
Identification and Examination of Practicable Dredged Material Management Alternatives

Task 1 Final Document

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INTRODUCTION

The Applicant (South Island Dredging Association, herein "SIDA") represents member organizations that require immediate dredging of the tidal creeks and basins within their geographical areas in order to restore reasonable navigability to those waters and bring them back to design grade. Presently these facilities are not navigable over much of each tidal cycle. This includes the following waterways inside Sea Pines Plantation, which is located on the southern one-third of Hilton Head Island, Beaufort County, South Carolina: Braddock Creek, Braddock Cove, and South Beach Marina; Gull Point Marina (located on the northeasterly side of Braddock Creek); Baynard Creek; and Harbour Town Yacht Basin. It is estimated that approximately 195,000 cubic yards of fined-grained material and up to 150,000 cubic yards of sandy profile nourishment-quality material must be removed from these waterways to bring the channels and basins back to reasonably navigable depths and widths.

This application is the result of over two years of study and review of the problems confronting SIDA's members. SIDA and its consultants have selected the open waters of Calibogue Sound for the discharge of the materials to be dredged from the areas to be permitted, because they have determined, after this exhaustive study, that Calibogue Sound is the only practicable, feasible disposal site for this project, and that there are not alternative sites reasonably available, either upland or offshore in the Atlantic Ocean.

It is the purpose of this section of the permit application to set forth the steps undertaken by the Applicant during its investigation of alternative disposal sites, and to demonstrate why Calibogue Sound is, in fact, the only practicable disposal site for the proposed dredge spoils discharge under this permit application.

APPLICABLE LAWS, RULES AND REGULATIONS

SIDA's alternative site analysis has been conducted under the purview of applicable federal and state laws, rules and regulations.

The principal federal law applicable to SIDA's site selection for this permit application is Section 404 of the Federal Water Pollution Control Act of 1972 (FWPCA), as amended by the Clean Water Act of 1977 (CWA).

The U.S. Army Corps of Engineers (USACE) and the Environmental Protection Agency (EPA) jointly developed and established procedures applicable to the evaluation of potential contaminant-related environmental impacts associated with the discharge of dredged material in inland waters, near coastal waters, and surrounding environs (that is, all waters in the United States jurisdiction other than the ocean and the territorial seas). These procedures are set forth in the "Evaluation of Dredged Material Proposed for Discharge in Waters of the U.S. - Testing Manual," commonly referred to as the "Inland Testing Manual" (and so identified herein).

Also, the EPA has promulgated "Guidelines" (so identified herein) as the substantive criteria to be used in evaluating discharges of dredged materials in Inland Waters (as regulated under Section 404 of the CWA). These Guidelines are affixed as Appendix "A" in the Inland Testing Manual, and published in 40 CFR Part 230.

The principal South Carolina (State) law applicable to the Applicant's site selection process for this permit application are the "OCRM Regulations" promulgated by the S.C. Department of Health and Environmental Control (SCDHEC), through its Office of Ocean and Coastal Resource Management (OCRM). Designated as DHEC Regulation 30, these rules and regulations are intended to implement the South Carolina Coastal Management Act of 1977. Inshore open water disposal of dredge materials is authorized under the OCRM regulations, although admittedly it is not the preferred method.

SIDA, in close and continuous consultation with its consultants, has spent in excess of two years identifying, studying and evaluating potential disposal sites for its dredge project. As noted below, industry/regulatory tradition has segregated disposal sites into three categories. SIDA's study involved a comprehensive review of potential sites within all three categories, with the specific goal of identifying the most practicable and feasible sites(s) for this dredge project.

All studies were conducted within the purview and specific requirements of the above-cited federal and state laws, rules and regulations and guidelines. Under the guidance of its consultants, Applied Technology and Management, Inc. (ATM), a review and discussion procedure was established with an interagency group comprised of representatives from all federal and state agencies who are interested in the dredge permitting process. Two years of frequent meetings and reporting kept the agency representatives fully apprised of the work being undertaken and completed by SIDA and its consultants. All participants in this process were allowed full opportunity to critique the Applicant's studies and reports, so that every reasonable alternative for spoils disposition could be thoroughly analyzed.

It is the conclusion of SIDA and its consultants, after this exhaustive and comprehensive study, that in fact the only practicable and feasible disposal sites available for the project to be permitted under this application involve open water placement in the inshore waters of Calibogue Sound. These include placing the majority of the finer-grained maintenance material in at least two deeper water locations and the sandy material from the facility entrances in the water column in front of adjacent beaches. Placement can be accomplished so that no unacceptable adverse effects on those waters and the marine life

in those waters will result. This justifiable conclusion has been arrived at for the reasons, and upon the evidence, set forth below.

A REVIEW OF THE SIDA PROJECT-ITS SCOPE, PARAMETERS AND GOAL

In the interest of providing an orderly, understandable review of the alternative site selection process utilized by SIDA, a brief review of the scope, parameters and goals of the SIDA dredge project which is the subject of this permit application is necessary and desirable.

SCOPE OF THE PROJECT

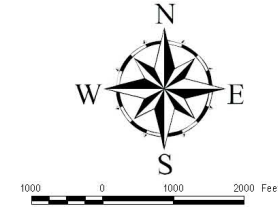
The scope of this project can best be visualized and understood by reference to maps of the several waterways included in the permit application for dredging. Attached as Figure 1 is a map of Hilton Head Island (situate in southern Beaufort County, South Carolina). This map also shows lands and waters surrounding Hilton Head Island within a geographical area extending approximately five miles from the Island. Through the course of this presentation, reference will be made to the map, and specifically to many of the individual tracts and waterways identified thereon by code (see the legend on this map).

Approximately the south one-third (1/3rd) of Hilton Head Island has been developed as "Sea Pines Plantation" (herein called "Sea Pines"), a contiguous tract of approximately 5,200 acres that comprises 5,890 residential sites (98% built-out) and also approximately 65 commercial business operations, many of which are located at Harbour Town and South Beach Marina and depend upon navigable water for their operations.

