensus building opportunities to achieve preferred

dredged material management consistent with USACE authorities, regulations, and established policies.

### **What LTMS is not**

Because of the misconceptions conveyed by several of the Forum participants and for clarification, it is important to highlight clearly those features which LTMS is presently not intended to provide. Therefore, LTMS is not:

- a.* A formally institutionalized, new program with a major new authorization and appropriation.
- b.* The source of funds to pursue environmental initiatives not clearly established by present authorities for USACE at the expense of the national navigation program.
- c.* An environmental habitat restoration program.
- d.* A contaminated sediment cleanup program.

### **Objectives**

One objective of this report is to convey the USACE assessment of LTMS and the findings of the National Forum specifically relating to implementation of LTMS plans. This report also summarizes the formal presentations, panel discussions, and the pertinent questions and answers raised and given throughout the Forum.

### **Organization of Report**

This report is organized in three parts. Chapter 1, the introduction, provides background, a brief overview of the LTMS process, and objectives of the report. Chapter 2 is USACE's topical assessment of the major findings from the meeting. It is intended to provide a USACE perspective on the major issues associated with, and potential for, incorporating LTMS into the USACE National Navigation Dredging Program. As presented, Chapter 3 is a summary of the proceedings' abstracts with questions and answers. This part reflects the Forum agenda and major points made by key speakers and panel members and case study presenters. The Program

agenda and list of participants are located at Appendix A, and a key to acronyms used throughout the report is found at Appendix B.

## **2 Corps of Engineers Assessment of Findings**

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### **Introduction**

This part of the report presents USACE's assessment of findings from the Forum. The primary emphasis is on available instruments and procedures for implementing LTMS plans within the context of the Federal Navigation Program. In addition, there are a number of important but secondary issues that are presented to provide a comprehensive discussion of the impacts these topics may have on development of an LTMS. These other topics include authority, policy, and regulation; scope of individual LTMS studies and plans; program consistency needs; and public awareness, education, and involvement.

### **Instruments for LTMS Implementation**

All appropriate Federal authorities, policies, and procedures must be effectively brought to bear on the issue of LTMS implementation. We can and must pursue more effective use of existing regulatory authorities, instruments, and procedures to achieve the desired implementation in the broader context of resource management. The individual states have a significant role to play in implementation of LTMS plans through their own regulatory authorities and procedures, particularly in the areas of land-use planning/zoning. Effective implementation can only result from joint Federal/state efforts and not as an either/or situation. The USACE's LTMS process can possibly be used as a catalyst, under existing authorities and regulations, to initiate solutions to complex environmental sediment issues. However, USACE has limited authorities and resources to go it alone. The final outcome of any major initiative like LTMS will depend on the willingness of all agencies and participating parties to take a proactive role in accordance with their assigned authorities and responsibilities.

Both Federal and state resource management statutes offer a number of proactive procedural mechanisms or "instruments" for implementing individual LTMS plans for the established life of the plan. *Forum participants concluded that there are no major identified impediments to use of these procedural instruments for LTMS implementation. In fact, the conclusion was that the LTMS process should serve to facilitate future application of many of the available procedures.*

Although all available instruments have been applied successfully in specific cases, most have not been used extensively. This is due in part to the typically reactive nature of the regulatory process, the significant commitment of resources required up front, and/or a general lack of information regarding the procedures, their implementation, and benefits derived from site-specific success stories.

The available procedures can generally be categorized as either geographically based or site-specific regulatory instruments. The former, or geographically based, instruments include: Special Area Management Plans or SAMPs; USEPA Advanced Identification of Disposal Sites (ADID); Ocean Disposal Site Designation (Section 102); Mitigation Banking and Land-Use Planning or Zoning. Generally speaking, these instruments were developed for application within the broader context of balanced water resource development and conservation. For example, the ADID procedure may be used to specify sites that are considered either suitable or unsuitable for dredged material disposal. The site-specific regulatory procedures require specific up-front regulatory actions. These include regional permits (404) or authorization (e.g., the Coastal Zone Management Act (CZMA)); USEPA's Section 404(c) veto; long-term permits/certifications (Section 404 O&M permits; CZMA; Section 401); specific State or local zoning actions; or special state laws such as the Mississippi Natural Heritage Law for the Pascagoula Harbor SAMP to lock in mitigation lands. (See Chapter 3, p 77).

It is important to note that neither category of procedural instruments is applicable in all cases, nor are the individual instruments themselves. For single projects or project reaches, site-specific regulatory instruments such as long-term permits/certifications may be all that would be required for effective LTMS plan implementation. In other cases (for example, if the intent is to establish regional, multiple-user disposal sites) it may be necessary to sequentially apply geographically based (e.g., ADID) and then site-specific procedures (e.g., regional permits) procedures for effective LTMS plan implementation. As a general rule, however, a commitment to geographically based procedures is also a commitment to follow-on specific regulatory implementation actions, due to the significant initial commitment of resources required by all involved.

The individual procedures themselves may, in cases, be more applicable in certain situations than others, or they may even be totally inappropriate. Some procedures are specifically applicable for implementing disposal management actions, while others may be specifically applicable for

implementing related resource conservation measures, such as ensuring the long-term viability of wetlands created with dredged material. Generally, Federal agency procedures such as ADID and Section 404(c) are most applicable to aquatic situations, while state procedures are often most appropriate when dealing with terrestrial management practices.

### **Geographically based procedures**

**Special area management plans.** Congress amended the CZMA to provide a procedure for developing Special Area Management Plans (SAMPs). The 1980 amendment describes the SAMP process as "a comprehensive plan providing for natural resource protection and reasonable coastal dependent economic growth containing a detailed and comprehensive statement of policies, standards, and criteria to guide public and private uses of lands and water; and mechanisms for timely implementation in specific geographic areas within the coastal zone." The objective is to develop a plan that provides a higher level of predictability for future development and protection within the special area, as compared to the case-by-case approach. Forum participants highlighted SAMP procedures as particularly applicable and effective implementation tools for LTMS plans.

The USACE believes that to be successful, a SAMP must satisfy each of the following four criteria:

- a. The area should be environmentally sensitive and under strong development pressure.
- b. There should be a sponsoring local agency to ensure that the plan fully reflects local needs and interests.
- c. Ideally, there should be full public involvement throughout the process.
- d. All parties must be willing at the outset to conclude the process with definitive (i.e., site-specific) regulatory products.

Given the resource-intensive nature of the SAMP process, it is important to meet all four criteria. First, the area must be environmentally sensitive (e.g., contain high value wetlands or a rare wetland type). Also, the area must be under strong development pressure; use of agency resources to protect a wetland not threatened by development would represent an inefficient expenditure of government funds.

Second, strong local interest is vital, for several reasons, to the success of the process. Since local governments control land use, they are in the best position to restrict certain uses of land and prohibit all development

with regard to sensitive lands. In addition, USACE often will issue regional general permits which can be administered by a local agency. Finally, local interests will generally provide the cohesive force that will make a SAMP work since they are accessible and want the process to be acceptable to environmental and development interests.

The third criterion focuses on identifying and involving the public, to the extent possible, in the SAMP process. Through such involvement, USACE can obtain a vast amount of information from the general public and special interest groups such as environmental and development representatives. This information is vital to a successful SAMP. Equally important, those groups that have been fully and fairly involved in the SAMP process are more likely to support its end products.

Finally, the process must result in regulatory products, i.e., a SAMP that will allow growth and protect the environment, while reducing governmental regulatory controls. More specifically, a SAMP should classify the entire area under consideration into three general categories of potential land use for dredged material disposal. Typically, all categories of development would be prohibited in areas with particularly sensitive aquatic resources outside of specific actions such as beneficial use/mitigation projects. Such areas should be clearly identified and protected by local (zoning), state (various regulatory means), or Federal (USEPA Section 404(c) prohibition on discharge) authority. A second land-use category includes areas of lower aquatic value where certain types of development (including dredged material disposal) will be permitted. In these areas, USACE will develop appropriate regional general permits, and the state and local agencies also should minimize, to the extent possible, regulatory requirements for appropriate development. The third category identified in a SAMP includes areas where development may be appropriate, but a more rigorous review is needed. In such areas, USACE will require the submission of individual permit applications and conduct a full public interest review on each proposal; similarly, state and local governments will carefully review projects proposed in these areas. The SAMP process also may involve mitigation for portions of the area that can be developed. Such mitigation should be included in the planning process and should be identified in the final plan.

A well-designed and developed SAMP will have all of these end products and, therefore, it is likely to be embraced by environmental and development interests. Environmental interests will know that certain sensitive areas will be maintained in their natural state and that other less sensitive areas will be subject to careful--and public--review. Development interests will have predictability, knowing that certain areas cannot be developed and that other areas can be developed, provided there is compliance with specific criteria (e.g., conditions on a USACE general permit and state and local authorizations).

One example of a successful SAMP involving dredged material management is the Port of Pascagoula Special Management Area (Pascagoula

SMA) plan in coastal Mississippi, which was presented as a case study at the Forum (see Chapter 3, p 77).

It is important to stress that SAMPs should not be developed for large areas. If the area is too large, local interest will be fragmented and the logistics of completing the process will be overwhelming. For example, identifying the entire Chesapeake Bay or San Francisco Bay as the subject of a SAMP would be inappropriate and doomed to failure. However, it is quite likely that portions of either estuary would be ideal for the SAMP process. For example, the San Francisco District is considering the advisability of pursuing a SAMP for portions of south San Francisco Bay.

**Advanced Identification of Disposal Sites (ADID).** Under Section 230.80 of the Section 404(b)(1) guidelines, USEPA and the Section 404 permitting authority (typically USACE) act jointly to identify wetlands or other waters of the United States in advance of any permitting action. The purpose of this tool is to identify areas as either generally suitable or generally unsuitable for disposal site specification.

For aquatic disposal sites, ADID is used basically as an advanced identification of an area that is environmentally acceptable for open water disposal of dredged material. Its principal application would be for regional/multiple-user aquatic disposal sites. Specific use of the ADID site, however, must still be addressed either on a case-by-case basis or through site-specific regional permits. In this respect, ADID is the 404 equivalent of EPA's Ocean Site Designation process (Section 102 of the Marine Protection, Research, and Sanctuaries Act of 1972 (MPRSA)). This process has been successfully used by the Puget Sound Dredge Disposal Analysis (PSDDA) program for specific regional aquatic sites within Puget Sound (see Chapter 3, p 64).

The other primary applications of ADID are to provide/develop information on the function and value of wetlands or of the critical aquatic habitat within the study area, to provide information in advance of 404 applications, and to encourage public participation. The information can then be used by the various Federal, state, and local agencies to determine which habitats of interest in the study area are of ecologically high value and should be protected and which areas are of low value and could serve as a potential future disposal area.

The result of this ADID application is typically a map which identifies wetland locations or other critical habitats of interest and habitats that are highly valuable. It is important to note that these results are developed for informational purposes only. However, the data can be and are commonly used for permitting purposes and should provide a sound technical basis for application of site-specific implementation tools.

**Ocean disposal site designation.** This is the ocean equivalent of the ADID procedure. This formal process is specifically a USEPA responsibility under Section 102 of the MPRSA and is of particular application to

multiple-use, ocean disposal requirements. It is also an advanced identification and designation of an ocean area or site that is considered environmentally acceptable for the ocean disposal of dredged materials. This authority (Section 102(c) of MPRSA) is also available to designate times and/or places where material may not be disposed in order to protect critical areas. No specific examples of this application were provided by Forum participants.

The USEPA's site designation process requires preparation of an Environmental Impact Statement (EIS) and formal rulemaking. Designation is usually for regional areas and/or general categories of dredged material. Site use, however, must still be approved through regional permits or on a case-by-case basis through individual permits issued under the USACE Ocean Disposal Regulatory Program.

**Land-use plans.** Land-use planning is a rational process for determining appropriate patterns of land use, land-use activities, and relative intensities of activities. An example of effective application of land-use planning to LTMS plan implementation is provided in Chapter 3, p 73.

Through land-use planning, the type, location, quality, intensity, pace of development, and growth of an area are determined. Land-use planning is typically conducted at the community level; however, it also occurs and is highly influenced at the Federal and state levels, as well as at the local or site level. Land-use planning attempts to address numerous goals (e.g., environmental enhancement and protection, aesthetics) and results in a diagram or map of what the future will look like. Steps in the land-use planning process are:

- a. Analysis of demographic and land-use trends; inventory of natural conditions and features.
- b. Establishment of goals and objectives; identification of issues and problems (important role of citizen participation/community consultation mechanisms).
- c. Consideration of alternative growth scenarios and design options.
- d. Selection of land-use design; determination of appropriate use and density patterns (e.g., in form of plan diagram).
- e. Preparation of an implementation program (adjusting existing management instruments so they are consistent with plan).
- f. Periodic evaluation and update.

Unlike the advanced identification processes or special area management plans, which are essentially specific land-use planning instruments that focus on environmental objectives, land-use planning seeks to integrate community development and growth with environmental manage-

ment. As detailed in the Oregon Estuary Planning case example presented at the Forum, long-term dredged material management can be successfully addressed through land-use planning procedures. The keys to integrating dredged material management into the land-use planning process in Oregon were the careful identification of state goals, development of a coordinated land-use plan, development of a land-use classification system, and a mandated dredged material disposal plan.

Depending on the goals of the planning process, special and/or sensitive habitats as well as dredged material disposal sites are protected, potential mitigation and/or restoration sites are identified, and dredging requirements and management are estimated over the long term. However, it is important to note that as land values increase, the overall success of a land-use planning approach decreases. This will be especially true for highly developed ports and harbors.

**State or local land-use zoning.** Zoning measures are available to specifically prohibit development in areas with particularly sensitive aquatic resources, to prevent encroachments onto actual or planned disposal sites, and to provide assurance through zoning that appropriate and required site management can be accomplished.

In the specific case of LTMS implementation, such land-use zoning actions are often essential to provide long-term availability and access to upland disposal sites, and may be equally as important to ensure the long-term viability of mitigation actions and/or habitat restoration efforts with dredged material.

**Mitigation banking.** Mitigation banking is widely viewed as a component of a comprehensive planning process to provide compensation for the unavoidable loss of wetlands or other aquatic habitat in which mitigation for more than one project is aggregated and effected in advance at a single large site or area. Mitigation banks may include the restoration or enhancement of existing degraded habitat or the creation of new habitat. Mitigation banking has the potential to play an important role in restoring and maintaining wetland and other aquatic resources, as well as to provide more certainty and predictability in the Section 404 regulatory program, especially when the project is an explicit component of a comprehensive planning effort such as LTMS. The process of developing a mitigation bank brings together financial resources, planning, and scientific expertise not generally practical for individual mitigation proposals, thereby increasing the opportunities for success and maximizing environmental benefits.

As with most other geographical-based procedures, follow-on site-specific regulatory actions would also be required to ensure the long-term stability and function of the set-aside habitat.

## **Site-specific regulatory instruments**

The USACE issues two types of permits, general and individual. General permits may be either nationwide permits or regional permits. Regional permits have particular potential where regional, multiple-user disposal sites are involved. In such cases, it is often possible to define one or more categories of disposal activity that would meet the criteria for a disposal site-specific regional permit. (See 33 CFR 320-330 and 33 CFR 335-338.)

A similar authority is available as a regional authorization under the CZMA. Presumably, individual states can issue such regional authorizations for coastal zone consistency. However, no specific applications to dredged material management were identified by Forum participants.

## **Long-term permits/certifications**

**Section 404.** The USACE has established a 10-year O&M permit for maintenance dredging activities of a recurring nature. These permits are issued routinely throughout the United States. Appropriate monitoring and review are required as conditions of the permit.

**Section 401.** The individual states are highly variable in terms of the established duration of 401 certifications. The majority of states issue certification for either 3 or 5 years, although a number of states do issue certifications for a 10-year period. The stated intent of the State of Florida permit, which presumably would combine the Section 401 and CZMA certifications, would be a 25-year permit with appropriate periodic review.

The USACE considers a 10-year time frame as the minimum justifiable expenditure of resources for LTMS plan development. Otherwise, the LTMS concept itself is not considered a viable disposal management tool.

**State CZMA consistency.** State requirements for reassessing project consistency are also highly variable. A number only require a reassessment if or when a substantive change in the project (e.g., a new disposal site) is contemplated. Realistically, there is no logical reason to do otherwise unless there is a substantive change in project conditions.

**USEPA's Section 404(c) veto.** EPA has traditionally applied this Authority in its role of environmental oversight of proposed USACE regulatory actions. However, USEPA representatives at the Forum indicated its additional application to LTMS plan implementation. While no specific example of this application was provided, the Section 404(c) veto would conceivably be used in concert with either ADID or a SAMP and specifically to implement or "lock in" resource conservation measures, such as mitigation banks or habitat restoration with dredged sediments. This is one of the few such available measures for strictly aquatic habitat

conservation, short of marine sanctuary determinations or similar levels of effort.

## **Authority, Policy, and Regulation**

Presently, interactions regarding the management of dredged material occur in a highly complex legislative and regulatory environment. Dredging projects are governed by over 30 major Federal environmental statutes, executive orders and regulations, and consistency in their implementation is difficult, if not impossible, to achieve (Francingues and Mathis 1989).

Due to the multiple statutes and regulations covering dredged material management and to the fact that each agency has its own program responsibilities and objectives, a unified multimedia approach to dredged material management has not yet been adopted. In a similar context, past congressional authorizations of water resource development projects have provided for specific language that enables or limits specific project operations. In many cases, the differences in congressional authorizations have resulted in inconsistency among and between projects. This level of inconsistency makes it extremely difficult to provide the desired program management uniformity, which is essential both to minimize Federal interference in the highly competitive transportation industry and to maintain national equity in program funding and management.

The authorities most frequently cited by USACE when developing LTMS plans are:

- a.* Section 148 of Water Resources Development Act (WRDA) 76, which directs the Corps to utilize those management practices that will extend the life of dredged material disposal areas, thus keeping the need for new sites to a minimum (33 U.S.C. 419a).
  - b.* 33 Code of Federal Regulations (CFR) Part 337.9, "Identification and Use of Disposal Areas," which requires District Commanders, where appropriate, to develop dredged material disposal management strategies for the long term and to explore management techniques to extend the useful life of existing sites.
- (1) Section 337.9 (a) states "... district engineers should identify and develop dredged material disposal management strategies that satisfy the long-term (greater than 10 years) needs for Corps projects. Full consideration should be given to all practicable alternatives including upland, open water, beach nourishment, within banks disposal, ocean disposal, etc. Within existing policy, district engineers should also explore beneficial uses of dredged material, such as marsh establishment and dewatering

techniques in order to extend the useful life of existing disposal areas."