The organization and development of Sea Pines began in the early 1960's. It was the first development project on Hilton Head Island, which at that time was virtually unused except by a few native inhabitants. More important to an understanding of the SIDA project, Sea Pines was one of the first planned communities on a barrier island in the United States, and its entire "finished plan" was laid out by the development company before marketing and sales of property to the public commenced. This overall plan included not only residential lots, specified areas for commercial operations, and tennis/golf/horseback riding/recreational facilities, but also a comprehensive development, creation and installation of lagoons, canals, navigable creeks, and marinas - for the obvious purpose of fully utilizing the natural relation of the Island's proximity to its surrounding waters, such as the Atlantic Ocean and Calibogue Sound. The result has been a nationally acclaimed and often copied community, which is certainly one of the true landmarks within South Carolina. To say that it is one of South Carolina's major tourist destination centers is understating the impact Sea Pines Plantation, and its water-oriented amenities have had on the state and its growing number of residents and visitors since 1960.

The waterways included within SIDA's application of a dredging permit are definitely an important, integral part of this community. Harbour Town and South Beach Marinas provide necessary docking facilities for boats either visiting the Island, or owned by residents who want ready-access to the water activities of the area. Both of these marinas are visited by more than a million people each year. Because Sea Pines Plantation is primarily a waterfront community, at least one-third of its 5,200 property owners are directly affected by

Town of Hilton Head Island
Sea Pines
 Prepared by Alessandra Delfico



LEGEND

- (1) COVENANT RESTRICTIONS
- Tidal Line
 - WATER TYPES**
 - FRESHWATER FORESTED WETLANDS
 - FRESHWATER MARSH
 - OPEN WATER
 - OPEN SPACE WETLAND-(1)
 - LAND
 - LANDUSE**
 - COMMERCIAL
 - COMMERCIAL
 - OPEN SPACE/ GOLF COURSE- UPLAND- (1)
 - RESIDENTIAL
 - RESIDENTIAL/ RESORT
 - ROADS
 - RECREATIONAL-PUBLIC

This information has been compiled from a variety of unverified general sources at various times and as such is intended to be used only as a guide. The Town of Hilton Head Island assumes no liability for its accuracy or state of completion, or for any decisions which the user may make based on this information.



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 ONE TOWN CENTER COURT
 HILTON HEAD ISLAND, S.C. 29928
 PHONE (843) 341-4600
 4/26/2000
 Project - seapines.apr Layout - d

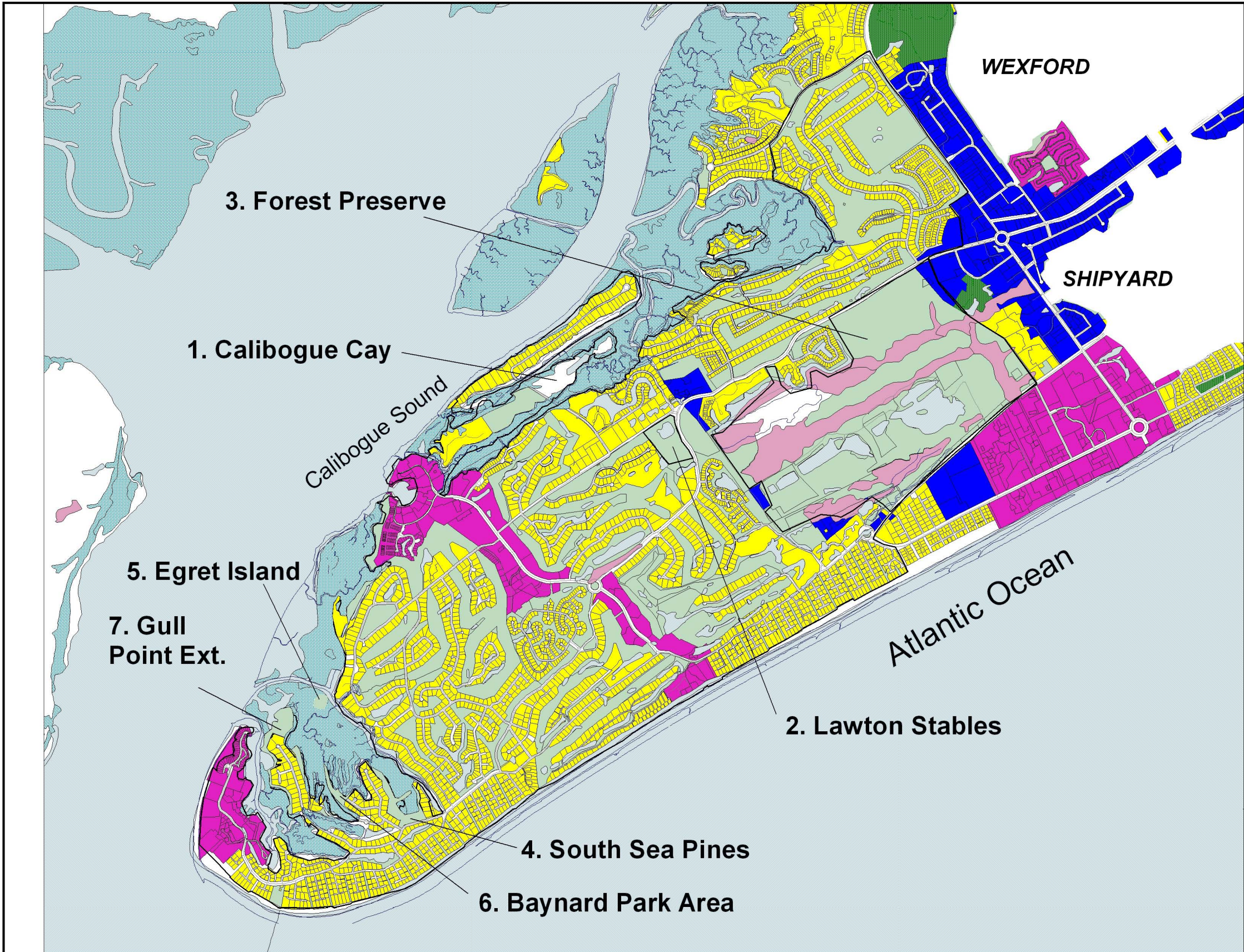


FIGURE I
 MAP OF SEA PINES PLANTATION AND ADJACENCIES
 TOWN OF HILTON HEAD ISLAND

these problems, and are represented by SIDA. Navigation problems at the marinas, and in their connecting channels, have now reached the intolerable point where regular scheduling of boating activities is curtailed and sometimes prohibited due to lack of sufficient water depths.