- (2) Section 337.9 (b) goes on to state "... the identification of disposal sites should include consideration of dredged material disposal by project beneficiaries. District engineers are encouraged to require local interests, where the project has a local sponsor, to designate long-term disposal areas."
- c. 33 CFR Part 322.5 (c)(1) "Non-Federal Dredging for Navigation," which states "... The benefits which an authorized Federal navigation project are intended to produce will often require similar and related operations by non-Federal agencies (e.g., dredging access channels to docks and berthing facilities or deepening such channels to correspond to the Federal project depth). These non-Federal activities will be considered by the USACE officials in planning the construction and maintenance of Federal navigation projects and, to the maximum practical extent, will be coordinated with interested Federal, State, regional, and local agencies and the general public simultaneously with the associated Federal projects. Non-Federal activities which are not so coordinated will be individually evaluated in accordance with these regulations. In evaluating the public interest in conjunction with applications for permits for such coordinated operations, equal treatment will be accorded to the fullest extent possible to both Federal and non-Federal operations. Permits for non-Federal dredging operations will normally contain conditions requiring the permittee to comply with the same practices or requirements utilized in connection with related Federal dredging operations with respect to such matters as turbidity, water quality, containment of material, nature and location of approved disposal areas (non-Federal use of Federal confined disposal areas will be in accordance with laws authorizing such areas and regulations governing their use), extent and period of dredging, and other factors relating to protection of environmental and ecological values."

With passage of recent water resource and development legislation (WRDAs 86,88,90) and the Coastal Wetlands Planning, Protection, and Restoration Act of 1990 (CWPPRA), USACE has been in a transition in how it will manage its traditional programs such as navigation, and, in terms of new Federal responsibilities, in the areas of environmental protection and engineering. The developmental focus of this legislation is clearly concerned with the Nation's economy, and the clear recognition of the role the existing navigation system must play in improving the Nation's international economic situation. With passage of WRDAs 86, 88, and 90, we have seen the beginning of a new type of construction mission (sometimes referred to as Environmental Engineering) for USACE. The recent legislation has included several new studies and project authorities dealing with environmental restoration. Some of these are:

- a. Section 933 WRDA 86 - Beach Nourishment
- b. Section 304 WRDA 90 - Habitat Restoration Projects
- c. Section 306 WRDA 90 - Assignment of Environmental Protection as a Primary Mission of USACE
- d. Section 307 WRDA 90 - Goal of No Net Loss of Wetlands
- e. Section 307a CWPRA 90 - Authorization for USACE to Conduct Environmental Restoration/Enhancement Projects.

Section 933 provides for the Federal share of 50 percent of the added cost of beach nourishment for public beaches. The Federal Standard is used as the basis for determining the incremental costs.

Presently, USACE uses the concept of the Federal Standard (33CFR335.7) as a point of reference for alternative(s) selection for existing projects. The Federal Standard is that alternative that meets required environmental laws and regulations in the least costly manner consistent with sound engineering practices. For new work construction, USACE uses the National Economic Development Plan to weigh and balance alternatives.

Section 304 amends Section 1135 of WRDA 86 by creating a continuing authority for modification to existing projects for purposes of fish and wildlife habitat restoration. The new authority has a \$15 million annual program funding ceiling, with a modest appropriation (about \$2.1 million) available for fiscal year (FY) 91.

Section 306 directs the Secretary of the Army to include environmental protection as one of USACE's primary missions. Implementation of Section 306 will most logically be done primarily through existing USACE regulatory programs, as well as through future environmental engineering initiatives. This provision is not intended to affect traditional authorities and responsibilities, including public interest reviews. However, this provision was particularly pertinent to Forum participants, because a prerequisite for any future habitat restoration project that USACE may undertake must be a clear demonstration of reasonable upfront assurances that the habitat will remain viable over the long term. The question of effective program implementation and to what extent the authorities, regulations, policies, and procedures of USACE and others can or should be refocused to address habitat protection (as well as to regulate the management of dredged material), also provided a basis for much discussion at the meeting.

Section 307a of CWPRA authorizes the Secretary of the Army to carry out projects for the protection, restoration or enhancement of aquatic and associated ecosystems, including projects for the protection, restoration, or creation of wetlands and coastal ecosystems. In implementing such

projects, USACE is required to give them equal consideration with projects relating to traditional missions of navigation and flood control. This will require appropriate weighing and balancing of both development and resource protection.

During the Summary Session, it was pointed out that the Clean Water Act (CWA) and the Resource Conservation and Recovery Act (RCRA) were both coming up for reauthorization in the next Congressional Session. The CWA would probably address options to change or insert language on remediation, inventory, criteria, and waivers concerning contaminated sediment. The USEPA was also preparing a strategy for contaminated sediments. No doubt, RCRA deliberations will include discussions of whether dredged material should be defined as a solid waste for regulatory purposes.

The procedures of the environmental laws that govern dredged material management (primarily the CWA and MPRSA) require consideration of all facets of the dredging and disposal operation, to include cost, engineering feasibility, environmental concerns, and all practicable alternatives. Some of the Forum participants suggested that a broader scoped economic analysis method was needed, and that benefit/cost analysis as presently conducted by USACE was too constraining to allow for selection of more desirable environmental alternatives.

Several specific observations and comments concerning authorities, policies, and regulations, or procedures made during the Forum are as follows:

- a. Regulatory conflicts exist between policies/regulations and goals of LTMS.
- b. The regulations and testing guidelines for evaluating dredged material and in-place sediments need revision.
- c. There was little discussion on ways to overcome land-use limitations in urban areas. For example, how to rezone or undo comprehensive zoning programs, if needed to implement LTMS, was not discussed.
- d. The regulatory/permit process needs to be flexible.
- e. Constraints on siting disposal facilities should be addressed by appropriate Federal and state agencies.
- f. The underlying concept of the Federal standard is not unique to Federal programs and will probably be part of any sediment remediation project.

- g. Nothing in the existing regulations governing the management of dredged material would preclude the development and implementation of an LTMS.
- h. The USACE's present authorities/regulations focus on dredged material; however, new authorities are expanding the role of the USACE in sediment management. The LTMS may even help to accommodate these new missions.
- i. The USACE has no comprehensive area-wide sediment management authority, yet. It is someone else's role to do estuary planning. However, one Forum speaker was interested in expanding the scope of LTMS to the level of estuary planning.
- j. Many environmental initiatives can and probably should be incorporated in an LTMS. The question remains just how and when this should/could be done, as well as appropriate sources of funding given the severe fiscal constraints now being faced by all levels of government.

There were several cases cited where the long-term management of dredged material has occurred within the framework of current agency regulations. In particular, examples were given for the Oregon Estuary, Puget Sound, and Coastal Mississippi. One participant stated that 29 states have CZMA programs with Federal consistency, and suggested that *Section 301 (CZMA), which promulgates environmental enhancement*, can be used in the LTMS process.

## Scope of Individual LTMS Studies and Plans

The intended versus potential scope of LTMS studies was the subject of considerable discussion and confusion among Forum participants. The present focus of USACE's developmental work with the LTMS concept is as a program management tool for its specific navigation dredging program responsibilities. In this case, USACE views LTMS as a process for providing reasonable assurances that the navigation project(s) in question can effectively be maintained and that anticipated national project benefits can be realized over the long term. Others, however, may view LTMS as a vehicle to tackle the broader issues of bottom sediment management, to include source control, habitat restoration, and contaminated sediment remediation, in addition to navigation dredging.

Some Forum participants, at least initially, were of the mistaken impression that the purpose of the Forum was to introduce LTMS as a major new national USACE program designed to address broad, regional management issues associated with bottom sediments. This confusion is understandable for several reasons. First, Federal emphasis is shifting more and more to geographically based resource management initiatives, such as

USEPA's National Estuary Program (NEP). Second, traditional USACE water resource development missions are now being broadened into new environmental engineering areas, including broader sediment management responsibilities such as habitat restoration. Finally, it can be argued that it is inefficient, and perhaps even environmentally unsound at times, to pursue solutions to sediment issues separate from each other, and, indeed separate from the broader perspective of resource management. For example, several Forum presentations specifically emphasized the need to move away from ad hoc solutions in applying beneficial uses and environmental mitigation and toward the establishment of technically based, regional resource management priorities and strategies.

A management issue/objective hierarchy was presented during the Forum summary session as a means of placing the LTMS concept in proper perspective. This hierarchy is discussed below.

**Dredged material management.** The primary focus of LTMS as presented concentrates on maintenance of essential navigation projects. This represents the priority need and, in turn, the funding priority of USACE for LTMS studies for the foreseeable future. The scope of such studies and projects is primarily involved with dredged material disposal. However, whenever applicable and within limits, habitat development/ restoration (beneficial uses of dredged material) and measures to reduce channel shoaling rates, and in turn, dredging volumes, are also addressed. Such studies and plans may involve single navigation projects or individual project reaches, or multiple projects having similar disposal management needs, and/or geographical boundaries.

**Bottom sediment management.** Such studies may involve all or appropriate component parts of this broad issue to include: dredged material management, habitat development/restoration, erosion control, and environmental remediation measures for highly contaminated bottom sediments.

As clearly recognized by Forum participants, it may, in cases, make greater economic as well as environmental sense to resolve these issues collectively instead of separately. For example, future dredged material and contaminated sediment remediation projects may well find themselves in direct competition for the same limited disposal sites. In such a situation, it would make no sense to use limited upland site capacity for clean dredged material. Yet, this could well happen if the issues were being addressed separately,

The LTMS process can logically be applied equally to the broader issue of bottom sediment management. As previously discussed, USACE has new environmental authorities that may allow future LTMS studies to be expanded in scope to address certain of these broader issues, but only to a point. Further, many of these issues often cross lines of responsibility of several Federal as well as State resource management agencies. As such, no single agency or group of agencies presently has the necessary level of funding, authority, mission, etc., to fully and effectively respond to this

rapidly evolving national problem. Interim help may be forthcoming through the "Coastal America Initiative," in terms of providing supplemental funding to initiate priority sediment management studies. Also, USEPA has underway an in-house planning effort aimed at formulating a Federal strategy for addressing the issue of contaminated bottom sediments.

**Geographically based resource management.** This level of effort includes efforts like USEPA's NEP, the North American Waterfowl Management Plan (NAWMP), and the National Wetland Inventory. Such broad-based efforts provide essential input and guidance to LTMS studies in two very important ways. First, there is the need for regional public and political consensus for appropriately balancing water resource development and conservation. This manifests itself in a number of vital areas, such as contaminant source control and an appropriate level of control. Second, and a point raised repeatedly by Forum participants, is the need to establish regional consensus on priority habitat and resource values. Mr. Bates of USACE raised this need initially in terms of appropriately locating suitable disposal sites for dredged sediments and in terms of sound planning for beneficial applications of dredged sediments for habitat development purposes. Mr. Hall of the National Marine Fisheries Service (NMFS) also emphasized this point in terms of moving from an "ad hoc" approach to beneficial use applications to "new, more integrated science and management techniques." Several additional speakers also emphasized this general need in terms of more technically based strategies for developing mitigation requirements. Mr. Hall also indicated that his agency plans to establish regional technical centers for the specific purpose of developing regional resource management priorities.

## **Program Consistency Needs**

A number of Forum participants stressed the need for the LTMS process to remain as flexible as possible to account for site and/or regional-specific differences and opportunities. At the same time, however, the USACE must also require that the LTMS concept and process provide a greater level of both study-/project-specific and programmatic consistency than has been the case in the past.

From a project-specific perspective, established USACE policy requires that all project dredging components (construction, maintenance, intended project beneficiaries) be considered together in LTMS studies and plans and not separately, as has often occurred in the past. This is a matter of necessity to ensure sound investment of public funds. However, this requirement will force a greater degree of project consistency in how dredged material is managed and it should also have positive environmental and economic results.

In opening the Forum, General Kelly expressed his requirement for a basic level of consistency in program management. This consistency is necessary both to minimize Federal interference in a highly competitive port industry and to maintain equity between states in navigation program funding and management.

### **Test and evaluation procedures**

Consistency in environmental evaluation of sediments at a project and in geographical areas is prerequisite to effective management and regulation of dredged material. Without such consistency, individual LTMS plans will be unworkable, and, therefore, not implementable. This requirement includes maximum consistency between Federal projects and permitted activities, between Federal and state testing requirements, and, in the case of coastal navigation projects, between Section 404 (CWA) and Section 103 (MPRSA) testing requirements.

The Forum participants stressed the need for technically valid and defensible procedures to respond to regulatory requirements and increased liabilities under recent Federal environmental statutes. Both Dr. Tudor Davies and Mr. Barry Burgan of USEPA discussed anticipated Federal regulatory initiatives that should provide this necessary level of consistency at both the project and program management level.

**Green Book revision.** This document is the technical implementation (testing) manual for USEPA's Ocean Disposal Criteria. The present version was last revised in 1977, and the latest revision of the manual was released in April 1991.

**404 Testing Manual revision.** This manual is for Clean Water Act evaluations and was published in its final version in 1975. USEPA's present plan is to adopt a tiered testing approach similar to that in the Green Book.

**Framework for management of dredged material.** This document will be a very effective and much-needed implementation tool for LTMS plans. It is intended to bring together the technical evaluation procedures for in-water (ocean, coastal and freshwater), upland, and beneficial uses under the broad umbrella of the National Environmental Policy Act (NEPA) process. In addition, the framework will include test and evaluation procedures designed to assess the case-by-case environmental acceptability of available management options for dredged material. The document will be used as technical guidance to assist in developing environmentally acceptable dredged material management on a case-by-case basis.

## **LTMS roles and responsibilities**

The first part of this discussion topic addresses appropriate roles and responsibilities of USACE and project sponsor/beneficiaries in LTMS studies and plan development. Previously, in some cases, USACE and its sponsors have worked cooperatively in resolving dredged material management issues. In others, however, the responsibility has fallen exclusively to either USACE or the sponsor, often with unsatisfactory results.

From past USACE experience, the successful development and implementation of an LTMS plan must involve USACE, the local project sponsor, where so designated, and the local/regional project beneficiaries where different from the project sponsor. The USACE's role is primarily that of technical and engineering advisor. As General Kelly clearly emphasized, USACE's role is *not* that of project proponent. In fact, USACE District Commanders will be discouraged from pursuing any future LTMS studies where formal local and regional support for the plan and its subsequent implementation are not forthcoming.

In terms of future navigation program consistency, this Forum has clearly identified the need for a strong State involvement in all such future LTMS studies. First, in most, if not all, cases the state is the major beneficiary of the project(s). Further, in any future controversy over development versus conservation associated with the Federal navigation project(s), USACE will look to the state(s) as the appropriate decisionmaker. Finally, and as clearly brought out during the Forum, the state not only has a major regulatory voice in this process, often it also has the major responsibility and authority for effective implementation of individual LTMS plans.

The second part of this discussion is consistency in roles and responsibilities in dredged material disposal site management. For open-water sites, this is presently not an issue because management of open-water sites is a Federal responsibility for most sites. However, over time, congressionally assigned roles and responsibilities for upland disposal sites have been highly variable, resulting in significant project-by-project inconsistencies in Federal funding and greater costs being transferred to the local project sponsor for site management. In future cases, where the established scope of individual LTMS studies will involve multiple Federal projects with different project authorization responsibilities, these inconsistencies may at times become confusing and indeed quite controversial.

A recent legislative initiative by the American Association of Port Authorities (AAPA) to resolve this programmatic inconsistency with site management was unsuccessful. However, with rare exceptions, all new navigation projects authorized since 1986 are consistent in terms of local sponsor roles and responsibilities for site management. Project reformulations must also conform to these same responsibilities. So, conceivably greater program consistency for site management will occur in the future.

## **Public Awareness, Education, and Involvement**

Two dominant themes emerged from discussions during the conference on the topic of public involvement in the LTMS process. These were:

- a.* The public's frustration with the participatory process that has developed for dredged material siting and disposal projects, with a particular emphasis on the public's view of their own role and input.
- b.* Agency consensus that in most cases, elevated public perception of risk is responsible for unnecessary delays in an otherwise technically sound process.

In an effort to resolve this ongoing policy and management dilemma in a constructive way, several points are discussed below regarding both of these issues.

The basic problem that emerged in listening to conference speakers and participants remains "the public's" divergent notion of what "dredged material" is. Material removed during dredging operations has historically been referred to as spoils, which implies something that is contaminated and must be disposed of. Mr. R. Morgenweck cited that the US Fish and Wildlife Service views the material deposited in navigation channels as a valuable resource (soil). If the public focus is on a noxious type of waste (spoils), any discussion on disposal (much less beneficial reuse), is negatively predisposed. Thus, the concept of dredged material as unwanted waste must be discarded and the many potential uses of most dredged materials must be clearly demonstrated. The public's ongoing frustration with the direction of participatory programs stems from not being able to effectively communicate their concerns about contaminated sediment, as well as the misconception about the extent of sediment that is actually contaminated.

It also became quite clear that from the point of view of involved professionals, most public concerns are based on a misunderstanding (or misrepresentation) of the issues. These misunderstandings generally stem from a lack of knowledge regarding the quality of dredged materials, estuary management strategies, as well as the national success stories of dredged material management. As such, a clearly communicated description of technical issues that USACE, port authorities, Federal and state agencies deem fundamental to any dredged material LTMS project is critical for successful public participation and eventual project success.

The conference reinforced that the following issues are subject to continual debate, and must be the basis of future consensus (within the LTMS framework):

- a.* What is contaminated sediment, and what is uncontaminated dredged material?

- b. What are the beneficial uses of dredged material?
- c. What is the strategic relationship between beneficial uses and LTMS? (This needs to be articulated across agencies and then to the public in a more basic way.)
- d. What range of physical/technical conditions define a wetland, and how do the different types of wetlands relate to LTMS and beneficial uses of dredged material?

As is so often the case with environmental projects, the initial hesitancy to come forward and engage the public stems from agency experiences that the public perceptions are so distinct from that of staff professionals, that even the task of developing an initial agenda gets bogged down in problematic definitional issues. Again, what is needed most is greater consensus on the fundamental issues that are key to dredging projects.