SIDA was formed in early 1999 to provide a non-profit organization that can assist the several different residential communities and marinas in obtaining permits, dredged material management, and funding for continued maintenance of the navigable tidal waterways and marinas in Sea Pines. To provide a more definitive understanding of the problems now confronting SIDA and its members, the following historical information for each of the facilities covered by this permit application is presented. Long-term residents and members of the management of Sea Pines Company assisted in compiling this information.

GENERAL

The waterways and basin areas under study (Baynard Creek, Braddock Cove Creek, Harbour Town basin, and the South Beach and Gull Point basins) were all natural waterway and intertidal areas that formed an integral part of the original Sea Pines Company development plan. These areas are all located at the south end of Hilton Head Island and all are connected to the Calibogue Sound. For the most part, the initial excavations to make these areas navigable provided a large amount of high-quality fill material that was used to develop the Sea Pines Plantation component properties.

HARBOUR TOWN MARINA

The present Harbour Town marina basin and concrete panel wall was constructed in 1968 from a natural area consisting of tidal creek and intertidal marshlands. Prior to excavation and bulkheading, there was an existing commercial dock in the cove area that was used by commercial fisherman and Daufuskie Islanders for access to the mainland. The dredged material from this first excavation contained enough high-quality fill material so that it was used to fill the area now occupied by the 18th fairway on the adjacent Harbour Town Golf Links. Some of this fill was also placed to improve the areas now occupied by the Schooner, Ketch, Cutter, and Caravale Courts and the area now occupied by the Golf Clubhouse.

The first maintenance event was performed in 1973. Approximately 50,000 CY were excavated from the basin area and approaches and placed in the Calibogue Cay site (40,000 CY) and on the Lawton Stables Tract (10,000 CY). At that time the developer (Sea Pines Company) was just beginning the development of the Calibogue Cay area. They were also the owners of both the Deer Island property, on which the Calibogue Cay CDF was constructed, and the owners of Harbour Town. The few residents in the Calibogue Cay POA at the time voted to permit this one-time use of the CDF by Sea Pines. In the same way, the Sea Pines Company also owned the Lawton Stables Tract. Fill was excavated from this property for development of the surrounding areas and a small amount of dredged material from Harbour Town was pumped to the site to refill some of these areas. Since that time, the ownership of Harbour Town has been transferred to different owners. Sea Pines retains ownership and control of the Lawton Stables Tract and has completed development

of Sea Pines Plantation. The Lawton Stables area is no longer suitable or available for the use of Harbour Town (see discussion of the Lawton Stables Tract below).

By 1978, the Harbour Town facility had a serious entrance channel shoaling problem. The Sea Pines Company received an agitation-dredging permit to maintain the channel entrance. Approximately 7,000 CY were removed at that time. In 1979, the Sea Pines Company received a permit to experiment with sediment resuspension by employing a cross-entrance "bubble curtain" designed by Dr. Per Brunn. This device was considered ineffective at the time and was dismantled within a few months.

In 1987, existing Sea Pines Company dredging permits for Harbour Town were transferred to the new owner, Fogelman Properties. No upland alternatives were available to them, so Harbour Town performed its first ocean disposal project. Approximately 98,500 CY were excavated by mechanical dredge equipment and placed in the Savannah Harbor ODMDS. The cost of this effort was approximately \$790,000. Since that time, use restrictions have been placed on the Savannah Harbor ODMDS and sediment barrier wing walls have been installed in the Harbour Town entrance area that do not permit the large mechanical dredging equipment used in ocean disposal to be brought into the inner basin.

In 1994, Prudential Bache/Fogelman Harbour Town Properties received a permit to dredge approximately 25,000 CY from the entrance channel and antebasin areas by mechanical means. (The inner basin was not dredged because the equipment could not enter all the way into the Harbour.) The dredged material was placed in the Port Royal ODMDS with a project cost of \$272,900. The permit was amended in 1996 and the inner dredging of the entrance channel, antebasin, and inner basin was accomplished with a combination of ocean-certified hopper scows and tugboats and small hydraulic dredging equipment (cutterhead and Mudcat). The material was excavated by hydraulic means, pumped to a scow in the Sound, overflowed until a suitable volume was settled out in the scow, and then the material was transported offshore to the Port Royal ODMDS and placed. Approximately 53,000 CY were removed at a cost of \$492,000. Besides the exorbitant cost, this project had severe logistical difficulties including the marriage of traditional ocean dredging equipment with small hydraulic dredge equipment. These fine-grained materials cannot effectively be settled out in an area as small as a 3,000 CY hopper scow. The Port Royal ODMDS has also been deauthorized since this project was completed (see below).

BRADDOCK COVE CREEK (INCLUDING SOUTH BEACH MARINA AND GULL POINT MARINA)

Prior to the development of Sea Pines Plantation, the Braddock Creek waterway provided riparian owners with access to the Sound, but only at the highest stages of the tide. In 1972, the Sea Pines Company performed the first major dredging effort to provide vessel access at low tide conditions. The South Beach Marina basin area was also enlarged at this time. The dredged material from this initial event contained a relatively large amount of high-quality fill material that was placed on adjacent uplands and used to improve the land for the development of that area now known as Lands End. The lack of practicable alternatives has not permitted maintenance on a schedule that keeps the channel open to recreational vessels at low tide. Three events (of a partial nature) have been performed since the initial

excavation. These events include a project in the late 1970s that sources indicate was an agitation dredging operation and one in the 1980s that may have utilized the Port Royal ODMDs. The last event (in 1994) removed approximately 86,000 CY from these areas. The material was excavated by a small hydraulic dredge and pumped into ocean-going hopper scows, which were subsequently towed to the Port Royal ODMDs for disposal. These areas are in need of maintenance dredging at this time and the stakeholders in this area (the South Beach POA, the South Beach Marina, and the Gull Point POA) do not have a practicable dredged material management alternative to complete this effort.