Because public awareness and concerns vary from project to project, it becomes vitally important to identify and communicate information on successful projects that have involved public participation. It is equally apparent that educating agency staff about how other LTMS projects have effectively involved the public will increase the probability of success on each new project.

## **Future of LTMS**

In recognition of the need to provide the Nation with a viable navigation system, USACE must proceed with development of policy and procedural guidance to implement the LTMS concept within the existing National Navigation Dredging Program and within existing funding authorities. The policy and procedures should reflect how the engineering, economic and environmental considerations are to be weighed and balanced within the broader context of regional development and environmental protection. Also, these policies and procedures should remain sufficiently flexible to allow the pursuit of related sediment management objectives (e.g., management of highly contaminated bottom sediments). This should be done in conjunction with individual LTMS studies where it is in the best public interest and cost-effective to do so, and where supplemental funding sources can be identified and are provided.

# **3 Summary of Proceedings Abstracts With Questions and Answers**

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## **Introduction**

Since the 1970s, long-term management plans have been recognized as the most environmentally and economically sound methods of dredged material management. However, Federal and state agencies have only recently begun to focus on long-term management strategies to implement such plans.

EA Engineering, Science, and Technology, Inc. was contracted by WES to organize a National Forum on Implementation Strategies for Long-Term Management of Dredged Material. This Forum was held 29-31 January 1991 in Baltimore, MD. The objective of this Forum was to address regulatory constraints, policy positions, and economic concerns from the perspectives of driving Federal, state, and private organizations. This was achieved through presentations on:

- a.* Federal and Non-Federal Perspectives.
- b.* Instruments for Implementing LTMS.
- c.* Sediment Management Strategies.
- d.* Case Studies.

This part of the document summarizes the presentations and question-and-answer sessions during the 2-1/2-day Forum. These abstracts were either provided by the speaker for the pre-workshop notebook or summarized by EA Engineering, Science, and Technology, Inc. from the actual taped presentation and are provided below. Pertinent questions and answers from the discussion sessions following the presentations are provided. Where possible, the identity of the person asking the question is provided.

## **Overview of LTMS - General Kelly and Dr. Davies**

**General Patrick J. Kelly**  
**Director of Civil Works, USACE**

General Kelly stressed the need for a partnership approach to long-term dredged materials management between USACE and other Federal, state, and local agencies as well as the port authorities. Specifically, four points were made emphasizing the need for a unified approach:

- a. The current view of dredged material as a nuisance is inappropriate. It should be considered an asset. Although USACE operates on a fixed budget and must consider the least costly, environmentally acceptable disposal method, other agencies have the funds and initiative to beneficially use dredged material for beach restoration, storm management, etc.
- b. The USACE is mandated to maintain navigation. However, if future plan development is to be a success, USACE cannot and will not go it alone. Thus, the project beneficiaries must take a more active role in this area as both a cost-sharing and decision-sharing partner.
- c. In order to avoid the current problems, long-term plans should be developed to cover a 50-year time span instead of a 5-year time span.
- d. Of the three major considerations of dredged material management (economics, environmental, and engineering), environmental concerns must be given equal consideration.

The USACE has new authorities including the recognition of environmental protection as one of the primary USACE missions (WRDA 90, Section 306). General Kelly emphasized USACE involvement in environmental initiatives: USEPA's NEP, the US Fish and Wildlife Service's (USFWS's) NAWMP, and the National Oceanic and Atmosphere Administration (NOAA)/NMFS's Fisheries Habitat Memorandum of Agreement (MOA). He indicated that there will be even more USACE environmental restoration involvement in the Coastal America Program, which is currently being formulated. General Kelly stated that USACE is studying appropriate implementation of new authorities including: Section 307 of the CWPCA (wetlands and coastal ecosystems); Section 304 of WRDA 90, which creates continuing authority for Section 1135 (WRDA 86) projects (funded at \$15 million annually and anticipated to increase in subsequent fiscal years); and the ability of USACE to pay for 50 percent of the additional cost of beach nourishment and similar coastal erosion control measures. General Kelly said that the ports must take an active role in

assuming responsibility for dredged material management through cost-sharing and consensus building within the LTMS process. He indicated that it is extremely important to develop long-term dredged material disposal strategies and procedures. For all new navigation projects, 50-year operation and maintenance dredging disposal will be included in determining project feasibility.

#### **Dr. Tudor Davies, Office of Marine and Estuarine Protection, USEPA**

Dr. Davies discussed the NEP in light of its relevance to LTMS. There has been substantial land development and this must be balanced with conservation, as encouraged by the NEP. Although USEPA has had success stories (water quality standards, technical limits, point source controls), degradation of land due to development continues to be a problem and needs to be addressed. These concerns should be addressed at the ecosystem management level through the NEP or LTMS with interagency coordination.

It will be important to manage dredged material through ecosystem management programs and not on a permit-by-permit basis. Dr. Davies gave some examples (Puget Sound, San Francisco Bay, Galveston Bay) and pointed out the need for public, local, state, and Federal involvement.

LTMS is a method of Federal, state, and local agencies, and the public working together to develop environmentally acceptable solutions for dredged material management. The USEPA wants long-term geographically based programs rather than permit-by-permit programs. This approach would be especially useful in dealing with contaminated dredged material, particularly now that USACE has received authority for 50/50 cost-sharing of managing contaminated dredged material outside the navigation channel. Dr. Davies emphasized that USEPA is developing a framework for sediment evaluation based on sediment quality criteria. Although USEPA is developing a single chemical-specific sediment criteria, they will continue using biologically based tests (such as those contained in the ocean dumping manual known as the Green Book). He also said that the LTMS framework fits in the NEP and should be consistent with the CZMA.

#### **Questions and answers**

**Question:** Rebecca Leighton, Lake Michigan Federation, Green Bay, WI

Will the need for harbor dredging be compared on a cost/benefit scale to other means of transportation in order to possibly decrease the amount of dredging conducted annually?

**Answer:** General Kelly

The future of harbors (the economic survivability) will be determined through competition. Therefore, this is a local or state issue.

Question: Mike Chezik, USFWS

In what ways would USEPA want USACE to become involved in sediment management?

Answer: Dr. Davies

Not only is there concern over controlling the source of contamination in sediment management, there is also concern over managing existing contaminated sediments. The USACE has been concerned solely with navigational dredging, yet the USACE dredging techniques are needed outside of navigational channels. The USACE has the engineering expertise that the resource agencies don't have when it comes to sediment management. This expertise should be used in areas outside of the navigation channels.

Answer: General Kelly

The last authorization of WRDA in September 1990 gives USACE the authority to handle contaminated sediments outside of the navigation channel.

Question: Paul Kemp, Coalition to Restore Coastal Louisiana

As Louisiana embarks on a National Estuary Program, is it important for the involved parties to "develop ownership" in such programs in order for them to be successful?

Answer: Dr. Davies

In some cases "ownership" is already there. With the Chesapeake Bay Estuary Program, the Federal government finished their work in the early 1980s. At that time, the political will to maintain the program and go to implementation was there. The local concern and public interest were translated into local statutes, land-use management plans, sewage treatment plant controls, non-point source programs, etc. Public interest was important for the success of the program. It is, therefore, important that the public has a sense of ownership to make things happen.

Question: Jill Singer, State University of New York (SUNY), Buffalo, NY

General Kelly de-emphasized the concern over contaminated sediments by stating 95-97 percent of dredged materials are "clean," while Dr. Davies expressed concern over contaminated sediments and concentrated his presentation on this issue. In light of the fact that most harbors have contaminated sediments, is the estimated amount of 95-97 percent clean

sediments accurate? Is methodology being developed to deal with contaminated sediments?

**Answer: General Kelly**

There is concern about the 3-5 percent of sediments that are contaminated, but often this concern overshadows the 95 percent of clean sediments that could be beneficially used. The USACE and USEPA are currently in the process of developing regulations addressing contaminated sediments.

**Answer: Dr. Davies**

Agrees with General Kelly. Use and disposal of the large volume of clean sediments require our attention. The draft testing manual, the "Green Book," which gives the current methodology for dealing with contaminated sediments, is available.

## **Federal Perspectives Panel**

**Jimmy Bates,  
Policy and Planning Division, USACE**

The need for long-term disposal management solutions was stressed in light of the fact that emergency dredging is still the norm rather than the exception. This is due to the present inability to establish feasible long-term disposal solutions.

An overview of the five-phase LTMS process or framework was provided. Phase I is basically a comparison of disposal needs versus available capacity. Specifically, Phase I should:

- a.* Include all foreseeable project-related disposal capacity needs including new work, project maintenance, and project beneficiary needs;
- b.* Define the operational boundaries of the study as well as needs and types of fish and wildlife restoration initiatives;
- c.* Define a minimum effective commitment of resources and funding of 10-50 years.

Phase II identifies all viable long-term management options. Detailed screening, weighing, and balancing of the engineering, economic, and environmental factors of each management option are conducted in Phase III. The preferred option is selected during Phase III. Phase IV involves

plan implementation, whereas Phase V requires periodic plan review and update.

In light of the LTMS process, there are four issues that require further attention. These are as follows:

- a.* Development of effective procedural mechanisms for implementing LTMS plans. Historically, publication of an appropriate NEPA document has not been an effective implementation tool.
- b.* The need for greater consistency in testing and other environmental evaluations of dredged material. These evaluations must be technically valid, defensible, and cost-effective.
- c.* The issue of critical resources and habitats must be addressed at the regional level. Guidance is needed in locating environmentally acceptable disposal sites and identifying beneficial use applications (e.g., habitat restoration).
- d.* Definition of appropriate and cost-effective site management and monitoring techniques. What type of monitoring data are required and how will that data be used? Geographic Information Systems (GIS's) and other data management instruments offer a great deal of potential in this area.

**Gregory Peck,  
Office of Wetland Protection, USEPA**

The 404 program is administered by USEPA and USACE. There are four fundamental provisions of the USEPA's 404 (b)(1) Guidelines which must be met prior to a decision to issue a permit.

- a.* An alternative analysis is needed to identify potential practical options to avoid or minimize adverse impacts to the aquatic ecosystem.
- b.* Applicable laws cannot be violated; e.g., Water Quality Standards, the Marine Protection, Research, and Sanctuaries Act (MPRSA), or the Endangered Species Act.
- c.* The proposed activity must not cause or contribute to significant degradation of US waters.
- d.* Impacts to the aquatic ecosystem must be minimized. Under the Guidelines, as with NEPA, mitigation must occur in a sequence, where each step must be satisfied before proceeding to the next :  
(1) avoidance (through the evaluation of off-site alternatives),  
(2) minimization; and (3) compensation (e.g., creation or restoration).

Interagency cooperation is essential for success of an LTMS plan. The LTMS process should parallel the NEPA process, although new EIS's may not necessarily be required. Federal agencies under the auspices of LTMS can greatly expedite Section 404 decision making.

**Ralph O. Morgenweck, Fish and  
Wildlife Enhancement, USFWS**

The role of the USFWS in assisting USACE in dredging projects assesses the effects of dredging and disposal and advises USACE on ways to avoid, minimize, and compensate for fish and wildlife damages. In light of these roles, the following points were stressed:

- a. USACE and USFWS personnel seem to be working more cooperatively in recent years on navigation projects and this bodes well for development of LTMS plans;
- b. Part of the reason the LTMS concept has not caught on may be that dredged material is considered a waste and not a potential resource;
- c. Dredged material has many potential uses, not the least of which is wetland creation;
- d. There may be hundreds of thousands of acres of dredged material deposits that are potentially available for beneficial uses;
- e. Various sections of the 1976, 1986, and 1990 WRDAs, and other laws and agreements, provide ample authority, but little funding, to use dredged material for habitat enhancement;
- f. The USFWS is interested in taking advantage of habitat enhancement opportunities that are compatible with dredged material disposal. However, valuable disposal sites should not be taken out of service merely because they become desirable wildlife habitats;
- g. Ecological trade-offs should be avoided, unless unproductive habitats can be exchanged for productive habitats;
- h. The key to increased funding for habitat improvements using dredged material is to ensure that Section 1135 demonstration projects are successful, well-documented, and presented to Congress and non-Federal sponsors;
- i. There have been a few notable LTMS successes and there are many more LTMS proposals and ideas awaiting USACE action; and
- j. Federal agencies need to approach habitat enhancement opportunities using dredged material with caution, especially with respect to

environmental contaminants, since many factors must be considered before proceeding.

**Timothy Keeney, Office of Ocean and Coastal Resource Management, NOAA**

Mr. Keeney discussed SAMPs within the Coastal Zone Management Act (CZMA). The SAMPs should include consideration of the following issues for dredged material disposal:

- a. Sediment testing--chemical and biological.
- b. Analyses of alternatives.
- c. Review of the capping issue.
- d. Enforcement of seasonal closure.
- e. Monitoring of the disposal site.

Coastal programs need to increase attention in the areas of enhancement, beneficial uses of dredged material, and education. Twenty-nine states have CZMA programs with Federal consistency. The CZMA must be addressed and adhered to for the management of dredged material disposal. Section 301 (CZMA) promulgates environmental enhancement and can be used in the LTMS process. The CZMA features not only include SAMPs but also consider secondary and cumulative effects of development in the coastal zone.

**John Hall, Office of Protected Resources, NMFS**

One objective of NMFS is management of the marine environment. The NMFS interacts with USACE and various port authorities on port and harbor development and channel maintenance issues. The NMFS policies include

- a. Habitat conservation, which requires cooperation between agencies and sponsors to save money, time, and habitat;
- b. Open-water disposal, which prohibits disposal of dredged material in shallow nursery areas, tidal flats, estuarine wetlands, etc.; and
- c. Disposal of materials dredged from channels, which includes beach replenishment and creation of offshore berms.

The long-term focus of the agency is restoration of habitat. There is a need for the integration of science and management technologies. To address this issue, the NOAA restoration center is being developed.

Many eroding shallow-water areas could benefit from wetlands creation. Wetlands creation in coastal Louisiana, and the proposed erosion control at Poplar Island in the Chesapeake Bay are examples of areas where this type of beneficial use of dredged material could occur. The NOAA expects to establish restoration centers to evaluate regional restoration needs. Mr. Hall mentioned that a new MOA would be in effect between NOAA and USACE (1 February 1991) that ensures close cooperation for constructing new habitats (fisheries, oyster beds, reefs, etc.) using dredged material. The LTMS process would be a good vehicle to implement the MOA. The NOAA has expanded its role in Section 7 (Endangered Species Act) consultations. The NOAA evaluates mostly the offshore/saltwater endangered species while USFWS evaluates the inland/upland endangered species. This may necessitate two reports on many coastal projects (USFWS and NOAA). Mr. Hall briefly described Coastal America, which he said would fit in with LTMS. Coastal America is a Federal initiative in the coastal zone (NOAA, USEPA, USACE, USFWS, US Geological Survey (USGS)). The areas of primary interest in Coastal America are: contaminated sediments, non-point source problems, and physical alterations (including berms and offshore bars).

### **Questions and Answers**

Question: Ron Wills, USACE

California has a lot of endangered species; (1) how do NMFS and USFWS address endangered species, and (2) is there overlap between the agencies?

Answer: R. Morgenweck

A memorandum of agreement was made several years ago. In general, fish species in salt water are under the jurisdiction of NMFS. Sea turtles are NMFS' responsibility in water and USFWS' responsibility on beach. Often agencies have to coordinate to determine responsibility, but there have been no problems in abiding by our agreement.

Question: Sally Lentz, Oceanic Society/Friends of the Earth

There has been much emphasis on the beneficial uses of sediments; however, our concern is with the small percentage, but large volume, of contaminated sediments. Ocean disposal is often the preferred management option and our organization does not find this to be a viable solution. We also question the efficacy and reliability of capping. Is decontamination being considered? Many decontamination techniques were developed under Superfund for soils; will these be used for sediments?

Answer: Dr. Davies

There is ongoing research by USACE to deal with contaminated sediments. Alternatives besides dredging are being investigated. The Superfund activities are being applied to subaqueous contaminated sediments.

Question: Bob Cortright, Oregon Department of Land Conservation and Development

Are agencies prepared to make a long-term (50-year) commitment for management of dredged material disposal? What is the appropriate time line?

Answer: R. Morgenweck

The USFWS must be prepared to make long-term commitments to make LTMS successful. There will be more considerations for site designation, but the commitment is necessary.

Answer: G. Peck

Also agrees with Morgenweck, and EPA has attempted a long-term plan before, but every agency must be prepared to make a commitment.

Question: Joseph Birgeles, Port Authority of New York/New Jersey

The ports feel they are the victim of point and non-point source polluters by having to clean up and/or deal with dredged materials which are contaminated as a result of these polluters. How is USEPA looking to deal with contaminated sediment in the future? The port is the "bad guy" because they have to address the sediment management issues.

Answer: Dr. Davies

USEPA currently has no strategy to deal with in-place contaminated material. There has been a process, however, to reduce current point sources of pollution; and a pretreatment process has been implemented by municipal dischargers. There is a stormwater management program, but they haven't been in charge of paying for or controlling non-point source(s). Non-point sources have, to date, been voluntarily controlled instead of controlled via permit, but USEPA is moving towards non-point source controls. The ports, however, are stuck with dealing with contaminants in sediments at this point and while the environmental groups focus on the 3-5 percent of sediments which are contaminated--the presumption is "all sediments are contaminated." The ports need to use the leverage that they have on people who discharge into their harbors and also need to work in public education to eliminate the problem. The ports are going to have to share these responsibilities. Historical contamination of sediments is a major issue which must involve local, Federal, state, and public organizations to either deal with it in place, or put it somewhere where it doesn't create a problem.

**Question:** Mike Chezik, US Fish and Wildlife Service

Are the ports prepared to make 50-year plans? Will this be possible for them to do?

**Answer:** Joe Birgeles, Port Authority of New York/New Jersey

Most of the port projects have been based on a 50-year plan. The ports look to LTMS to develop the means and the capital to keep operating. They feel they need LTMS in order to survive.

**Question:**

What is the goal for the environmental community and how much of a role will they have in planning LTMS?

**Answer:** Jimmy Bates

The opportunity is there for the environmental community to participate as they did for the San Francisco Bay Study.

**Answer:** Dr. Davies

There is a significant role for public involvement in LTMS. The public has been crucial in the NEP.

## **Overview of Non-Federal Perspectives Panel**

### **David Slade, Coastal State Organization**

Mr. Slade emphasized that states are full partners in the dredging process; they are involved legally and with budget issues. A central problem with the current dredging procedure is the lack of a Federal dredging act. Instead, there exists a confusing body of laws which regulates dredging activities. The legal problems emanate from budgetary problems. Although a goal of LTMS is to reduce the cost of the dredging process, increasing beneficial uses of dredged material is also a goal...a more expensive goal. One dredging law may alleviate some of the problems LTMS is facing.

### **Mark Sickles, National Association of Dredging Contractors**

The National Association of Dredging Contractors is a trade association whose members are in the business of building and maintaining America's navigation system as well as beach replenishment, underwater pipeline work, and heavy marine construction. Impediments to dredged material

disposal include the "Not in My Back Yard" (NIMBY) syndrome and the fact that disposal options involve many media, each managed by a separate Federal agency. The LTMS framework can overcome these impediments by providing a mechanism through which professionals and the community can work together in a shared decision-making process. The role of the dredging industry in the LTMS process is to provide better cost estimates. In light of this, there are five observations about future dredging costs:

- a. If increased distance to a new site is the only factor, dredging costs will not rise as much as some have predicted.
- b. There are constraints on dredging that drive up the cost and produce little environmental benefit.
- c. One mitigation measure against drastic price increases in the dredging market is increased industry efficiency and competitiveness.
- d. If a new confined site is the best disposal solution, there is no way to generalize about economic impact.
- e. Policy changes are necessary to allow USACE to consider environmentally beneficial disposal options that may be slightly more expensive.

### **Derry Bennett, American Littoral Society**

Mr. Bennett emphasized several points:

- a. Environmental groups and the general public must be involved from the beginning.
- b. The quantity of dredged material should be decreased through consideration and use of the following:
  - (1) Reduced channel size to be self-flushing;
  - (2) Reduced number of deep draft ports, i.e., use of smaller vessels;
  - (3) Consideration of pipelines instead of ships;
  - (4) Control of upstream land use to reduce erosion and sedimentation;
  - (5) Use of the size of the tributary to dictate the size of the vessel.
- c. The quality of dredged sediment must be increased with pretreatment and pollution prevention.

- d. Clarify perception of beneficial uses: Are they always beneficial?
- e. Beach Replenishment: The long-term uses of beaches must be considered when beaches are replenished; construction should not occur on filled areas.
- f. Artificial Islands: Is it beneficial to create islands while at the same time wetlands or other habitats are being filled?
- g. Wetlands: Wetlands are not being created--instead "soggy" or "wetter" lands are resulting. The benefit of created wetlands has not been established.
- h. There is a need for sediment criteria/standards. What is a "contaminated sediment"?

### **Neil Ross, International Marina Institute**

The International Marina Institute (IMI) is a nonprofit corporation that conducts marina/boatyard research and serves as an education and information clearinghouse. The goal of the IMI is to help marinas move toward better environmental compatibility. To this end, there are several recommendations for improved dredged material planning.

- a. Reference to dredged material as "spoils" to be "dumped" has negative implications; therefore, the current language needs to be refined.
- b. There needs to be a single numeric national standard for sediment quality.
- c. Dredging guidelines should be developed.
- d. Federal disposal sites should be designated for use by marinas.
- e. Beneficial uses need to be promoted.
- f. The environmental review process is excessive and needs to be streamlined.

### **Questions and answers**

Question: Rebecca Leighton, Lake Michigan Federation

On the Great Lakes (Lake Michigan) there is a proliferation of marinas as well as extensive pressure for development of marinas due to public demand. In the context of LTMS, how can we choose to limit marinas? Who will make the decisions and how will the choices be made?

**Answer: Neil Ross**

Michigan won't allow marinas to be built out into the lake, but instead, marinas must be built into the land. The public should be involved as far as how it wants to use its shores. In some states land-use planning is critical to balance development and preservation. Marinas do not want *more* marinas necessarily. Supply and demand dictates marina development. This can be incorporated into long-term environmental impact and land-use plans. The marinas believe in "clustering" rather than linear proliferation of marinas. This not only minimizes environmental impacts, but suits the purpose of the marina.

**Question: Paul Kemp, Coalition to Restore Coastal Louisiana**

If it all comes down to dollars, what are the options? Louisiana requested \$17 million worth of beneficial use and received none. There is a lot of talk about beneficial use, but no follow-through. Even if the state is willing to put up the dollars, there is nothing being done by the Federal government. Is new legislation needed? What is the problem?

**Answer: David Slade**

There are no easy answers. Budget problems are critical. Revolving funds and fees can be used, for instance, to pay for beach nourishment. There are land and water conservation funds with \$1 billion in them which may be available for "revolving funds" or "revolving loans" where the principal never drops down and is used in the field and maintained by repayments.

**Comment:** Fishing boats and other ships that use the channels should pay for dredging, not the USACE.

**J. Birgeles:** The port does pay for dredging. This year the ports are paying \$500 million for USACE maintenance dredging projects. We pay 35 percent of all of new activities plus testing costs.

## **Non-Federal Perspectives**

### **Joseph J. Birgeles, Port Authority of New York/New Jersey**

The American Association of Port Authorities (AAPA) is interested in protecting the environment and improving water quality. They are also responsible for the economic well-being of the ports. It is important that the ports be involved in LTMS. The ports look to LTMS to alleviate the regulatory gridlock they currently experience. They anticipate LTMS will get away from the project-by-project approach, which is neither beneficial to them or in the best interest of the environment. The AAPA bears the cost

of testing and planning for dredged material management. Specific recommendations regarding dredging and LTMS are:

- a. All sediment types must be accommodated.
- b. Ocean disposal is currently the most appropriate option for the Port of New York/New Jersey.
- c. Some sediments are best left in place.
- d. There currently is a \$10-million, 10-year disposal plan for the Port Authority of New York/New Jersey.

### **Peter deFur, Environmental Defense Fund EDF**

The current method of dredged material management was established at a time when environmental awareness and knowledge were just developing. Thus, this method must be revised to effectively address current environmental concerns. Further, in order to be successful this plan must include all of the diverse and sometimes disparate interests of environmental/citizen groups. The EDF recommendations for LTMS plan development are as follows.

- a. Do not try to balance environmental and economic factors. The most effective long-term solutions will satisfy both economic and environmental needs.
- b. Include all interested parties from project initiation.
- c. Establish local and regional planning groups.
- d. Address sources of sediments on a watershed basis.
- e. In considering dredged material as a resource, it must be given the same marketing and economic considerations as other resources, such as stone or gravel.
- f. Set up regional, national, and international conferences to disseminate information and exchange expertise.
- g. Establish clear goals to protect habitats and maintain navigation.
- h. The goals of LTMS should be maintenance of navigation and simultaneous environmental restoration with full participation of all parties. Mr. deFur applauded the change in approach to dredged material disposal management from "command and control" (top down) to a cooperative partnership. However, the planning process is too long and should be shortened. The LTMS has appeal because it should allow for economies of time with proper coordination.

Mr. deFur called for elimination of all ocean disposal of dredged material on the rationale that it is a valuable resource, is derived from land-based sources (with few exceptions), and for the most part has a beneficial use. Also, he suggested that the problems of sediment contamination be handled at the source by watershed management and within the National Estuary Program.

**David Carroll, Chesapeake Bay  
Coordinator, State of Maryland**

The current dredged material planning procedures are very disjointed, i.e., three USACE Districts, three states, three port administrations. Maryland is in the process of adopting formal state policies for dredged material resource recovery. These policies are:

- a. Increased partnership.
- b. Prioritizing beneficial uses.
- c. Improving public perception.
- d. Incorporating monitoring into the state program.

Problems which remain to be resolved are (a) the sediment classification issue (how clean is clean?) and (b) the applicability of cost/benefit analyses, which often do not produce the best solution. There is no single or easy solution for these issues. The State of Maryland regards LTMS as a management strategy for "recovered resources" (formerly known as dredged material). This new approach to dredged material requires a change in attitude to advocate dredged material as a resource in beach replenishment and wetlands creation. Public perception must be changed to a positive image for positive action.

**Questions and answers**

Question: John Seyffert, EA Engineering, Science, and Technology, Inc.

Are Federal agencies ready to implement programs such as Maryland's?

Answer:

The Federal agencies have been strong advocates of such approaches. USFWS, USEPA, and others realize the bind they are in and that the traditional approaches are not working. A partnership will be necessary. The biggest task, however, will be to involve the general public.

Question: Carol Coch, USACE

The North Atlantic Division is also involved in the Chesapeake Bay program, which wants to decrease the amount of sediment coming into the area. A study was performed to determine what areas were being eroded. Several of these areas could not be remediated because of lack of public access and the local people did not want it. How can we address these issues (problems affecting the long coastline areas in which USACE and USFWS do not have jurisdiction) within LTMS?

Answer: This will be one of the challenges of the LTMS task force. The reasons private property owners refuse to deal with such issues must be addressed, investigated, and solutions must be found.

Peter deFur: There are some decisions which must be made as to the uses of coastline areas. Everything cannot be controlled, so perhaps some of the coastline areas should be identified as not controllable which would allow efforts to be concentrated in areas where the problem can be addressed. If you think in terms of managing the watershed and not one specific problem area it is easier to put such issues into perspective and target the real problems.

Question:

How are shipping depths determined? Can ships be built with less draft?

Answer: Joseph Birgeles

Shipping depths are determined by ports around the world and by ship-owners who build ships on a scale of economics. Ports respond by dredging navigational channels to support these ships. If a port cannot support the state-of-the-art ship, this is translated into big money losses. Most ports continue dredging to meet worldwide competition. It is cheaper to build a ship deeper and shorter than longer, less deep, and wide bodied. Design of vessels should be investigated and regulated. There is a place for shallow-draft ports for general cargo.

Question: Ellen Johnck, San Francisco Bay Planning Coalition

The San Francisco Bay Planning Coalition has been very active in advocating and facilitating a "structure" which is carrying a long-term management process of dredged material. The setup is there, but is LTMS the panacea? Are the problems associated with dredged material management political or environmental? The environmental groups have participated from the onset of the Coalition, but after they miss several meetings, they become less involved. The environmental groups must continue participation because if not, we feel they may come in at the end and file a lawsuit because they missed out on the "educational" process of the meetings. If this is really an environmental problem, why aren't they there?

Answer: P. deFur

Environmental people often serve on several committees and must choose which to attend. One possible solution is to have substitutes or alternatives, which would ensure their continued representation.

Rebecca Leighton: There are many reasons environmental representatives cannot attend meetings. One key issue is "trust" and the concern about whether one will have an impact on decision-making or if this is simply a time-consuming venture. Most environmental groups do not have many paid staff members and they cannot attend useless meetings. Meetings must be well-organized with a purpose and an objective to get "real" work done. We will also not come if we are "token" members of a minority group to simply use the name of the group to say we support the end result when, in fact, we do not. Meeting times would also be better scheduled on evenings and weekends so volunteers can attend.

## **Overview of Dredged Material Uses**

### **David Mathis, Office of Environmental Policy, USACE**

Beneficial use applications of dredged material have historically focused on "traditional engineering applications" (e.g., fill for roadbeds, airports, etc., construction aggregate, beach nourishment, and erosion control). However, through the efforts of more recent research and development programs, the beneficial use concept has been broadened substantially to include many habitat development/restoration activities. Further, through recent shifts in public/political priorities and legislative actions, Federal interest and activities in sediment management have been expanded in the area of beneficial use applications. In light of these changes, the following four items were briefly discussed.

- a. An overview of beneficial use applications for dredged material was presented emphasizing habitat restoration, beach nourishment, and commercial use as construction aggregate. There are numerous examples of beneficial uses and good summary documents are available.
- b. A review of legislative history and institutional restrictions on beneficial use applications were discussed. Recent legislative changes include:
  - (1) §933 (WRDA 81) Beach nourishment
  - (2) §304 (WRDA 90) Habitat restoration projects
  - (3) §306 (WRDA 90) Identifies the primary mission of USACE as environmental protection

- (4) §307 (WRDA 90) Goal of no net loss of wetlands
- (5) §307a (WRDA 90) Authorizes USACE to conduct environmental restoration/enhancement projects.
- c. An overview of procedural and logistical constraints and considerations that must be carefully addressed was discussed. Constraints include funding issues (USACE is required to use the least costly, environmentally acceptable method), site-specific constraints and real estate considerations (zoning and land ownership issues).
- d. The concept of reusable upland disposal sites and alternatives to direct placement of dredged sediment on beaches for renourishment and erosion control purposes was reviewed.

## **Approaches to Sediment Management**

### **Kirk Stark, Regulatory Branch, USACE**

The USACE regulates dredging in navigable waters, disposal of dredged material in US waters, and disposal of fill material resulting from construction activities into US waters. The USACE issues two types of permits, general and individual. However, in light of issuing 14,000 individual permits per year, the regulatory process is reactive, not proactive.

In an effort to take a proactive approach to dredged material management, there are a number of technical and managerial instruments available. The Geographic Information System (GIS) is a computer-based management tool which provides access to information on parameters of interest for a geographic area of interest. The GIS can be an effective tool when land-use planning becomes part of watershed management to identify potential disposal site locations, as well as potential habitat enhancement areas. Special Area Management Plans (SAMPs) are another tool. The USACE believes that SAMPs can work both in coastal and inland aquatic areas, and encourages their use whenever possible. The USACE believes, however, that certain conditions must be met before undertaking a costly SAMP. These conditions are:

- a. The area should be environmentally sensitive and under strong development pressure.
- b. There should be a sponsoring local agency to ensure that the plan fully reflects local needs and interests.
- c. There should be full public involvement throughout the process.

- d. All parties must be willing to conclude the process with definitive regulatory products at the outset.

The first phase of a SAMP is a resource inventory, which is a collection and review of data prior to dredging and/or mitigation banking. The GIS could be used in this phase. The SAMP is a process through which aquatic functions and values are evaluated and areas of low, medium, and high or unique environmental value are identified. The USACE has been involved in numerous SAMP efforts, including a plan developed by the Alaska District for the City of Anchorage. Anchorage is subject to rapid and continued development.

A third tool is Advanced Identification (ADID). The process is similar to SAMP except ADID does not require strong local support and results in designation of sites as suitable or unsuitable for construction. This only serves as a template for Federal regulatory decision making--not definitive regulatory products.

The USACE is advocating the use of both SAMPs and ADID in appropriate circumstances. The USACE believes the proactive regulatory action is beneficial to the environment, development interests, and the general public. The advantage of SAMPs and ADID are that both environmental and land-use information are evaluated on a broad geographic scale, which allows for comprehensive evaluation of dredged material disposal sites. Further, opportunities for wetland creation and habitat enhancement can be identified.

A problem encountered with SAMPs or ADID is the "taking" issue. When lands are determined to be inappropriate for development under a SAMP or ADID, the owners may sue due to a loss in value because they can no longer use or sell land for industrial or other purposes. Another disadvantage is that for a large geographic area which may cross municipal lines, there is increased potential for conflicting interest. Further, with large geographic areas, it may be too logistically complicated to obtain a reasonable regulatory return on the resource investment.

### **Greg Peck, Regulatory Activities Division, USEPA**

Under Section 230.80 of the Clean Water Act Section 404(b)(1) Guidelines, USEPA and the Section 404 permitting authority (either USACE or an approved State agency), act jointly to identify wetlands and other waters of the United States as possible future disposal sites and areas generally unsuitable for disposal site specification for all or certain types of discharge. Use of ADID in the planning process allows USEPA, the permitting authority, and the state to collect information on the natural values of wetlands. This information is evaluated by the agencies to determine which wetlands in the study area are of ecologically high value and should be protected, and in some cases, which wetlands are of low value and could serve as potential future disposal sites. The results of the study are

published and made available to the public and the regulated community. The value of ADID is that it provides information on the values of wetlands in the study area, and identifies the wetland areas that should be protected and could be modified. Maps are produced which identify where wetlands are located, and which wetlands are generally suitable or unsuitable as disposal sites. The information produced by the ADID is used by USEPA and the permit authority when reviewing a Section 404 permit application. ADID provides the regulated community with an indication of whether a Section 404 permit is likely to be received. ADID results should discourage areas identified as high value wetlands from being filled.

Immediate results of the ADID study are informational and advisory, not regulatory. An application for a Section 404 permit for sites that have been identified as generally unsuitable for disposal site specification may therefore still be submitted under this provision. Conversely, individuals applying for permits in areas identified as possible future disposal sites may, in some circumstances, not receive a permit. The USEPA Regional Offices and the permitting authority have considerable flexibility in their administration of this program. This program is largely intended as a practical means to provide advance information on potential permit issues that might arise under Section 404. However, the results of a Section 230.80 study may be used to support a range of regulatory actions, such as a Section 404(c) action or a General Permit. The ADID studies are potentially quite useful in providing information relevant to LTMS decision making.

### **Fred Calder, Florida Department of Environmental Regulation (DER)**

In 1984, following legislation backed by navigation interests, DER initiated a process for issuing 25-year maintenance dredging permits and the State began a program to fund disposal site acquisition. One purpose of these changes was to avoid piecemeal handling of dredging decisions, and the success of these approaches, to a large degree, depended on viable long-term disposal and site management plans for Florida's major commercial navigation systems.

The Florida long-term permit process consists of two phases leading to a permit length of up to 25 years. The 25-year period seemed a reasonable horizon based on confidence in shoaling predictions. Under Phase 1, applicants can carry out maintenance dredging for up to 5 years, during which they conduct testing and develop a long-term disposal plan as a requisite for determining the overall permit length and entering Phase 2. Phase 2 frames a predictable operational scenario where regulatory requirements apply primarily to monitoring and record keeping and new permit actions occur only when planned capacity is inadequate or violations are detected.

Presently, only one port, the Tampa Port Authority, has entered the long-term permit process, and it is nearing completion of Phase 1. Yet, even here the vision for long-term permits falls short. The USACE did not join as a party to the permit, consequently in Tampa Bay there is no unified disposal strategy that addresses Federal channel maintenance needs.

Clearly, state regulatory and funding measures have not been sufficient incentives for identification of long-term disposal sites and active site management. The first lesson learned was that one agency -- even with the leverage of funds, technical assistance, regulation, and friendly persuasion -- cannot alone overcome obstacles to planning and management follow-through. The DER went about as far as a regulatory agency could go on its own in establishing a statewide process and projecting material handling requirements for larger ports. Three to four ports could have begun dredged material master planning if Federal agencies were prepared to be fully participating partners.