BAYNARD CREEK

Prior to the 1967 development of this area, Baynard Creek was only navigable at high tide conditions. As part of the development, the Creek was dredged in 1967 to provide Calibogue Sound access to the individual property owners and for users of the Community Dock. The material excavated from this initial event was deposited in a site constructed on adjacent upland property. This site was subsequently closed and the land incorporated into the Sea Pines development. The only maintenance dredging of the Creek was performed in 1984. Sources indicate that this material was placed in a marsh area near Audubon Pond that has subsequently been developed. Since that time, alternatives have not existed that are financially supportable by the POA. The POA recently applied for and received a maintenance-dredging permit, but the only management alternative available was ocean placement in the Port Royal ODMDs. This alternative is not practicable for this group because of the prohibitive costs and does not represent a long-term management solution. The Creek is predominately intertidal and is in serious need of maintenance.

In concluding this historical review, it should be noted that Gull Point Marina and the Braddock Creek/Baynard Creek waterways are the only two areas within Sea Pines that allow sheltered, full-time dock facilities for residents. These facilities were on the original master plan for the community, and lend considerable ambience to all of Sea Pines Plantation. They are much utilized for boating, kayaking, and sport fishing by residents and visitors, but those enjoyable activities are now greatly curtailed, and in danger of being lost, because of the major accumulation of silt deposits that greatly impair navigation through these waterways.

The goal of SIDA and its members is to dredge these facilities and return them to usable, navigable waterways. Previous dredging projects over the past 25 years required transportation of the spoils to a Corps of Engineers designated ocean disposal site designated for the federal project in the Port Royal Sound. For reasons detailed in the discussion below, that procedure is no longer a viable, practicable option for the SIDA members. And, as well documented below, all efforts by SIDA to find any suitable, practicable upland site(s) for this project have been totally unsuccessful.

It is estimated by ATM's engineers that restoration of these waterways to an average depth of 8 feet at mean low tide, with 60 feet of channel width into the basins, will yield over 195,000 cubic yards of fine-grained material and up to 150,000 cubic yards of sandy profile nourishment-quality material. Most of the material to be removed can best be characterized as fine-grained maintenance material-it is at least 80% water when pumped out with a

suction-type dredge. A full-scale sample testing program (detailed below) has proven that there are no contaminants in this mud that could adversely impact the waters and marine life in Calibogue Sound. By working closely with all interested federal and state agencies, and by preparing scientifically-sound models to predict how the spoils plume will react within the tidal currents of the Sound, SIDA's consultants have established that this plan is, in fact, the only practicable and feasible method to reestablish these waterways to reasonable navigable status and preserve them for future use by all the public.

REVIEW OF REGULATORY GUIDELINES FOR DREDGE MATERIAL DISPOSAL

The discharge of dredged material into waters of the U.S. is regulated under Section 404 of the Clean Water Act (CWA). The §404(b)(1) Guidelines can be found in 40 CFR Part 230 and are also reprinted as an Appendix in the Inland Testing Manual (USEPA/USACE, 1998a). Both the federal §404 Guidelines and the OCRM Regulations give preference to upland and ocean disposal alternatives over and against placement in 404 open waters, unless an upland disposal would have adverse environmental results.

The applicable scope of the federal guidelines, per §404(b)(1) of the Clean Water Act is summarized as follows:

The guidelines are applicable to the specification of disposal sites for the discharges of dredged or fill material into the waters of the United States. Sites may be specified through...(1) The regulatory program of the U.S. Army Corps of Engineers under sections 404(a) and (e) of the Act... §230.2(a)

According to the supplementary information contained in 40 CFR Part 230, specified disposal sites must be “practicable”:

...the only alternatives which must be considered are practicable alternatives. What is practicable depends on cost, technical, and logistic factors...Our intent is to consider those alternatives which are reasonable in terms of the overall scope/cost of the proposed project... If an alleged alternative is unreasonably expensive to the applicant, the alternative is not “practicable”... it must be reasonably available or obtainable. However, the mere fact of ownership or lack thereof, does not necessarily determine reasonable availability.

An alternatives analysis must also consider the South Carolina OCRM Regulations as they relate to dredged material management alternatives (CZM consistency) and the State 401 water quality certification process. The OCRM Regulations are reasonably consistent with the 404 Guidelines. The OCRM Regulations make use of the word “feasible” where the 404 Guidelines use “practicable.” The applicable OCRM Regulations, which come from DHEC Chapter 61 state:

- Existing facilities must have either permanent upland disposal sites or EPA approved ocean disposal sites - R.30-12.G(2)(f)

- Upland disposal of dredged material shall always be sought in preference to disposal in wetlands. Vegetated wetlands and mudflats shall not be utilized for disposal of dredged materials unless there are no feasible alternatives – R.30-12.1(2)(a)
- Open water and deep water disposal should be considered as an alternative if highland alternatives are not feasible - R.30-12.1(2)(b)
- Wherever feasible, existing disposal areas shall be utilized to the fullest extent possible; this would include raising the height of the embankments to increase the holding capacity of the disposal area - R.30-12.1(2)(f)

The OCRM Regulations define feasible to be:

...based on the best available information, including...consideration of factors of environmental, economic, social, legal, and technological suitability of the proposed activity and its alternatives...“Feasible alternatives” applies both to locations or sites and to methods of design and construction... - R.30-1.D(20)

While the Guidelines “prefer” upland disposal over ocean or open water alternatives, the Guidelines also recognize that placement in an upland facility is not necessarily less impactful than returning the material to the estuarine system. According to 40 CFR Part 230:

...once these practicable alternatives have been identified in this fashion, the permitting authority should consider whether any of them, including land disposal options, are less environmentally harmful than the proposed discharge project. Of course, where there is no significant or easily identifiable difference in impact, the alternative need not be considered to have “less adverse” impact.

...some commenters were concerned that the alternative consideration was unduly focused on water quality, and that a better alternative from a water quality standpoint might be less desirable from, say, an air quality point of view. This concern overlooks the explicit provision that the existence of an alternative which is less damaging to the aquatic ecosystem does not disqualify a discharge if that alternative has other significant adverse environmental consequences. This last provision gives the permitting authority an opportunity to take into account evidence of damage to other ecosystems in deciding whether there is a “better” alternative.

For the purposes of this analysis, “practicable” and “feasible” are taken to have essentially the same meaning. The potential “practicable” alternatives are discussed and compared to determine the optimal alternative, in terms of environmental factors, social and legal issues, technological considerations, and costs. The following section identifies the alternatives in order of preference to the regulatory agencies.

IDENTIFICATION OF POTENTIAL ALTERNATIVES

This section will identify the known potential locations and provide information concerning the long-term establishment of each. Emphasis is placed on the temporal aspect of this endeavor. Recent and historical dredging projects have been individual efforts that have garnered case-by-case permits for typically 3 years. The current goal for SIDA is to bring member facilities into compliance with the OCRM Regulations [R.30-12.G(2)(f)] by

specifying a long-term¹ disposal option (i.e., for more than 10 years) to accommodate SIDA's current and future maintenance dredging needs. Organizationally, the potential alternatives are presented, discussed, and evaluated in three broad categories: ① confined upland placement; ② ocean placement; and ③ inshore open water placement. Because the 404 Guidelines seek to designate the least environmentally damaging practicable alternative, the categories are presented in an order that it is typically considered least to most potentially damaging (confined upland placement first, ocean placement second, and inshore open water placement last). In actual practice, this order really represents typical ease of regulatory permitting. It is not always clear that upland placement alternatives are less environmentally damaging than placement in ocean or inland waters.

UPLAND PLACEMENT

As preference for confined upland sites is contained in both the OCRM Regulations [R.30-12.1(2)(a)] and implicitly in the 404 Guidelines, practicable alternatives under this category were sought first. Upland disposal facilities generally require maximizing the available area to limit the initial improvement costs, reduce required dike heights, provide more effective settlement of fine-grained material, and minimize material desiccation times. The ideal dredge disposal alternative (for any facility) would consist of an appropriately sized upland confined disposal site in close proximity to the subject dredging location.

The primary criterion for any confined upland disposal alternative to meet SIDA's long-term management needs is capacity. With an approximate initial quantity of 195,000 CY of fined-grained material and 150,000 CY of cyclical maintenance material, ATM estimates that a minimum of 25 acres is required. This estimate is based primarily on meeting the needs of the initial effort with an initial effective dike height of 8.5 ft and a nominal material expansion factor of 1.5. Alternatively, multiple confined upland facilities of greater than 5 acres each with similar dike assumptions could be managed collectively to meet the project goals. Applicant's survey takes these requirements into consideration.

The legal and environmental considerations go hand-in-hand with the capacity requirement. In order to use an existing site or develop a new one, the site must be legally available for SIDA's long-term use and the development and maintenance of such a facility (CDF) must consider the potential environmental impacts in the siting and operation of the CDF. The cost and social issues for this alternative are secondary, but also very important.

Upland availability adjacent to the SIDA member facilities is severely limited to the point of becoming nonexistent. This is due to the existing level of development (i.e., Harbour Town, South Beach, Baynard Cove, etc.), as well as strict zoning codes imposed within the Sea Pines development. These restrictions include Open Space, Conservancy, and Forest Preserve covenants (see Figure 1). According to the Sea Pines master plan and covenants, only two parcels within the limits of Sea Pines Plantation are specifically designated for the purposes of dredge disposal. One is referred to as the Lawton Stables Tract and the other is the Calibogue Cay disposal site. Each is discussed in the following sections.

¹ The OCRM Regulations specify a "permanent" disposal site.

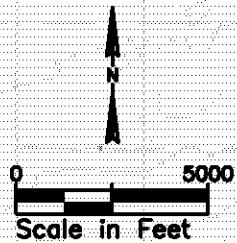
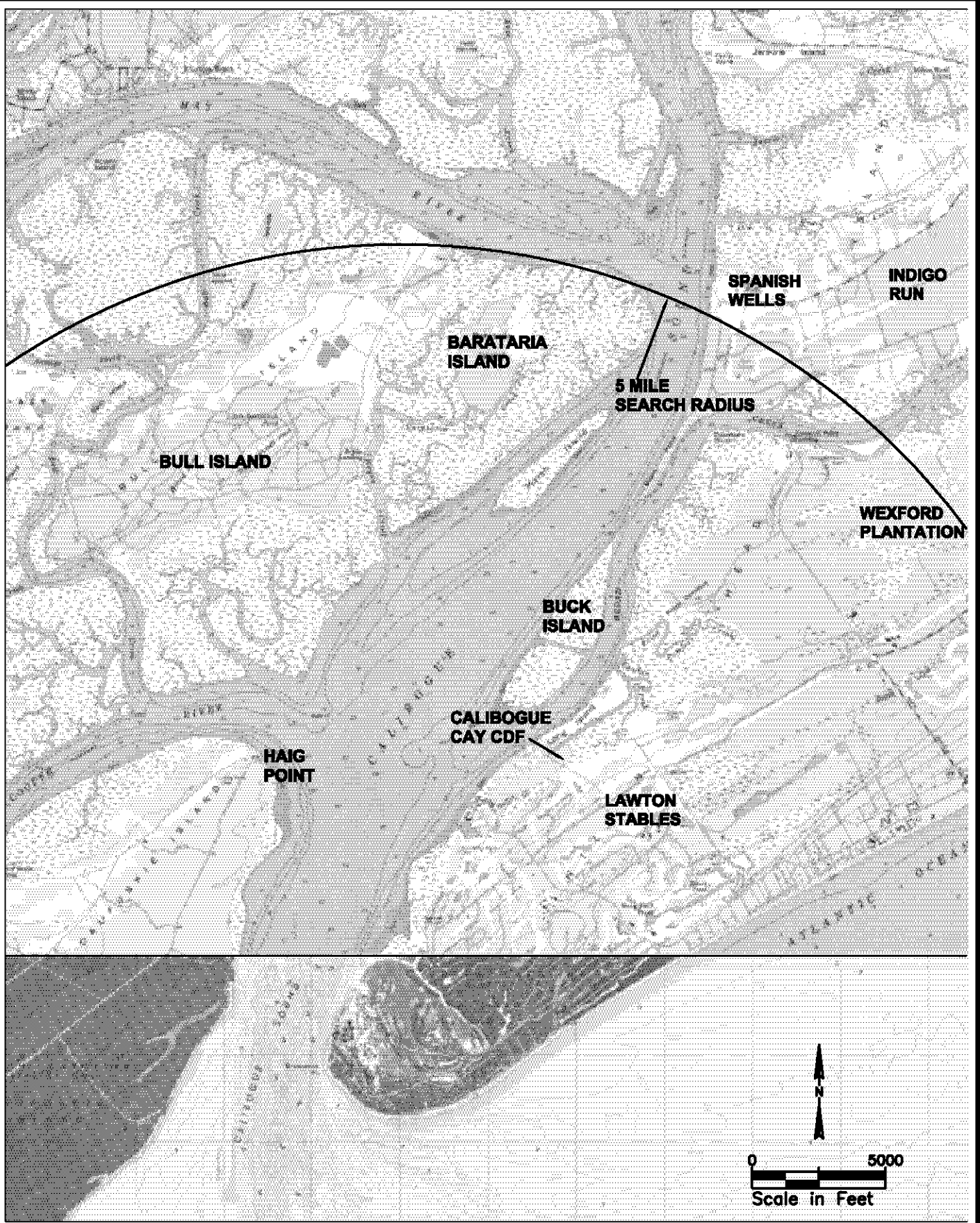