Long-term disposal in Florida involves multi-user sites. Full cooperative commitments between port authorities, private terminals, and USACE are essential to address cost-sharing, liability, and engineering requirements. For example, state funds for disposal site acquisition were diverted to non-navigational needs because of disagreements over disposal site ownership.

The DER established the long-term permit program so that one permit could encompass the navigation system. This was done to accommodate the multi-user and cooperative requirements of system-wide maintenance. This approach evoked considerable discussion among private and public navigational interests regarding responsibilities for planning, cost-sharing, and site management.

Two points emerged during these discussions. First, affected parties have to expand responsibilities to address long-term dredged material disposal needs. New actions are needed, which were not contemplated in project authorizations or original local sponsor agreements. Secondly, new financing arrangements are needed to support plan development, ongoing site management, and possibly, site acquisition.

It is very difficult in Florida to develop sustained commitment for long-range disposal planning, even where the economic and environmental benefits seem so clear. Regional (state-Federal) teamwork is essential to start the process, gain full institutional support, and assume responsibility for results.

**Timothy Beatley, University of Virginia,  
Department of Urban and Environmental Planning**

Land-use planning is defined as a rational process for determining the appropriate pattern and distribution of uses and activities. Through

land-use planning, the type, location, quality, intensity, and pace of development and growth are influenced. Land-use planning is conducted at all levels of society from the State to individual site/parcel level and is influenced by a number of Federal regulations including the CZMA, Section 404 Wetlands Regulation, Endangered Species Act, etc. Common instruments and techniques of land-use plan implementation include development regulations (zoning), public investment decisions (capital improvements programs), land and property acquisitions, taxation, and information dissemination. Factors influencing land-use planning are ethics, politics, economics, and legal/constitutional constraints. There are six basic steps in the land-use planning process:

- a. Analysis of demographic and land-use trends; inventory of natural conditions and features.
- b. Identification of community issues, problems, goals, and objectives.
- c. Consideration of alternative growth scenarios.
- d. Selection of community design--determination of appropriate use and density patterns.
- e. Preparing or modifying existing implementation programs.
- f. Periodic evaluation and update.

**William Millhouser, Office of Ocean and  
Coastal Resource Management, National  
Oceanic and Atmospheric Administration**

The CZMA encourages the states to manage their coastal resources through resource protection and resource development. Twenty-nine states have Federally approved Coastal Zone Management (CZM) programs. The Federal government offers funding as an incentive to develop and implement these management plans. It is important, however, that state CZM plans remain consistent with other Federal guidelines. Consistency in Federal activities, perhaps, can encourage greater interagency coordination.

The CZM proponents support SAMPs. Local CZM plans can be used to solve port plans, local land-use uncertainties, wetland regulation, mitigation requirements, and state regulatory programs. Long-term maintenance dredging management programs will fit into CZM programs.

**Kenneth Kamlet, Ph.D., A.T. Kearney, Inc.**

A summary of the report "Contaminated Marine Sediments--Assessment and Remediation" from the National Academy Marine Board was presented.

In general, contaminated sediments are widespread and do pose potential human health and aquatic life risks in some places. Many sediments are contaminated with persistent pollutants, which may bioaccumulate in fish or shellfish tissue; however, the available data are inadequate to prioritize sediments for remedial action. Part of the problem is due to the lack of an acceptable definition of "contamination" or "how clean is clean." The Hazard Ranking System gives little or no weight to sediment-mediated contamination of edible seafood. In contrast to upland Superfund sites which involve relatively small quantities of highly contaminated soils, sediment contamination problems usually involve larger volumes of less contaminated material, thus requiring alternative management strategies. Existing technologies are adequate, however, to manage a good portion of these sediments. Constraints to remediation are the difficulty in obtaining specialized dredging equipment and the realization that although capping may be a useful option, it has limitations. Recommendations for future work are:

- a. Initiate a comprehensive national program to delineate areas with contaminated sediment.
- b. Establish an interagency technical committee to evaluate existing and emerging data on sediment contamination.
- c. Develop a tiered strategy to permit rapid remedial response when necessary (e.g., high erosion rates).
- d. Determine if current dredged material management strategies are appropriate for managing severely contaminated sediments.
- e. Establish an aggressive technology and information transfer mechanism.
- f. Look for opportunities to piggyback contaminated sediment remediation activities with existing navigational dredging activities.
- g. Encourage research and development of specialized equipment for contaminated sediment remediation.
- h. Eliminate clearly infeasible options early in the remediation feasibility study process.

## **Norman Francingues, USAEWES, USACE**

Contaminated sediments are frequently encountered in marine and US waters. The potentially large volumes of sediment requiring special management and remediation limit the feasible engineering options to in-place controls and/or removal with contaminant immobilization or contaminant degradation. Environmental engineering options for managing contaminated sediments are either non-removal or removal.

### **Non-Removal Option Components:**

- a.* No action
- b.* Restricted use
- c.* Contaminant immobilization
- d.* *In situ* treatment

### **Removal Option Components:**

- a.* Excavation of sediments
- b.* Transport of dredged material
- c.* Pretreatment of dredged material
- d.* Treatment of dredged material
- e.* Disposal of dredged material
- f.* Water (effluent and leachate) treatment

When evaluating removal alternative technologies, several factors need to be considered, including the state of technology, availability, effectiveness, implementability, cost, and potential impacts at the alternative placement site. The available technology options for removal or non-removal reviewed for this presentation were assessed for their effectiveness, implementability, and cost, along with other considerations such as whether they have been applied to dredged material and the status of availability. Approximately 30 technology categories and over 200 process options were reviewed as a basis for this presentation. The conclusions based on this extensive review are as follows.

- a.* Many processes and technologies are potentially available for contaminated sediment.
- b.* Few processes have been actually applied on a field scale outside navigation dredging operations.

- c. Most testing of treatment technologies has been done on a bench scale with limited pilot scale applications.
- d. The database for design of contaminated sediment management operations is primarily limited to navigation dredging and disposal operations.
- e. Further testing and pilot demonstrations are needed to advance the technology data gaps to incorporate sediment remediation strategies.
- f. Costs for managing contaminated sediments in large and possibly even small volumes will be substantially (potentially orders of magnitude) more than normal dredging operations.

### **Barry Burgan, USEPA**

Section 103 of the Marine Protection, Research and Sanctuaries Act of 1972 (MPRSA) and Section 404 of the Clean Water Act (CWA) both provide regulations governing the disposal of dredged material and assign specific responsibilities to both USEPA and USACE. The regulatory jurisdiction for dredged material disposal options under MPRSA include ocean waters and beach nourishment, whereas the CWA covers estuaries, rivers, lakes, wetland displacement/creation, creation of nearshore islands, beach nourishment, and upland disposal that results in discharges to navigable waters. Under MPRSA and CWA guidance, a decision-making framework has been established and involves the following steps.

- a. Identify potential disposal environments.
- b. Identify environmental concerns; conduct initial characterization of dredged material.
- c. Consider public comments.
- d. Characterize and test dredged material (e.g., Green Book testing).
- e. Assess test results.
- f. Determine feasibility of implementing the optimal disposal option including more complete cost-benefit assessment. Determine compliance with 103/404 criteria.
- g. Implement final decisions, with restrictions, as appropriate.

### **Sarah Clark, Environmental Defense Fund**

The LTMS is not currently being used in the New York District. Standards for sediments are needed; however, a clear definition or

interpretation of "contaminated sediments" needs to be made first. Decontamination needs to become part of contaminated sediment management. A hierarchical system of various disposal options should be constructed for these sediments, which would weigh environmental and cost issues. To date, public involvement has been minimal. Ways to increase public education, and consequently public involvement, should be investigated. Preventative measures should also be taken, i.e., decrease sedimentation and decrease contamination. Environmental protection needs to play a significant role in the LTMS process. Environmental groups should have a substantive role in the decision-making process. The successful implementation of LTMS depends on:

- a. Using monitoring data to classify sediments for LTMS.
- b. Development of long-term goals with the public.
- c. Preventing the wasting of funds from evaluation of non-viable options (even though NEPA requires consideration of all options).
- d. Setting milestones for planning.
- e. Maintaining flexible plans -- particularly long-term plans.

### **Questions and answers**

Question: William Fehring, Greiner, Inc.

There has been much discussion and encouragement concerning the beneficial uses of dredged material. Everyone looks to beneficial uses as solutions to the "problem," but only 10 percent of dredged material is used (or can be used) beneficially. What about the other 90 percent? A disposal option must be discussed.

Answer: Dave Mathis

The USACE is trying to improve its "batting average" as far as beneficial uses go. There are major logistical constraints but in some cases basic technology advancement can produce results. For example, creation of underwater berms to supplement beach nourishment is a feasible option to use large volumes of material in a constructive fashion (e.g., Mobile Harbor). Material must be perceived more constructively. Also, equipment constraints are very expensive to overcome, and deter beneficial uses of dredged material.

The USACE will be looking at the concept of reusable upland disposal sites. Extreme real estate costs will require upland sites in the coastal zone to be reusable. The aggregate industry is looking at mobile processing plants which will make this option more feasible.

With innovative practices (berms, etc.), the beneficial use of dredged material will increase, but it will still be considerably low (less than 50 percent of the overall volume).

Question: Rebecca Leighton, Great Lakes Foundation

Several states have tried to set more strict standards than the Federal standards or USACE standards, yet USACE has the option to withhold funding for one of their projects and not pay for that extra level of protection that the state requires. This is not a cooperative position. How will LTMS get around similar problems, especially if interagency cooperation is such a central theme?

Answer: Dave Mathis

Part of the problem is the different objectives, priorities, and/or missions of each agency. Congress is currently reviewing some of the traditional ways USACE operates, particularly in the area of beneficial uses. Congress is looking for ways to broaden USACE horizons and put more flexibility into the process. Congress also wants USACE involved in other areas, such as contaminated sediment cleanup. There has been no intentional lack of cooperation. In many cases it has been a lack of authority and funding. The USACE is currently working with a number of other agencies on such issues. In terms of LTMS, an evolving process will determine how these pieces will fall together.

Question: Brett Hulsey, Sierra Club

What do you think of the five draft sediment criteria USEPA is introducing next summer? What chemicals should USEPA look at next? How will the criteria process fit into LTMS?

Answer: Ken Kamlet

Rather than talk about specific chemicals that should or should not be addressed as part of the criteria, I would like to respond more generally to the real issue you have raised and that is the use of the bioassay-oriented approach versus the new sediment criteria approach and how these two approaches will fit into long-term planning programs. The bioassay approach has been fundamental to the evaluation of dredged material disposal in the ocean and the inland waters. How then will the "miracle" sediment criteria fit into this evaluation process? Which methodology will prevail? The USEPA and other environmental regulators are pressing for the development of sediment criteria, while USACE and dredging interest groups are supporting the use of effects-based criteria because they are more biologically significant and have a lengthy track record. There is value in both approaches. The sediment quality criteria can and do

encompass bioassay-based approaches, and the two are not mutually exclusive. One of the values of sediment quality criteria is that they address point source inputs into waterways that result from sediment contamination in the first place. Criteria will help to prevent the initial contamination from the discharge sources.

For navigation projects, on the other hand, it makes sense to continue applying the effects-based criteria. With a remediation project under Superfund or otherwise where remediation is the driving force, you would want to use criteria set up to define remediation targets. The sediment criteria are set up to address environmental considerations. Therefore, there is value with both concepts.

**Question:** Brett Hulsey, Sierra Club

How will this long-term program account for advancements in science? Fifty years is a long time. How will the economics of the project reflect advancing science and shifting priorities over a 50-year period?

**Answer:** Dave Mathis

Phases 4 and 5 of the LTMS process address this issue. Updating LTMS plans is an ongoing process.

**Question:** Tom Wall, USEPA

How will "moving targets" in toxicity testing affect long-term planning? For example, the current Green Book (1977) uses clams or worms as target species in acute tests. The new Green Book (1991) adds amphipods to acute toxicity testing measurements for testing dredged materials. The preliminary indications from USEPA are that the amphipod is far more sensitive and will identify more dredged material as unacceptable than previous testing procedures. The USACE is currently testing polychaetes in chronic tests. When will these chronic tests be added to the testing manuals and how will this affect LTMS?

**Answer:** Barry Burgan

The Green Book is a dynamic document in a three-ring binder. As tests are developed they will be incorporated into the document.

Sarah Clark: The regulations to determine what is suitable for ocean disposal are also being reconsidered and re-proposed in another year.

## Case Studies

### **Environmental enhancement plan for the Ports of Philadelphia and Camden, William Mulr, USEPA**

During the late 1970s and early 1980s port development was on a tremendous upswing not seen since the Second World War. Port expansion, including channel deepening, construction of new terminals, and upgrading of existing facilities were deemed vital to the health of the ports. At the same time there was a new effort to protect, restore, and enhance the quality of the aquatic environment. With passage of the Clean Water Act of 1977, USEPA was given a lead role in the development of new criteria for environmental protection.

Region III of USEPA encompasses several major US ports including Philadelphia, Camden, Wilmington, Baltimore, and the ports of Hampton Roads. During this period, USEPA was involved with the review of numerous port projects especially those requiring the fill of aquatic habitats including wetlands, mud flats and shallow water, and open-water areas. During this period, many rivers and harbors in this country were beginning to see the effects of almost 10 years of water quality enhancement due in part to the tremendous development of sewage and industrial treatment.

Working with the Port of Philadelphia, USACE, and other resource agencies, USEPA proposed to develop an enhancement plan along the Delaware River that would assist not only in the processing of USACE permits where dredge and fill were required, but would improve and enhance aquatic habitats. The plan provided advanced identification of sites (enhancement sites) along the Delaware River to compensate for habitat lost from dredging and disposal. Unlike previous advanced identification projects, this project was based on a ranking system to determine how to best enhance the environment.

**Study approach.** The study area encompassed the Delaware River and its banks and tributaries within 1/2 mile<sup>1</sup> of the New Jersey and Pennsylvania shorelines. The study area extended from the Pennsylvania/Delaware state border at river mile 79 north to just above Burlington Island at river mile 120 for a total of approximately 41 miles. For study purposes, the area was subdivided into nine segments.

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<sup>1</sup> A table of factors for converting non-SI units of measurement to SI (metric) units is presented on page ix.

The study approach compiled a detailed assessment of the Delaware River including baseline environmental information for evaluating conditions relating to: aquatic habitat; fish populations; water quality; waterway/channel characteristics that impact aquatic ecology, and relevant substrate characteristics. This information was then used to:

- a. Provide a basis for the identification of the strong and weak elements of aquatic systems.
- b. Evaluate the general state of existing aquatic habitat diversity and quality.
- c. Identify and substantiate guidance parameters for the establishment of aquatic and shoreline habitats.
- d. Evaluate the best available site-specific environmental data that could be used both in determining suitability and site plan design for enhancement projects.

**Selection of enhancement sites.** The major goal of the enhancement plan was to identify the most viable enhancement sites within the study area. Seven potential enhancement activities were initially prescribed to be emphasized. Over 110 potential sites were identified in the beginning on the basis of aerial photographs and known environmental characteristics that were conducive to implementing and maintaining an enhancement activity. Further, more detailed study of each site included field visits, and evaluation of site characteristics by each member of the Urban Waterfront Action Group Technical Committee. Sites unsuitable for enhancement were eliminated from the inventory at the end of each review step. Preliminary site design and cost estimates were then developed for each location.

The following enhancement types were emphasized in the study:

- a. Creation of new wetlands from uplands.
- b. Expansion of previously existing wetlands.
- c. Restoration of previously existing tidal wetlands.
- d. Creation of shallows.
- e. Creation of reef structure/aquatic habitat.

**Environmental enhancement management plan.** Management of a newly developed enhancement project was an important consideration when determining real mitigation value. If the increase in resource productive capacity created at a particular location cannot be ensured over time then its value will diminish. Public or private ownership status alone will not provide a secure enough basis to characterize whether an

enhancement site will retain the projected level of increased capacity. In general, both types of ownership exhibit practical constraints when it comes to management needs.

Private ownership of land brings to bear the economic forces of best use. In some cases this may not be compatible with resource productivity brought about from environmental enhancement. Even though legal restrictions protect natural resources, on-site and off-site land use may conflict with and therefore severely constrain the viability of an enhancement project.

In order to effectively manage and plan for optimum environmental conditions in the study area, a mitigation strategy was developed. The following is a brief outline of the strategy developed for the plan:

- a. Establishment of wildlife and habitat objectives and priorities on a regional and sub-regional basis.
- b. Adoption of a quantitative method for measuring losses and gains based on an estimated baseline level of wildlife and habitat resources.
- c. Development of alternative scenarios using loss prevention, mitigation, and enhancement as a combined strategy to obtain wildlife and habitat objectives.
- d. Adoption of and securing funding for a mechanism that not only evaluates progress towards study objectives, but allows for modification of appropriate alternative scenarios as a result of changing baseline conditions.

**Enhancement site ranking factors.** The potential success of the proposed plan depended on the development of a ranking system. The enhancement site ranking system was designed to give a comparative grade based on suitability and resource value to potential enhancement sites along the Delaware River. Specific criteria were developed to evaluate important physical, socioeconomic, and environmental characteristics of each site. The major reason for ranking every site on one scale was that site productivity, importance, and potential usefulness could directly be compared. Another purpose of the ranking system was to identify the five best sites that could then be studied further in terms of conceptual engineering.

The major objectives of the ranking system were to:

- a. Show preference for sites that were needed based on relative scarcity by type and preference for areas where environmental degradation was highest.
- b. Rank sites in accordance with regulatory agencies' preference.

- c. Rank sites on the basis of their relative feasibility for implementation and survival value.

After a preliminary assessment was made of each site, the ranking factors were applied and evaluated. At the end of the process, five sites were selected for preliminary engineering assessment. The engineering assessment was designed to provide the applicant with detailed information on the extent and value of the habitat created and the approximate cost of implementation.

Shortly after completion of the plan in 1983, port development took a drastic downturn nationwide. As a result, the plan was never fully successful. However, the merits of the plan warrant consideration for future attempts to marry port development with improved overall environmental enhancement.

Question: Shannon Cunniff, USEPA

What do you know about creation of artificial reefs and their success?

Answer:

There have only been a few such projects to date. One was in California and the results only came out this year. There has not been a chance to thoroughly review it; however, preliminary indications are that it was a success. The major concern was being able to actually quantify the mitigation in relationship to the loss in terms of the fill. This gets back to the question we are placing to the enhancement program. We do not have quantitative measures to be able to compare the fill with the beneficial use of shallows versus wetlands versus reef. Nationwide, that is the status of the reef mitigation idea.

Question: Steve Chessser, USACE

Early on, you did not credit this program as being successful and if that is the case, why and what lessons can we learn?

Answer:

The reason this project was developed was due to the tremendous surge in port development related to coal terminals and energy-saving facilities in 1979. Originally, this was called an environmental enhancement plan both for port development and for energy siting facilities; however, between the time we started the project and the time we finished it in 1983, port enhancement went "bust" in Philadelphia and we no longer had the demand for new terminals. Just prior to that, we had 25 proposals to site new facilities for coal terminals. Not all were built and a number of the ones built actually went bankrupt. Therefore, there was no longer a need in the Delaware System for any major port development by the time this plan went into being. It is now coming back a little, but the need will not

be the same. The "concept" was okay, it was the "need" that changed. Our purpose was to tie the need with long-term enhancement.

Question: Dave Mathis, USACE

I agree on your broader systems perspective not only in planning and setting priorities for beneficial uses, but in mitigation and environmental engineering issues as well. Hopefully, it's much broader in scope than just wetlands. We are looking at a wide array of critical resources. You mentioned the estuary program. What is the best avenue to pursue this? Is it LTMS, or perhaps the estuary program itself? How do we get this type of information to help manage our programs?

Answer:

I don't believe that LTMS is the best avenue. The estuary programs are a fantastic avenue because they already have the "in-place" mechanism for communication down to the grass roots, public level. The estuary program, as well as the Great Lakes and Chesapeake Bay programs, could be the driving factor. I suggest that LTMS become a standing committee within each estuary program.

In over half of the estuary programs to date (including the Chesapeake Bay Program, which is a multi-million-dollar program), dredging has not been identified as one of the major factors in the estuary area. This is a critical problem. We need to quit thinking just in terms of wetlands, but in the broader context of all enhancement (wetlands, shallows, islands, etc.).

### **Puget Sound Dredged Disposal Analysis (PSDDA) Frank Urabeck, USACE**

The Puget Sound dredged disposal analysis (PSDDA) was a partnership effort of USACE, USEPA, Washington Department of Natural Resources (DNR), Washington Department of Ecology, NMFS, state fish and wildlife agencies, numerous environmental groups, Washington Public Ports Association, individual ports, Indian tribes (due to treaty rights), and private citizens.

The study focused on "clean" material because initially that was the major concern. There was concern, however, of whether sediment management practices had been sufficient to ensure that clean material was being discharged in the water, as well as concern for disposal sites themselves. The study area was from Olympia to Canada. Overall, Puget Sound is clean; however, in certain areas where development has occurred over time, there are contaminants in the sediments from both point and non-point source dischargers. Concern over the well-being of the Sound initiated the interest, which ultimately resulted in this study.

The scope of the study involved aquatic disposal of clean dredged material. The study did aim to identify what was clean and what was contaminated. The contaminated sediments were dealt with independently through an Environmental Impact Statement (EIS). Because it was felt this was a local land-use issue, site designation for disposal of contaminated sediments was not in the scope of this study.

The study took 4.5 years, cost \$4.5 million, and was a two-phased study. The first phase addressed the area with the bulk of the dredging needs (central Puget Sound area), and the second phase dealt with the balance of Puget Sound. The overall goal of the program was to develop an environmentally safe, publicly acceptable, dredged material disposal program. To this end, communication and public involvement were key ingredients. Economics was also an issue which was weighted, balanced, and incorporated into the EIS. The three study objectives were to:

- a. Identify acceptable open-water disposal sites.
- b. Develop acceptable disposal evaluation procedures.
- c. Develop (1) plans for the long-term management of these sites, and (2) evaluation procedures to determine material suitable for ocean disposal. (Note: this material still must go through the full 404(1)(b) evaluation.) Material was also considered for beneficial uses.

The three objectives were reflected with three different work groups (chaired by USACE and DNR), and included representations from the Federal and state agencies, environmental groups, ports, etc. Inclusion of these groups in the decision-making process was a key factor in the success of the program.

There was also a policy review committee, which consisted of the heads of the major agencies. This group worked with each of the work groups to ensure that all agencies agreed on procedures.

To forecast dredging needs, USACE permit activity was estimated for the next 15 years. Additionally, site capacity was examined (five dispersive sites, three non-dispersive sites), and dredged material evaluation procedures were developed. These procedures involved:

- a. Developing sampling guidelines.
- b. Chemical and biological tests--based on 404(b)(1) guidelines.
- c. Disposal guidelines--based on the suitability of material.

The management work group responsibilities included:

- a.* Overall process management.
- b.* Permit process administration.
- c.* Compliance inspections.
- d.* Environmental monitoring.
- e.* Data management and analysis (Data Analysis Information System (DAIS)--a computerized system which takes the data and analyzes it so the workgroup is able to make direct interpretations).
- f.* Management plan adjustment and annual review process.

The Puget Sound Water Quality Authority was organized as a state agency in 1984 specifically to clean up Puget Sound. In 1987, Puget Sound became part of the National Estuary Program and the plan developed by the Puget Sound Water Quality Authority was updated and is now under Federal jurisdiction. The Puget Sound Water Quality Authority worked closely with PSDDA and adopted their management plan.

The lessons learned from the PSDDA experience are:

- a.* All agencies must take a cooperative approach.
- b.* All stakeholders must actively participate.
- c.* The scope of the study must reflect the resources and the local situation.
- d.* All technical expertise should be involved.
- e.* Agency policies must be defined and understood.
- f.* Management instruments must be flexible and allow for professional judgment.
- g.* Implementation must always be kept in mind.
- h.* Tight management is a requirement.
- i.* Good working relationships among the groups are critical. Clear and open communication of problems is necessary.
- j.* A process for periodic plan review and update is necessary.
- k.* Determining evaluation procedures for identifying contaminated sediments is one of the most difficult tasks. The experts must get together early in the process.

## **Questions and answers**

**Question: Ron Willis, USACE**

In the \$4.5 million total costs, were the in-house costs of the four lead participating agencies included?

**Answer:**

Yes, we looked at services as well as cash.

**Question: Ron Willis**

In the monitoring phase, DNR conducted some monitoring. Did they budget for that monitoring?

**Answer:**

DNR gained the dollars for that monitoring by charging a use fee (\$0.40/yd<sup>3</sup>) for the disposal sites.

**Question:**

Did they go through a public involvement process to establish that fee?

**Answer:**

They put out an announcement and there was opportunity for the public to react. The ports did respond and comment.

**Question: Bill Rue, EA Engineering, Science, and Technology, Inc.**

I am under the impression that the State of Washington developed their own set of sediment standards. How did this influence the study?

**Answer:**

The people involved in developing the state standards were also involved in the PSDDA study in stages. The PSDDA was completed before the standards were completed but the concepts used to develop the standards were incorporated into PSDDA. The standards are out now for review. They have not been finalized at this time. They were mandated by the Puget Sound Water Quality Authority Plan to establish standards in terms of levels of cleanliness to protect areas. The PSDDA projects were viewed as separate, but related, to that process. They are therefore compatible.

**Question: Richard Peddicord, EA Engineering, Science, and Technology, Inc.**

How do you identify those people in advance who don't realize they have a stake in the process until way down the road and then want to become involved? How do you get the right participation up front?

Answer:

That usually comes from experience. Our experience came from our navigation projects. Usually, when dredging is involved, the public is involved. We, therefore, elaborated on the list of public involvement groups from the navigational projects to establish our own list. We also had to identify groups which would have future interests. This was not an easy thing to do. A good example is the Indian tribes for whom we had to make special efforts to encourage their involvement. They did not, nor did we, recognize their importance in the process initially. They should have had even more involvement up front.

Question: Ellen Johnck, San Francisco Bay Planning Coalition

Could you go through how the ongoing regulatory problems will affect the LTMS planning process? During the 4.5 years of PSDDA what sort of agreements did the agencies make as to what their roles were going to be to ensure dredging would continue and disposal sites would or would not be used during the long-term process? How do you keep the planning when the regulations don't necessarily remain consistent?

Also, could you review your experience with the testing protocol that was developed for PSDDA?

Answer:

Basically, the study plan required preliminary agency agreement, so that during the course of the study we would continue to understand how business would be done without worrying about agencies changing their positions. We agreed to make decisions on a case-by-case basis to determine whether a disposal site would be used. We were challenged by outside interests several times concerning what we should be doing during evaluation of specific projects and all four agencies were held to the initial agency agreement. It was essential to our success that all major parties stood by their agreement not to unilaterally withdraw their support for a committee decision during the implementation process.

The testing protocols were somewhat controversial. The PSDDA used an approach that was developed from the Commencement Bay Superfund activities and is referred to as AET (apparent effects threshold methodology). The PSDDA didn't use this method directly, AET was modified. Analytical tests were conducted to determine if chemical concentrations were below the screening level concentration. If these screening level criteria were passed (the sediment concentration was below the screening level concentration), then open-water disposal was allowed without additional testing. If these levels were exceeded, biological tests were

required to make the final determination for suitability of disposal. Therefore, a rejection was not made based on chemical concentrations in the sediment, and can result only due to failure of a biological test.

Question: Dave Mathis, USACE

The ADID process in PSDDA did not result in the types of problems indicated earlier today. You mentioned the Coastal Zone folks had adopted your plan in the revision of their Coastal Zone Management Plan for the Bay; has that been helpful in terms of implementation and how is that going?

Answer:

The 230.80 was not a problem because USEPA was looking for areas which could be identified and funding was made available for USEPA's participation through the 230.80 route. It worked very smoothly because PSDDA was designed to meet the requirements of 230.80.

The Coastal Zone and the National Estuary Plan were very important. A good working relationship was established with the people around these programs from the start because we recognized their importance. When they developed their plan, they talked about PSDDA and we commented. There were many meetings to resolve the differences. This working relationship and the incorporation of PSDDA in the Coastal Zone Management Plan gave us a lot of credibility.

Question: Ron Willis

At the outset of the study it was stated that you had elevated sediment chemical levels in shallow embayments. Dredging was therefore automatically zeroed in on. Was dredging the only culprit that was identified? Were there any concomitant studies that went on?

Answer:

We tried to make the case that dredging was not the only culprit, but the problem was we didn't have any data. The only data collection was done for special purposes and we couldn't use it. Therefore, we couldn't prove ourselves innocent. On the other hand, we did recognize that one of our disposal sites did have elevated chemicals and dredging was labelled as the main culprit at that site. However, other areas were identified where dredging was not the culprit. Urban action plans and remedial actions are currently under way. Things have come back into perspective. The PSDDA has educated the public so they don't see dredging as a "dirty" concept and it is not immediately identified as the culprit.

Question: Bob Engler

What was the most difficult obstacle PSDDA had to overcome and what advice would you give if that problem had to be addressed now?

Answer:

We had the most difficulty with reviewing and determining the evaluation procedure and then getting a consensus on an appropriate test. It was the same thing that has been wrestled with at this forum. How do you determine what is clean and what is not clean?

My advice is to gather all your expertise in the workgroup sessions right in the beginning. When people participate, decisions are made, and people feel they have had input. Even when you get up far in the review chain and someone else starts shouting, it's very difficult to turn a decision around when it has evolved through such a process.

**Long-range Dredged Material Management Program  
for the Atlantic Intracoastal Waterway, Florida,  
R. Bruce Taylor, Taylor Engineering, Inc.**

The purpose of this program is to provide a long-term capability for the disposal and management of maintenance material dredged from the 374 miles of the Federal navigation channel comprising the Atlantic Intracoastal Waterway (AIWW) and Intracoastal Waterway (ICWW) between Fernandina Harbor and its southern terminus in Miami. To accomplish this, a series of long-range plans for the waterway are being prepared and implemented on a county-by-county basis, using a priority sequence established by the Jacksonville District, Corps of Engineers. This work is being performed by Taylor Engineering, Jacksonville, under contract to the local government sponsor of the ICWW and AIWW projects in Florida, the Florida Inland Navigation District. However, from its inception, the program has been guided and supported as a cooperative effort between the Jacksonville District Corps of Engineers; the Florida Department of Natural Resources, Division of Resource Management; the Florida Department of Environmental Regulation, Division of Surface Water Management Coastal Management Section; and the Florida Inland Navigation District (FIND). As shown in Table 1, work on the program is scheduled to continue through the year 2000, at which time all of the 11 county plans will have been completed and implemented.

The Intracoastal Waterway in Florida is as varied in its character as it is beautiful. Beginning in historic Fernandina, a natural deep water port settled by the English in the 1700s, it carves its way 75 miles southward to the Matanzas Inlet, through broad expanses of pristine salt marsh interspersed by connecting artificial channel cuts dredged during the late 19th and early 20th centuries. From here the channel enters another series of artificial cuts which carry it southward for 25 miles through Flagler county and into the upper Halifax River. For the next 170 miles the Intracoastal Waterway channel traverses a series of three broad, shallow,

**Table 1**  
**Atlantic Intracoastal Waterway Dredged Material Management**  
**Plan Program Schedule**

3/90 to 9/91- Phase I  
 Section 1 - Begin and complete the implementation of the Brevard Co. study  
 Section 2 - Begin and complete the implementation of the St. Johns Co. study  
 Section 3 - Begin and complete the implementation of the Palm Beach Co. study

10/91 to 9/92-Phase II  
 Section 4 - Begin and complete the study section for Martin County  
 Section 5 - Begin and complete the study section for Volusia County  
 Section 6 - Begin and complete the study section for Flagler County

10/92 to 9/94-Phase III  
 Section 7 - Begin and complete the implementation of the Martin Co. study  
 Section 8 - Begin and complete the implementation of the Volusia Co. study  
 Section 9 - Begin and complete the implementation of the Flagler Co. study

10/94 to 9/95-Phase IV  
 Section 10 - Begin and complete the study section for Indian River County  
 Section 11 - Begin and complete the study section for St. Lucie County

10/95 to 9/97-Phase V  
 Section 12 - Begin and complete the implementation of the Indian River Co. study  
 Section 13 - Begin and complete the implementation of the St. Lucie Co. study

10/97 to 9/98-Phase VI  
 Section 14 - Begin and complete the study section for Dade County  
 Section 15 - Begin and complete the study section for Broward County

10/98 to 9/00-Phase VII  
 Section 16 - Begin and complete the implementation of the Dade Co. study  
 Section 17 - Begin and complete the implementation of the Broward Co. study

coastal lagoons, namely the Halifax River, the Mosquito Lagoon, and the Indian River. Of these, the Halifax River and the Indian River (Brevard County portion only) are characterized by heavily urbanized shorelines. In contrast, the Mosquito Lagoon remains relatively untouched by man except for a succession of small residential communities along its western shore in its northern reaches. In this area, the majority of the lagoon plan area is dominated by extensive stands of mangrove interlaced by small and irregular tidal creeks. South of Sebastian Inlet, in Indian River County, the Indian River becomes more constricted as it winds its way through miles of mangrove and sparsely populated shorelines. Twenty-nine miles south of Sebastian inlet the Waterway reaches the natural deep water port of Ft. Pierce. It continues southward through a lagoon setting once again to the southern terminus of the Indian River at St. Lucie Inlet in Stuart, FL. Commonly referred to as the Crossroads, here the waterway channel intersects the Okeechobee Waterway (Loxawhatchee River) and the passage to sea via the St. Lucie Inlet. It then continues southward another 18 miles to Jupiter Inlet in north Palm Beach County. For the

next 8 miles the waterway is characterized by a series of artificial cuts bisecting heavily urbanized areas. It then enters Lake Worth and again traverses a broad coastal lagoon surrounded by a large metropolitan area for the next 16 miles. South of Lake Worth the channel proceeds through 46 miles of artificial cuts in Broward and north Dade Counties, the sides of which are almost entirely hardened by seawalls and bulkheads all the way to Biscayne Bay. In Biscayne Bay the channel remains in open water for the final 10 miles to its terminus in downtown Miami.

The varied character of the Atlantic Intracoastal Waterway in Florida requires that a wide variety of factors and changing circumstances be considered in the development of a comprehensive and realistic dredged material management plan for the 374 miles of channel. The process by which this is being accomplished is addressed in the following sections.

**Program overview.** To accomplish the overall program objective, work performed for the Waterway in each county is divided into two phases. The first phase addresses the formulation of a long-range dredged material management plan for the entire length of channel within the county, the preparation of a plan document, and the preparation of a set of Mylar photo-based plan sheets which show the Federal channel right-of-way, cut by cut, and summarize all pertinent information for that sheet regarding historical dredging, shoaling, sediment characteristics, and recommended disposal sites.

**Formulation of the county waterway plan.** Formulation of each county plan begins with a detailed analysis of all available historical data and engineering documents pertaining to previous dredging activity, shoaling, sediment characteristics, and all existing disposal easements or properties available to USACE for dredged material disposal. From this, a characterization of the channel shoaling throughout the county, the spatial variability of these rates, and where possible, the physical and chemical characteristics of the material to be dredged, are developed. Concurrent with this effort, the existing inventory of disposal easements and sites is evaluated for feasibility of future use within the present-day regulatory environment, and the practicality of dike construction and site access. Factoring in the overall availability of undeveloped land, and operating pumping distances, the waterway channel in the county is then divided into operating reaches. A 50-year disposal requirement for each reach is calculated using the results of the historical data analysis. In arriving at this estimate, the projected 50-year dredged material is scaled upward using a combined over-dredging and bulking factor of 2.15.

Having established the usable inventory of Federal disposal easements and sites within the county, as well as the functional reaches of the waterway and their associated 50-year disposal requirements, work then proceeds on the identification of disposal options and candidate sites to meet these requirements. To focus the site identification and selection process, a set of guiding principles are established. These are referred to as the disposal concept, which can and does vary from reach to reach depending

upon changing constraints and requirements. In general, however, each disposal concept attempts to satisfy, as closely as possible, the following conditions.

All future disposal will be confined to upland areas with good road access, except for those reaches where beach disposal is the preferred alternative.

Sites will be established to provide centralized disposal in a minimum number of locations per operating reach of the waterway, as determined by the analysis of historical data.

Disposal sites will be designed and operated as permanent facilities, with the capability of being emptied and reused over multiple 50-year periods.