FIGURE 2
POTENTIAL UPLAND DISPOSAL SITES
SOUTH ISLAND DREDGING ASSOCIATION
SOURCE: USGS QUADRANGLE (BLUFFTON & NORTH
TYBEE ISLAND)



LAWTON STABLES TRACT

The Lawton Stables tract is located in Sea Pines Plantation in the area indicated on Figure 1&2. It is not located near any Sea Pines waterways and is primarily used as a park area, green space, and livery. The total upland area of the site encompasses approximately



22 acres. However, only 2 acres of this tract could be used as part of any comprehensive dredged material management plan and only for material dredged from one (i.e., Harbour Town) of the SIDA member facilities. The Lawton Stables tract covenants state “the use of *existing or future lakes* on the 21.786-acre Lawton Stables tract as a disposal area for dredged bottom material from the *Harbour Town Yacht* basin will be specifically permitted (*italics added*)...” Although this site was utilized in the past for small dredging events at the

Harbour Town Yacht Basin (last time was 1980), the Sea Pines Plantation has since been fully developed and the parcel includes a pond area totaling only 2 acres (refer to letter from CSA dated 1 July 2000 in the Appendix).

Limitations for use of the Lawton Stables tract include: ① the legal designation (which allows only spoil from Harbour Town Yacht Basin); ② severely limited available capacity; ③ logistical impracticability; ④ ownership and control issues, and ⑤ adverse environmental impact.

The limitation on use at the Lawton Stables pond by Harbour Town is problematic even under a dredged material management plan that uses a multi-site approach. With Sea Pines now developed, the conveyance pipeline cannot reasonably be routed to the site from Harbour Town. ATM estimates a minimum initial dredge quantity requirement of approximately 30,000 CY from the Harbour Town Yacht Basin alone. The remaining lake areas on the Lawton Stables tract cannot accommodate even this volume. No other lake areas can be developed. In fact, the owner of the property has refused permission for any use for dredged material management (see letter from the Sea Pines Company dated 14 August 2000 in the Appendix). The original purpose for allowing use of the site for dredged material was to replace the upland areas removed from quarrying the property during the development of Sea Pines Plantation. Harbour Town was last able to use the site in 1982, when both the Tract and the marina were owned by Sea Pines Company and the area around the Lawton Stables park was still developed. Since then, ownership of the marina has changed and they have had to resort to expensive ocean disposal options totaling over \$1.5 million for less than 200,000 CY of material.



If the site were feasible in terms of capacity and logistical acceptability, a strong effort would be made to overcome the owner’s refusal to use the site. But, previous ATM experience suggests that a minimum CDF size of approximately 5 acres is required for use with a 12 to

14-inch dredge plant. Dike construction requirements; surface area requirements to effectively settle solids; and dike stability during filling; and other considerations dictate a minimum overall CDF size regardless of the volumetric requirements of the project. A CDF cannot feasibly be constructed on the site for even a part of the Harbour Town material and other SIDA members are strictly prohibited from using the site at all. Trucking accumulated spoils out of Sea Pines will not be allowed (see attached letter from CSA dated 26 March 1999).

Therefore, the Lawton Stables site will not suffice even in the short-term solution for Harbour Town or as a portion of a multi-site dredged material management alternative for SIDA. The site is located in the middle of the upland portion of Sea Pines Plantation and was used in the early days of development as a quarry for quality fill material. Some of these quarried areas were refilled with high-quality dredged material from the initial excavations at Harbour Town Yacht Basin, but the tract is no longer available for use for dredged material management because of access, capacity, and owner permission issues. Conveyance pipelines in excess of three miles would have to be placed along major Plantation roadways with provision made for underground crossings and with periodic booster pumps. CDF dike construction would require secondary stabilization to create a more vertical side slope and prevent "blow-outs." For the minimum and certainly one-time use, this type of solution is neither practicable nor feasible. The combination of legal, logistical, and capacity issues eliminates this alternative from further consideration even as part of a multi-site approach to long-term management of SIDA material.

CALIBOGUE CAY DISPOSAL AREA

The Calibogue Cay confined disposal facility (CDF) is located adjacent to Back Creek, immediately landward of Calibogue Cay (see Figures 1&2). As this appeared to be the best hope for a practicable upland alternative, a detailed feasibility study of the Calibogue Cay CDF was completed for SIDA in July 1998 (ATM, 1998b). The relevant details and conclusions of this report were excerpted from the study and are presented here. The existing site requires extensive redevelopment and enlargement to be useful for cyclical long-term maintenance. Additionally, current covenants restrict the use of the site to sediments excavated from the adjacent Back Creek. A detailed study was initiated to examine the feasibility of site redevelopment for SIDA's long-term use from logistical, cost, legal, and social perspectives. The study examined the existing conditions and potential capacity of the Calibogue Cay CDF and the feasibility and conceptual costs associated with improving the site for the long-term management of SIDA member maintenance dredged material.

When evaluating this site for any dredge project, an important fact to note is that the "Back Creek" of Calibogue Cay was partially dredged in 1996, and the spoils from that project are still onsite. Thus, its present capacity for additional dredged material, in its current state, is minimal (not in excess of 6,000 CY). It is estimated that approximately 600 truckloads would be required to remove the 1996 spoils.

The ATM study identified several problems with the proposed use of the Calibogue Cay CDF, including:

- limited site capacity at the fully developed state;
- covenant restrictions that are insurmountable;
- logistical problems including the required heavy use of the Sea Pines roadways by dump trucks for initial improvement and regular unloading of the facility; and
- aesthetic/social problems with excessive dike elevations blocking adjacent owners' marsh vistas.

These factors were determined to render the Calibogue Cay site inappropriate for use as part of SIDA's project. The CDF facility at Calibogue Cay has an estimated initial *existing* capacity of 6,000 CY. The available upland (contained within a 34-acre open space parcel of Deer Island) was surveyed and a conceptual spoil site planned that would maximize site use by applying a limited (10 ft) buffer around the entire upland/marsh boundary. This resulted in a maximized storage area of 14.9 acres and an initial improved capacity of 118,000 CY (assuming a constructed dike height of approximately 17 ft above existing grade). Construction costs for this initial improvement were estimated to be \$235,000, not including permitting, surveying, and other "soft" costs.

The limited initial capacity requires a "phased" approach to be taken to initial excavations. Application of a nominal 40% desiccation factor, prioritized initial dredging, and a methodical dike raising program results in ultimate site capacity being reached in 5 years with final dike heights of 23 ft above grade. Potential truck haul removal of material from the site was also investigated, but excessive truck haul costs (\$5-\$8/CY), prolonged heavy truck traffic on residential Sea Pines roadways, as well as social issues of excessive dike height blocking the view of adjacent Sea Pines communities further restrict the potential for use. Correspondence from CSA further supports these considerations (refer to letter from CSA in the Appendix dated 26 March 1999).

The Calibogue Cay CDF is sited on land owned by CSA; however, the *Sea Pines Land Use Covenants* for Calibogue Cay, Back Creek, and Contiguous Areas state that the site is expressly reserved as a CDF for dredged material from Back Creek (lying behind Calibogue Cay) only. This condition can only be changed by "...a majority of the then owners of lots substantially affected by such change in Covenants..." Communications between CSA and the Calibogue Cay homeowners show that they are not willing to enter into a use agreement with SIDA. Calibogue Cay has an ongoing siltation problem in the Back River and this site represents these owners' only dredged material management alternative. Placement of any SIDA facility material on this property reduces the overall capacity, limits the Calibogue Cay POA's options, and shortens the useful time horizon of the property because the material cannot be effectively removed from the site once placed.

The Calibogue Cay Dredging Association has removed this site from consideration. Letters from Robert Willock, President of this organization, state that SIDA should not consider use of this property for any portion of their dredged material management needs (see Appendix for copies of the letters dated 30 June 1999 and 10 May 2000). Mr. Willock cites reduced capacity issues, the existing covenants, and the views and attitudes of the existing property owners. These considerations combined with the very practical considerations of high site development costs for a limited volume remove this site from consideration. The owners of

properties adjacent to the Deer Island property on which the Calibogue Cay CDF is constructed have already voiced their displeasure with the degradation of their marsh vistas and the poor aesthetics of a two-story dike structure. These owners would surely attempt to block any significant site redevelopment of the Calibogue Cay CDF.

In summary, this site must be removed from consideration for use as a long-term management alternative for all or even part of the SIDA dredged material. The site is currently restricted to use by the Calibogue Cay POA for dredged material from Back Creek. The Calibogue Cay Dredging Association is already planning to use the site in the near future (Fall 2000). There is no reasonable prospect of revising these covenants. In a fully developed state, capacity will be reached within five years leaving a 15-acre facility in the middle of a now attractive marsh vista. The Calibogue Cay owners will have lost their long-term alternative and SIDA will still require a long-term management alternative for their needs. Even under the ideal scenario (as expressed in the site use feasibility document and summarized above), site management and dike raising demands required by SIDA use must proceed less than acceptable rates. After the five-year time horizon is exhausted, cyclical dredging of the SIDA facilities will still be behind maintenance needs, all capacity in the only available upland CDF in Sea Pines Plantation will be consumed, and SIDA and the Calibogue Cay owners will still be in need of a long-term management alternative.

EGRET ISLAND

This is the one presently undeveloped upland site within Sea Pines that is now privately owned. Ownership was recently acquired by White Hat Properties (Mr. Frank Guzzio, principal). Egret Island is designated in the development plans of the Plantation for residential use, and thus is restricted to the uses permissible under covenants applicable to that designation, which would not include storing dredge spoils (see Figure 1).

This island is very small - approximately three (3) acres of upland surface at mean high tide. Also, it is completely surrounded by wetlands and marshes, so that building an access road to it is impossible. Thus, access is limited to shallow draft boats during times of high tide. Even if spoils were pumped onto it, there would not be a way to prepare it as a satisfactory CDF, nor could the accumulated spoils thereafter be removed.

Mr. Guzzio has advised SIDA in that Egret Island cannot be considered for use as a dredge spoil disposal site. For all of the above reasons it is not available for the use in the project to be permitted under this application.

OPEN LAND/FOREST PRESERVE SITES IN SEA PINES

There are several upland tracts within Sea Pines Plantation that are not presently developed with housing or other fixed facilities, but all are specifically designated on all maps and plans as "open space", which has a very defined meaning in the land use covenants of Sea Pines. As explained in the attached letter from legal counsel (dated 22 June 2000) for CSA, open space lands cannot be used for the disposition of dredging spoils because of the restrictive covenants. A review of the applicable limitations follows.

Forest Preserve lands

This 605-acre tract (see Figure 1) is the largest single open space site in Sea Pines that is not “developed” within the sense of fixed facilities that prevent setting up a disposal site. The Forest Preserve is owned by Sea Pines Company, whose management has advised SIDA in writing that no portion of the tract can be used for dredge spoil disposition (temporary or permanent).

In any event, the plats and covenants filed in Beaufort County designate the entire tract as a “forest preserve”, with allowable uses strictly limited to wildlife habitat, outdoor recreation, and waste water/sanitation purposes. As noted in the attached letter from CSA, numerous groups closely monitor activities in the preserve, and any attempt to use even a portion of the site for disposal of dredge spoils would result in immediate opposition. And, as for other upland sites in Sea Pines, the heavy trucks over an extended time period to remove the accumulated spoils to a remote location would not be acceptable. Thus, the Forest Preserve tract cannot be considered as an upland disposal site.