Candidate sites meeting these criteria are then identified using high-altitude infrared photography, black and white aerial photography, wetlands inventory maps, soils inventories, and other available documents. Typically, 30 to 40 such sites are identified for a given county by this process. Each site is then subjected to further scrutiny by means of an on-the-ground preliminary inspection. Finally, a bank of primary and secondary sites for each reach is selected and the final plan documentation is completed. To date, all plan formulation work has been completed for Nassau, Duval, St. Johns, Brevard, and Palm Beach Counties.

**Implementation of county waterways plans.** The second phase of work in each county addresses the finalization of site selection, the development of a detailed documentation package for each site to support the property acquisition process, and the procurement of necessary permits and long-term maintenance dredging agreements. Each site documentation package consists of the following:

- a. Property boundary survey.
- b. Environmental habitat and vegetation survey report.
- c. Topographic survey.
- d. Soils survey and report.
- e. Site narrative.
- f. Permit drawings.
- g. Site management plan.
- h. Site cost report.

In accordance with an existing agreement between the FIND and the Jacksonville District, USACE, USACE provides funding and services necessary to complete the topographic and soils survey elements of the documentation package. Normally, the sequencing of work during the plan implementation phase of the program proceeds as follows:

- a. All information available in the public records pertaining to site ownership, assessed value, property boundaries, pending development and permit applications, zoning, land-use restrictions, and other potential site encumbrances is gathered and reviewed. Included in this work is a detailed search of the property deed information.
- b. Property owners are notified by FIND of the state's interest in acquiring the site and are requested to sign a written agreement authorizing FIND and USACE personnel and agents to enter the property for evaluation and testing purposes.
- c. Property boundary, roadway, and pipeline easement surveys are performed and documented. A detailed environmental survey of the property is then completed, which includes site habitats, plant and animal species, and the existence of threatened and/or endangered species.
- d. Using the access agreements and the boundary surveys, the Jacksonville District, USACE, performs the required topographic and soils surveys of the sites.
- e. Preliminary site plans and design documents for the dredged material containment facilities are then prepared. These include dike plans and sections, ramps, excavation depths, dike material requirements, weir sizing and placement, pipeline routing and easements, buffer and vegetation plans, and a hydraulic analysis of the expected settling efficiency of each containment basin. Results of this work are summarized in a 5- to 10-page site narrative for each site and a set of completed site permit drawings, which include:
  - (1) Site location map.
  - (2) Site plan.
  - (3) Pipeline easement plan.
  - (4) Typical dike section.
  - (5) Typical ramp section.
  - (6) Site vegetation plan.
  - (7) Site wetland map.

(8) Historical sediment time settlement curves and core boring logs (if available).

- f. Following the completion of the site plans and containment facility designs, a management plan document is then prepared for each site. This document addresses various aspects of the site design and long-term operation of the facility. It is divided into three main sections. The first discussed pre-dredging and site design features, including site preparation, site design capacity, interior earthworks, existing easements, ramps, design ponding depths, dike erosion and vegetation, inlet works, and weirs. The second section addresses site operational considerations during dredging, including pipeline placement, inlet operation and monitoring, weir operation and effluent monitoring, and groundwater monitoring. Finally, the report addresses post-dredging site management operations, such as dewatering, material grading and storm water control, material handling and reuse, monitoring, mosquito control, and site security.
- g. Each site documentation package is completed with the preparation of a site cost report, which summarizes the estimated costs to prepare the site and construct the facility, the costs incurred during disposal operations, and the costs incurred between successive disposal operations.

Table 2 summarizes the completion status of the documentation packages for the 29 disposal sites targeted for acquisition in Nassau, Duval, St. Johns, Brevard, and Palm Beach Counties. These sites comprise 25 upland areas totalling 1,887 acres and 4 beach disposal areas covering approximately 4.5 miles of Florida's Atlantic coastline. Also included in the accompanying table are estimates of the initial construction cost and the annual operating cost for those sites for which this information is available. Of the total 29 sites, all of the Nassau/Duval sites (except the S. Amelia Beach Disposal area and the Pablo Creek Site) have been acquired and are currently in FIND ownership. Similarly, in Palm Beach County the majority of the upland sites are currently under FIND ownership or disposal easements. Only Peanut Island and the two beach disposal areas are not encumbered in this manner. In contrast, the only sites to which title or easement rights are currently held in St. Johns and Brevard Counties are the SJ-1 and Rockledge BV-R sites. The nine remaining upland sites in these counties have yet to be acquired. To date, approximately \$13.2 million has been spent by the State of Florida for the acquisition of these properties. It is estimated that when completed, the overall program cost will approach \$100 million.

### Questions and answers

Question:

Who is responsible for the disposal areas in the authorization document?

<b>Table 2</b> <b>Florida Inland Navigation District Long-Range Dredged Material Management Program</b> <b>Site Summary by County</b>											
County Site	Completed Site Documentation								Construction and Operations Costs		
	Boundary Survey	Topo Survey	Geo-Tech Report	Environ. Report	Permit Drawings	Site Narrative	Mgmt. Plan	Cost Report	Initial Constr.	Annual Operation	
<b>Nassau/Duval (Plan document complete, with accompanying 64-sheet plan book.)</b>											
Crane Island	X	X	X	X	X	X	X	X	\$592,653	\$4,801	
S. Amelia Island Beach Disposal	N/A	N/A	--	--	--	--	--	--	--	--	
N.E. Black Hammock Island	X	X	X	X	X	X	X	X	589,356	7,109	
W. Central Black Hammock Island	X	X	X	X	X	X	X	X	703,280	9,535	
Fanning Island	X	X	X	X	X	X	X	X	820,733	7,231	
N. Heckscher Drive	X	X	X	X	X	X	X	X	262,888	3,541	
Bullard	X	X	X	X	X	X	X	X	389,150	4,323	
Moody Manne	X	X	X	X	X	X	X	X	386,689	4,081	
Pablo Creek	X	X	X	X	X	X	X	X	1,432,493	15,252	
<b>St. Johns (Plan document complete, with accompanying 58-sheet plan book.)</b>											
SJ-14	X										
SJ-29	X			X							
SJ-20A											
SJ-1	N/A	N/A	N/A	X							
SJ-MB (Matanzas Inlet Bch. Disposal)	N/A	N/A									
<b>(Continued)</b>											

Table 2 (Concluded)											
County Site	Completed Site Documentation							Construction and Operations Costs			
	Boundary Survey	Topo Survey	Geo-Tech Report	Environ. Report	Permit Drawings	Site Narrative	Mgmt. Plan	Cost Report	Initial Constr.	Annual Operation	
Brevard (Plan document complete, with accompanying 101-sheet plan book.)											
BV-2A											
BV-4	X			X							
BV-5	X			X							
BV-11	X			X							
BV-R	X			X							
BV-18	X	X	X	X							
BV-24	X			X							
Palm Beach (Plan document complete, with accompanying 40-sheet plan book.)											
PB JB (Jupiter Inlet Bch. Disposal)	N/A										
MSA 610/611A	N/A										
MSA 620B	N/A										
Peanut Island	X			X							
PB-BB (Boyton Inlet Bch. Disposal)	N/A										
MSA 640	N/A										
MSA 641A	N/A										
MSA 684A	N/A										

Answer:

The Jacksonville District is responsible. They are "deeded" over to USACE once they are acquired and then USACE is responsible.

Question: Steve Chesser, USACE

Are you marketing the material at the site, or is that material just available?

Answer:

The USACE cannot sell it. In Florida, the material is considered owned by the state. Florida law provides for the state's disposition of that material and the terms upon which they may sell it.

Question:

What were some of the environmental concerns raised?

Answer:

Various environmental concerns have been raised. One concern has been saltwater contamination of groundwater. In Florida, we anticipated some localized problems in the shallow aquifer. As part of the identification program we looked at the presence of wells in the area and other groundwater usage around the sites to try to avoid any impacts. We are requiring that monitoring wells be put in place prior to any construction or disposal activity. We also monitor and establish baseline conditions prior to and during disposal.

Other concerns relate to impacts on upland habitats. We have made efforts to stay out of wetlands, although in Florida that is virtually impossible. There are upland habitat issues that have to be dealt with. We have some threatened or listed species that are cause for concern. Because of the large buffer area at the sites, we can avoid or mitigate within the acreage. However, this adds considerable expense.

### **Oregon Statewide Planning Program, Robert Cortright, Oregon Department of Land Conservation and Development**

The focus of this talk is on the estuary planning process which is an element of the Oregon Statewide Land-Use Planning Program. The LTMS task involves many Federal, state, and local agencies, and requires a legal framework to make it work.

The state program was developed because of the rapid population growth in Oregon. Oregon does not have a project-oriented review process. The state, however, does have environmental concerns, and chose a

different approach from the national norm. The state chose planning. Specifically, Oregon chose to accommodate planning in the context of conservation and development.

Initially, comprehensive plans were set in the legal framework of the state. There are eight key aspects to this comprehensive plan:

- a. Redefining the partnership with local government so that the state could take a stronger role.
- b. Mandating that local plans and zoning be adopted.
- c. Establishing state requirements for local plans.
- d. Reviewing local plans' compliance with state goals.
- e. State review of amendments.
- f. Requiring citizen involvement.
- g. Requiring that local governments must consider and accommodate needs and interest of all levels of government.
- h. Stating that environmental groups that don't participate from the onset waive their right to participate.

The state goals and a concern that the current trend of development in the estuaries would threaten the viability of the estuaries fueled the State-wide Planning Program, and fueled the Estuary Program. Oregon does not have a large amount of estuary area as do other states.

The state started by developing standards for estuary planning. The initial step was a statewide classification of estuaries. The state allowed maximum development in each estuary while maintaining ecological diversity. The goal was to focus development into a few estuaries instead of spreading it out to all estuaries. Within each estuary a complex estuary plan was developed.

The water in the estuary was zoned according to the requirements of the statewide program. These classifications are natural, conservation, shallow draft development, and deep draft development. In Oregon, 93.6 percent of the estuaries are categorized as natural or conservation. The remaining 6.4 percent are classified as developed navigation channels.

A critical issue is how lands that would otherwise have been designated as natural or conservation were down-rated for development. A series of coast-wide inventories were performed to determine estuarine value and economic development potential. Habitat inventories were also taken based on the USFWS wetland classification system. Inventories of development trends, commercial fishing, and boating were performed. These

estuary-by-estuary inventories provided information to determine which sites would be used for development. In essence, long-term management plans were developed for all estuaries in a 20-year time frame. Local governments were also required to zone upland disposal sites for dredged material disposal for the next 20 years as well as identify "reserve sites" which could be potentially used for dredged material disposal. These plans included a mitigation and restoration element, i.e., zoning sites for future use to either offset approved development or to restore lost benefits to the estuary. Many of the standards used in the 404(b)(1) program were also incorporated into this program.

#### **Suggestions for the future development of LTMS programs.**

- a.* The focus of LTMS is too narrow. It should focus on estuary-wide planning because the managed resource is the estuary itself and not just the dredged material.
- b.* A 50-year plan would be preferable in order to look at restoration and enhancement of estuary value.
- c.* A decision of what a beneficial use is must first be made in the context of the overall plan for the estuary.
- d.* Federal resource agencies need to adopt the posture that simply saying "no" to a permit is not a valid option for environmental protection.
- e.* Local governments, through their planning and zoning, are deciding the future of the estuaries.
- f.* Mitigation must be made to work. It has received a tainted image because it is done in response to development. If mitigation is put in the context of restoring and enhancing the estuary, it then becomes a tool that serves the objectives of the environmental and resource protection community rather than the development community.

#### **Questions and answers**

##### **Question:**

There seems to be a need for the mixture of long-term planning and agency coordination. What laws should be changed to allow for this?

##### **Answer:**

The laws that need to be changed are Section 404 of the Clean Water Act, Endangered Species Act (to require proactive planning), and the Federal Wildlife Coordination Act. All laws should require a

50-year planning horizon. Currently, there is no provision in these laws for long-term planning or agency coordination.

Question:

How did Oregon interface with the State of Washington in Columbia River Estuary Planning?

Answer:

We established the Columbia River Estuary Study Task Force (which included the local interstate planning committee). Most of development is on the Oregon side of the river as opposed to the Washington shoreline.

Question: William Fehring, Greiner Engineering, Inc.

Did disposal site zoning look at current sites only or evaluate and identify future privately owned sites? For privately owned sites, how was the "taking" issue handled?

Answer:

Disposal site zoning and identification did include privately owned sites as dredged material disposal sites. Typically, the privately owned sites were zoned as reserved sites. On these sites the plan allows reasonable economic uses until the site is needed in the future. At this point we have not had a "taking" case raised regarding dredged material disposal sites.

Question: Carol Coch, USACE

How did all of the agencies agree on mitigation banking?

Answer:

In the Lower Columbia River Estuary, we looked at resource values lost if the Columbia River sites were developed. Mitigation rules were developed through an interagency committee and included a structured permitting process. Historical and current habitats in each estuary were reviewed and evaluated.

Question: Joe Hall, National Estuary Program, USEPA

Any advice or recommendation for other estuaries?

Answer:

You should involve local governments because they are currently making land-use decisions every day.

**Special management area planning in Coastal Mississippi,  
Susan Ivester Rees, Ph.D., US Army Engineer District, Mobile,  
Phillip L. Lewis, Mississippi Department of Wildlife, Fisheries,  
and Parks, Bureau of Marine Resources, Biloxi, MS**

The Coastal Wetlands Protection Law of 1973 established Mississippi's public policy of preserving coastal wetlands in their natural state, except where an alteration of a specific coastal wetland serves a higher public interest. To carry out this policy, a permitting and compliance review procedure was authorized by the law to govern the defined regulated activities. The most significant regulated activities are dredging and filling in coastal wetlands. According to the Wetlands Law, filling in coastal wetlands is regulated even if the source of the filling is outside the coastal wetlands. Subsequently, the Wetlands Law was amended to include the regulation of the erection of structures on sites designated as suitable for water-dependent industry. This new activity was established to reserve waterfront sites for industries which genuinely require water access so that the need for creating new sites would be reduced, as would the need for environmentally and economically costly dredging.

Certain agencies, areas, and activities, including local port and development authorities, were not required to secure state permits to conduct regulation activities in coastal wetlands. In addition, water-dependent industries do not require a state permit to erect a structure on a suitable site. Although excluded from the state permitting process, these activities must nonetheless be conducted in compliance with the state's wetlands protection policy.

In 1979, the Mississippi Commission on Wildlife Conservation, acting through the Bureau of Marine Resources, replaced the Mississippi Marine Resources Council as the agency responsible for oversight of the Wetlands Protection Law. In establishing the council, the Legislature established goals of the state's coastal program and provided authority for the council to enter into agreements with Federal, state, public, or private agencies, departments, institutions, firms, corporations, or persons to carry out the policies and goals of the coastal program.

The Mississippi Coastal Program, which was enacted in 1980, established guidelines and procedures pursuant to the following goals:

- a. To provide for reasonable industrial expansion in the coastal area and to ensure the efficient utilization of waterfront industrial sites so that suitable sites are conserved for water-dependent industry.
- b. To conserve the resources of the coastal area for this and succeeding generations.
- c. To consider the national interest involved in planning for and in the siting of facilities in the coastal area.

- d. To encourage the preservation of natural scenic qualities in the coastal area.
- e. To assist local governments in the provision of public facilities and services in a manner consistent with the coastal program.
- f. To ensure the effective coordinated implementation of public policy in the coastal area of Mississippi comprising Hancock, Harrison, and Jackson Counties.

In addition, the council was directed to prepare as part of the coastal program and after consultation with county port authorities, development commissions, and port and harbor commissions having jurisdiction in the coastal area, a long-term plan for the development of suitable sites for water-dependent industry. As part of this plan provisions were to be made for deposition of materials from dredging operations within the area.

To supplement regulation with affirmative management efforts, the Mississippi Coastal Program designated "special management areas," and set up a process for adopting management plans for these areas. The designation of a special management area does not (and by law cannot) impose regulations on an area over and above those which are authorized by existing statutes. In effect, area management plans will apply the general regulatory provisions of the program to a specific site(s).

The Special Management Area (SMA) planning process is a concept that establishes an issue-/decision-oriented forum for the balancing of public interests that compete for the use of valuable coastal resources in a limited geographical area. The need to designate SMAs arose because of the failure of more traditional planning methods to manage adequately the resources of certain locations.

Essentially, SMA planning draws potential future struggles between development and protection interests into the present, and attempts to reconcile these struggles in the present with full recognition of all positions and missions. By initiating the SMA process in Mississippi, the Bureau of Marine Resources began to balance its regulatory program with positive efforts to encourage environmentally sound development in Mississippi's coastal areas.

The role of the area management plan is to improve the predictability of permit decisions in designated areas and to help resolve permit controversies in advance of specific development proposals. Specific provisions of approved management plans would prevail over the general provisions of the coastal program. When approved by the Federal government as part of the coastal program, the management plan will be recognized as official state policy by Federal agencies.

Three general categories of SMAs were designated in the Mississippi Coastal Program of 1980. These include port and industrial areas, urban

waterfronts, and shorefront access areas. Of interest to this discussion are two areas designated in the 1980 program as port and industrial areas: Pascagoula River and Bayou Casotte.

Planning for the Port of Pascagoula SMA began in early 1982 with the establishment of a task force. Members of the task force included: Mississippi Bureau of Marine Resources, Mississippi Bureau of Pollution Control, Mississippi Department of Archives and History, USACE, USEPA, USFWS, NMFS, Jackson County Port Authority, and Jackson County Board of Supervisors. The role of the task force was that of a planner operating through consensus. The ultimate goal of the task force was to prepare the management plan, and in doing so, to provide for the orderly development of suitable sites and protection of the coastal resources.

The Pascagoula SMA applies to a specifically defined geographical area and consists of three major elements: area-specific development proposals; a dredged material disposal management plan; and a mitigation plan to compensate for environmental and cultural resources losses.

The SMA plan, which was incorporated into state law in 1986, approved the development/use of the following:

- a.* A marina at Greenwood Island West.
- b.* Industrial development at Greenwood Island East.
- c.* Northward expansion of Bayou Casotte channel and facilities.
- d.* Development of the north and east sides of Singing River Island.
- e.* Development of port facilities on the Pascagoula River.
- f.* Restricted use of the Middle River area.

In addition, a long-term dredged material disposal plan was prepared for the diked disposal areas at Greenwood Island, Singing River Island, and Triple Barrel. This plan considered the use of the sites for material dredged during maintenance of the Federal navigation project and port facilities and placed a number of restrictions on the quantity of material that could be placed within a site per maintenance cycle, the frequency of use of a site, and the coordination of Federal/non-Federal use. The development scenarios for Greenwood Island and Singing River Island also included specific provisions that the development or use of these areas would not adversely affect the USACE management plan for the disposal areas. This plan served as the basis of the agreement between USACE and the local sponsor concerning roles and responsibilities for management of the upland disposal areas.

Mitigation for the impacts associated with the development/use plans and for attainment of the long-term disposal plan was accomplished

through the transfer of 2,500 acres of county-owned wetlands to the Mississippi Commission on Wildlife Conservation. These lands are held in perpetuity as a natural area preserve and are protected, preserved, and managed consistent with the intent and purposes of the Mississippi Natural Heritage Law of 1978.

The remainder of the presentation dealt with happenings since 1986 including:

- a. Development of the US Naval Station at Pascagoula.
- b. Development of Greenwood Island East.
- c. Controversy over the "Gallinule Pond."
- d. Long-term planning for Ingalls Shipbuilding.
- e. The new long-term dredged material disposal plan.
- f. The future of the Bangs Lake mitigation area.

### **Questions and answers**

Question: Ron Cucina, USACE

Mississippi SMA requires non-Federal use of disposal areas to coincide with Federal projects. Does this cause any conflicts or problems? The Mississippi SMA also contains a requirement for the local sponsor to remove an amount of material equal to the amount placed in the disposal area. Were there any problems with contamination?

Answer:

We have seen that when a Federal project is completed, private sponsors will use the same contractor. There is a limit on the amount of material that can go into an area at any time. Further, Federal projects must be completed first.

All material has been tested using Ocean Disposal Guidelines. To date, the only uses of dredged material have been roadbeds and raising dikes. At this time, there is not widespread use of dredged material.

Question: Herb Mauer, USACE

Is the private sector encouraged to use these disposal areas?

Answer:

At Singing River Island, the private sector was initially encouraged to use the site. Currently, however, the Federal agencies, Port Authority, and marinas use the Port Authority-controlled site while other industries have responsibility for their own site(s).

Question: Tom Chase, San Francisco District, USACE

The SMA is part LTMS and part land-use planning. What was the USACE authority on land-use issues? Explain the mechanics of how the District dealt with this.

Answer:

There were two USACE representatives (from Regulatory and Planning) on the task force. Their responsibilities were wetland identification and long-term management of disposal areas. Further, USACE ensured that all Federal activities were consistent, including the Navy's interest at the Port of Pascagoula.

Question: Jim Coyle, US Fish and Wildlife Service

For disposal area dewatering, where was the water discharged to and what water quality monitoring was conducted? Any problems of endangered species inhabiting sites once they were upgraded?

Answer:

Water flowed through adjacent wetlands before entering the ultimate receiving water. The only monitoring conducted was for the suspended load of the water. Once interstitial water was off of the site, flow primarily consisted of rainwater.

No problems were observed with endangered species. These areas have not served as an attraction for migratory animals.

Question: Bruce Taylor, Taylor Engineering

Elaborate on progressive trenching.

Answer:

Progressive trenching is done by: (a) building exterior trenches to drain water; (b) deepening the trenches and working towards the center of the site; (c) connecting the trenches to deep weirs; and, (d) disking the top layers of soil to facilitate drying. Through progressive trenching, we have regained approximately 40 percent of capacity without hauling material out of the site for each dredging cycle. Cost for this is approximately 25-30 cents per yard.

Question: Craig Seltzer, USACE

What is the progress on stable and feeder berms?

Answer:

The objective of the feeder berm was to get sand back into the sand transport system of the barrier islands and determine if it could be done for costs comparable to other methods of disposal. The feeder berm is slowly moving shoreward and merging with the shore face of the barrier island. Cost for construction of this structure was comparable to over-board disposal at the ocean disposal site.

The objective of the stable berm was to interrupt energy carried by long period waves and determine if creation of a soft structure would serve as habitat enhancement. Results so far indicate that the structure is stable and wave energy has been reduced up to 80 percent. Fisheries studies to date have indicated higher concentrations of fish on the landward side of the berm.

Question: Carol Coch, USACE

Were structural channel changes considered to decrease sedimentation and how high will the dikes be built?

Answer:

We are proposing a 40-ft dike height. Most of the sediments are bottom material that slosh back and forth in the Mississippi Sound. Material coming downriver from soil erosion is being addressed by the Soil Conservation Service.

## Summary Panel

**William Fehrling, Greiner, Inc.**

Dr. Fehrling moderated the panel session on Approaches to Sediment Management. Based on the panel presentations of that session, several points were made:

- a. Although there is a great deal of interest in the LTMS approach on a Federal level as noted by the number of Federal employees at the Forum, there is limited participation and enthusiasm from the private sector, specifically local sponsors. This is primarily due to the major costs for disposal sites that the local sponsors bear.
- b. The ability to implement LTMS is dependent upon new and equitable funding mechanisms.

- c. Differences between the goals of LTMS and policies for resource protection need to be resolved, especially in terms of habitat restoration.
- d. Although the Oregon experience illustrated the benefits of land-use planning, this tool is not likely to be effective in urban areas where there are high land values.
- e. Beneficial use of dredged material is not a panacea.
- f. Research and development programs initiated by USACE on contaminated sediment and wetlands are encouraging.
- g. Incorporating LTMS into the NEP may be a key to making the program work, however, very few NEPs have really considered dredged material at this point.

In light of the above, the major problems and anticipated solutions to implementing LTMS have been identified. Yet, it will take dollars, staff, and resources to make the program successful.

#### **John Seyffert, EA Engineering, Science, and Technology, Inc.**

Mr. Seyffert moderated the panel on Non-Federal Perspectives/Issues Related to LTMS Implementation. One of the largest impediments to the long-term management of dredged materials is the lack of interaction between Federal, state, and local agencies and the lack of an effective process to enhance public participation. Thus, the regulatory and permitting process needs to be more flexible to encourage free and open debate about the issues and to educate the public to avoid the "Not in My Back Yard" syndrome. In the past, emphasis has been placed on the technical aspects of dredging and dredged material disposal; currently, though, emphasis is needed on implementation of long-term management and public education of the dredging process. Further, because the state and local agencies must ultimately sell whatever alternative is identified, the local sponsor must be made a full partner in the decision-making process. Finally, all agencies must be committed to establishing a long-term management strategy and strive for effective communication.

#### **Shannon Cunniff, Office of Federal Activities, US Environmental Protection Agency**

Ms. Cunniff moderated the Case Studies session and summarized the following three topics.

- a. Program Planning - Because LTMS must deal with a large volume of uncontaminated sediment and a relatively small volume of contaminated sediment, the program must address both material

disposal and use. Thus, LTMS must be flexible in planning implementation and reviewing the plan. The LTMS must be able to deal with the variety of dredging operations (O&M, civil works, and permitting) and must seek to achieve both environmental and navigational goals.

- b. Instruments and Methods - There are a number of environmental management instruments (ADID, SAMP, NEPA) which are compatible with LTMS. In the past, USEPA had a "command and control" role in large environmental projects; however, that is now changing. The USEPA is becoming more willing to work with the various agencies in management planning. Recommended changes to current programs include (a) broadening the scope of traditional benefit/cost analyses to assess and value environmental benefits, and (b) incorporating LTMS within NEP as a subcommittee.

Constraints and Needs in Implementation - the USEPA needs to evaluate the current impediments to siting disposal facilities. Currently, USEPA is looking at immediate and long-term fixes to sediment management through developing a sediment management strategy which addresses sediment assessment, prevention, remediation, and dredging. Further, as the Clean Water Act and the Resource Conservation and Recovery Acts come up for reauthorization, USEPA will be evaluating long-term solutions to the sediment management problem.

#### **David Mathis, Office of Environmental Policy, USACE**

Mr. Mathis noted that dredged material management is only one management issue in sediment and resource management. At this time, USACE can only focus on dredged material issues. From an implementation standpoint, there is a need for greater consistency in sediment testing. To effectively manage dredged materials, a single methodology is required. The management instruments available are compatible with the LTMS process. The most successful examples of long-term management of dredged material occur when both development and resource protection issues are considered. Finally, all concerns regarding environmental protection and LTMS plan implementation must be addressed early and throughout the process.

#### **Richard Peddicord, EA Engineering, Science, and Technology, Inc.**

The two major themes heard throughout the Forum were (a) the need for involvement and coordination of all affected parties, and (b) the need for a comprehensive area-wide estuary management program. Because dredged material management affects numerous agencies as well as public citizens, it must be recognized that each agency has its own perspective. In light of this, all views should be seriously considered and addressed.

Although no one disputes the fact that regional estuary plans are necessary, USACE is restricted to navigation dredging at this time. As a part of sediment management, dredged material management should be only a component of a long-term estuary plan.

### **Audience comments to Summary Panel**

**Comment:** The port authorities have been treated as silent partners. However, if the Federal government is going to accept port money, then the local sponsor must have some say in the decision-making process. It must be recognized that the ports are significant players for the long term.

It is becoming increasingly difficult to obtain disposal sites due to environmental concerns and increasing costs. However, ports do not have an unlimited amount of money. The ports currently need assurances that once a disposal site is identified, it will remain a disposal site.

**Comment:** The public education aspects of LTMS are extremely valuable. The local decision makers must be educated so that they can intelligently consider the cost of dredged material management along with everyday cost issues (utilities, trash collection, etc.).

**Comment:** The USACE should evaluate the status of all of its dredging programs to determine if an LTMS-style program is appropriate and can be implemented.

**Comment:** Long-term planning has been most successful in programs where sediment quality criteria are available. Work on criteria should be continued. It was pointed out that USACE and USEPA are still dependent upon effects-based criteria and because of the diversity in sediments, development of a single sediment criterion per contaminant is not likely.

**Comment:** There is some concern regarding the relationship between an LTMS plan and an EIS. An existing EIS may have to be amended prior to implementation of an LTMS plan. However, although the NEPA process provides the basic elements for program implementation, publication of appropriate NEPA documents has not been successful in the past. Implementation of a programmatic EIS document was suggested.

## References

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# **Appendix A: Program Agenda and List of Attendees**

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## **Agenda**

The agenda for the 2-1/2-day forum was as follows:

### **29 January - Morning Session**

- 8:00** Overview of LTMS Forum - Purpose, Organization, and Objectives. Dr. Richard Peddicord, Director of Environmental Assessment, EA Engineering, Science, and Technology, Inc.
- 8:30** US Army Corps of Engineers - Major General Patrick Kelly, Director of Civil Works, US Army Corps of Engineers, Overview of LTMS: Development, Current Status, and Future Direction
- 9:00** US Environmental Protection Agency - Dr. Tudor Davies, Director, Office of Marine and Estuarine Protection, Overview of LTMS: Development, Current Status, and Future Direction
- 9:30** Break
- 9:50** Panel Introduction: Federal Perspectives/Issues Related to LTMS Implementation, Moderator, Jimmy Bates, Chief, Policy and Planning Division, US Army Corps of Engineers. Introduction of Panel Members and Issues to be Discussed, Moderator, Mr. Bates, panel includes GEN Kelly and Dr. Davies.
- 10:10** US Environmental Protection Agency - Gregory Peck, Office of Wetland Protection
- 10:30** US Fish and Wildlife Service - Ralph Morgenweck, Assistant Director
- 10:50** NOAA, Coastal Zone Management - Timothy Keeney, Director, Office of Ocean and Coastal Resource Management
- 11:10** NOAA, National Marine Fisheries Service - John Hall, Director, Office of Protected Resources
- 11:25** Open Discussion Among Panel Members and Audience-Moderator, Mr. Bates

### **29 January – Afternoon Session**

- 1:00 Panel Introduction: Overviews of Non-Federal Perspectives/ Issues Related to LTMS Implementation-Moderator, John Seyffert, Vice-President, EA Engineering, Science, and Technology, Inc.
- 1:05 Coastal States Organization - David Slade
- 1:20 National Association of Dredging Contractors - Mark Sickles
- 1:50 American Littoral Society - Derry Bennett
- 2:05 International Marina Institute - Neil Ross
- 2:20 Open Discussion Among Panel Members and Audience – Moderator, Mr. Seyffert
- 2:50 Break
- 3:05 Panel Introduction: Non-Federal Perspectives/Issues Related to LTMS Implementation – Moderator, Mr. Seyffert
- 3:10 American Association of Port Authorities - Joseph J. Birgeles
- 3:30 Environmental Community - Peter deFur, Environmental Defense Fund
- 3:50 National Governors Association
- 4:10 Panel Discussion – Moderator, Mr. Seyffert
- 4:30 Open Discussion Among Panel Members and Audience – Moderator, Mr. Seyffert

### **30 January - Morning Session**

- 8:00 Overview of Dredged Material Uses - Dave Mathis, Directorate of Civil Works, US Army Corps of Engineers
- 8:25 Panel Introduction: Approaches to Sediment Management-Moderator, William Fehring, Director of Port and Coastal Planning, Greiner Inc.
- 8:30 Special Regulatory Perspective - John Studt, US Army Corps of Engineers

- 8:45     404 Advanced Identification - Gregory Peck, US Environmental Protection Agency, Office of Wetland Protection
- 9:00     Long-term Permits - Fred Calder, Florida Department of Environmental Regulation
- 9:15     Instruments Associated with Land-Use Planning - Timothy Beatley, University of Virginia, Department of Urban and Environmental Planning
- 9:30     LTMS in the Context of the Coastal Zone Management Act - William Millhouser, Coastal Zone Management
- 9:45     Break
- 10:00    General Findings of the Marine Board - Kenneth Kamlet, A.T. Kearney, Inc.
- 10:15    Environmental Engineering Options for Sediment Management - Norman Francingues, US Army Corps of Engineers
- 10:30    Management of Contaminated Sediments in 404 and 103 Programs - Barry Burgan, USEPA OMEP
- 10:45    EDF Concerns in Managing Contaminated Sediments - Sarah Clark, *Environmental Defense Fund*
- 11:00    Panel Discussion of Approaches to Sediment Management- Moderator, Dr. Fehring
- 11:30    Open Discussion Among Panel Members and Audience – Moderator, Dr. Fehring

**30 January - Afternoon Session**

- 1:00     Implementation Case Study Presentations – Moderator, Shannon Cunniff, US Environmental Protection Agency, Office of Federal Activities
- 1:05     Case Study No. 1 - Upper Delaware Advanced ID-William Muir, USEPA Region III
- 1:35     Discussion
- 2:05     Break
- 2:30     Case Study No. 2 - PSDDA-Frank Urabeck, US Army Corps of Engineers

- 3:00 Discussion
- 3:30 Case Study No. 3 - Florida Long-term Permit Program –  
R. Bruce Taylor, Taylor Engineering, Inc.
- 4:00 Discussion
- 4:30 Open Discussion Among Presenters and Audience-Moderator,  
Ms. Cunniff

### **31 January - Morning Session**

- 8:00 Implementation Case Study Presentations, continued –  
Ms. Cunniff, Moderator
- 8:05 Case Study No. 4 - Oregon Statewide Planning Program –  
Robert Cortright, Department of Land Conservation and  
Development
- 8:35 Discussion
- 9:10 Case Study No. 5 - Coastal Mississippi Special Area Manage-  
ment Plans – Susan Rees, Mobile District, Corps of Engineers  
and Philip Lewis, Mississippi Department of Wildlife
- 9:40 Discussion
- 10:15 Break
- 10:30 Open Discussion Among Presenters and Audience-Moderator,  
Ms. Cunniff
- 10:50 Summary of Lessons Learned and General Discussion of  
LTMS Implementation Among Panel Members – Moderator,  
Dr. Fehring
  - Dr. Peddicord
  - Mr. Bates
  - Mr. Seyffert
  - Dr. Fehring
  - Ms. Cunniff
- 12:30 Adjournment

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## **Appendix B: Key To Acronyms**

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<b>AAPA:</b>	<b>American Association of Port Authorities</b>
<b>ADID:</b>	<b>Advanced identification</b>
<b>AIWW:</b>	<b>Atlantic Intracoastal Waterway</b>
<b>CFR:</b>	<b>Code of Federal Regulations</b>
<b>CWA:</b>	<b>Clean Water Act</b>
<b>CWPRA:</b>	<b>Coastal Wetlands Planning, Protection, and Restoration Act</b>
<b>CZMA:</b>	<b>Coastal Zone Management Act</b>
<b>DNR:</b>	<b>Department of Natural Resources</b>
<b>EDF:</b>	<b>Environmental Defense Fund</b>
<b>EIS:</b>	<b>Environmental Impact Statement</b>
<b>FIND:</b>	<b>Florida Inland Navigation District</b>
<b>GIS:</b>	<b>Geographic Information System</b>
<b>ICWW:</b>	<b>Intracoastal Waterway</b>
<b>IMI:</b>	<b>International Marina Institute</b>
<b>LTMS:</b>	<b>Long-term Management Strategy</b>
<b>MOA:</b>	<b>Memorandum of Agreement</b>
<b>MPRSA:</b>	<b>Marine Protection, Research, and Sanctuaries Act of 1972</b>
<b>NAWMP:</b>	<b>North American Waterfowl Management Plan</b>
<b>NEP:</b>	<b>National Estuary Program</b>

<b>NEPA:</b>	<b>National Environmental Policy Act</b>
<b>NIMBY:</b>	<b>Not In My Back Yard</b>
<b>NMFS:</b>	<b>National Marine Fisheries Service</b>
<b>NOAA:</b>	<b>National Oceanic and Atmosphere Administration</b>
<b>O&amp;M:</b>	<b>Operations and Maintenance</b>
<b>PSDDA:</b>	<b>Puget Sound Dredged Disposal Analysis</b>
<b>RCRA:</b>	<b>Resource Conservation and Recovery Act</b>
<b>SAMP:</b>	<b>Special Area Management Plan</b>
<b>SMA:</b>	<b>Special Management Area</b>
<b>USACE:</b>	<b>US Army Corps of Engineers</b>
<b>USEPA:</b>	<b>US Environmental Protection Agency</b>
<b>USFWS:</b>	<b>US Fish and Wildlife Service</b>
<b>USGS:</b>	<b>US Geological Survey</b>
<b>WES:</b>	<b>US Army Engineer Waterways Experiment Station</b>
<b>WRDA:</b>	<b>Water Resources Development Act</b>

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