Other “Open Space” Sites In Sea Pines

There are only three other upland sites in Sea Pines that are “open”, but each is also designated on the maps and in the covenants filed in Beaufort County as “Open Space Areas.” All three sites are owned by CSA. They are identified on the attached map (Figure 1) of the Plantation.

As stated in the attached letter from CSA, and also in the letter from legal counsel (Vaux & Marscher, P.A. dated 22 June 2000) for CSA, use of one or all of these tracts—even if physically satisfactory for temporary storage of dredge spoils—would be a direct violation of the covenants. Whenever there has been a previous proposal to use one of the open space sites for a dredging project, the opposition of adjacent property owners has been adamant. For all of the reasons stated in the CSA letters, these open space sites cannot be made available for this dredging project.

All efforts and inquiries to find one or more suitable upland tracts within Sea Pines Plantation for use in this project require the conclusion that none are available. The attached letters and references confirm this conclusion.

OTHER UPLAND SITES (OUTSIDE SEA PINES PLANTATION)

Other potentially feasible upland sites were investigated within a 5-mile radius of the SIDA facilities (refer to Figure 2). This radius was deemed the reasonable limit for a search considering the logistics of small hydraulic dredges; however, the practical and cost effective pumping limit for 8 to 10 in. hydraulic pipeline dredges, which are typically required for the SIDA excavations, is closer to 1 to 2 miles. Dredged material conveyance beyond a distance of 2 miles would require use of a single large booster pump, or multiple boosters, which can raise the unit dredging price by \$1.50 per cubic yard for each booster. In addition, higher mobilization costs would be anticipated due to the booster pump requirements. If required to pump across Calibogue Sound, dredging costs would also increase relative to

the contractor's increased safety and equipment risks associated with maintaining a submerged pipeline across the Calibogue Sound channel (Lavelle, 1999). The search area was limited to waterfront properties, since the conveyance of dredge material across significant upland distances to inland locations is not likely to be permitted on Hilton Head Island and presents severe logistical difficulties.

- **Areas Surrounding Sea Pines.** The area surrounding Sea Pines on Hilton Head Island is occupied by Spanish Wells Plantation, Indigo Run, and Wexford Plantation. Each of these tracts border Broad Creek. No lands are available for SIDA dredge spoil in any of these areas, all of which are highly developed residential communities.
- **Buck Island** (see Figure 2) is located along the east bank of Calibogue Sound, approximately 1.7 miles northeast of Harbour Town Yacht Basin. ATM and SIDA representatives visited Buck Island in 1998. Buck Island has two factors that render it unusable. First, the upland area (scaled from Beaufort County Tax Map Sheet 14, Hilton Head) is only ±11 acres. This area is less than that of the conceptual improved disposal site at Calibogue Cay. Therefore, on this basis alone, it is not of sufficient capacity for long-term consideration. Secondly, there is a home on the island and the owner, Mr. Welles Murphey, Jr., has stated that he will not consider granting easements for any dredge spoil to be disposed of on Buck Island. A copy of relevant correspondence from Mr. Murphey (dated 24 March 1999) is attached.
- Water-accessible areas along the westward bank of Calibogue Sound, across the waterway from the SIDA facilities, were also considered. The candidate sites include Barataria Island, Bull Island, and Haig Point on Daufuskie Island (refer to Figure 2). Barataria and Bull Islands are located west of the confluence of Calibogue Sound and May River. The center of Barataria Island is 3.4 miles north of Harbour Town Yacht Basin, although water access along Barataria Creek (i.e., pipeline distance) is closer to 3.7 miles. Although the upland at **Barataria Island** measures roughly 150 acres (cf., the Beaufort County Tax Map), the island's owner Mr. Alfred Loomis (see letter from Mr. Loomis dated 4 May 2000 in the Appendix) has stated to SIDA that the island is under a conservation easement that would not permit the development of a CDF on the property. Barataria Island was therefore removed from further consideration.
- **Bull Island** is also owned by Mr. Loomis. Bull Island is accessible via Bull or Bryan Creeks. The relative minimum distances to Bull Island from Harbour Town Yacht Basin are 3.2 miles via Bull Creek and 2.6 miles via Bryan Creek. Site capacity at Bull Island would only be limited by use agreement restrictions and current upland uses. Costs for this alternative, due to the limited water-only access to Bull Island, as well as the required length of submerged pipeline and associated booster pumps would be much higher than upland alternatives closer to Sea Pines. These obstacles present serious problems, but ones that ATM believed could be overcome. However, in a letter to SIDA, Mr. Loomis has stated that he will not grant SIDA authority to dispose of dredge materials on either Bull Island or Barataria Island (see attached letter dated 4 May 2000).
- **Haig Point** is the northernmost tract on Daufuskie Island, located across Calibogue Sound and approximately 1.3 miles west of Harbour Town. Haig Point is a large real estate development of International Paper Company and is the most developed tract on Daufuskie. The logistic and cost problems associated with this location relative to a SIDA CDF are similar to those described above for Bull Island. In addition, in a letter from Haig Point's vice president of construction operations, SIDA has been advised that there are no areas available within Haig Point that could

be made available to SIDA for upland dredged material disposal (see attached letter from Benny K. Jones dated 5 April 1999).

- **AIW spoils areas behind Daufuskie Island.** The Corps of Engineers has designated upland spoils areas on Ramshorn Creek (off the Cooper River) toward the southerly end of Daufuskie Island. SIDA and ATM made inquiry to the Corps office about the possibility of using one or more sites for the SIDA project. Attached is a letter (dated 1 May 2000) from the local Corps office in Savannah stating that none of these sites are available to SIDA because they are restricted to federal usage only. Also, they currently are “unconfined” so that even the Corps is not permitted to use them at this time. The Corps is having to transport the AIW maintenance material all the way to CDF Area 14A on the Savannah River. SIDA finds that these sites are not available to its members.

SUMMARY OF UPLAND SITE INVESTIGATION

Based upon the above findings, it is the conclusion of SIDA that there are no existing CDF's, or land that could be developed by SIDA into CDF's, within a reasonable, practicable distance of Sea Pines. Concluding that upland disposal of their dredged material is impossible, SIDA and its members, with the assistance of ATM, next investigated ocean placement opportunities (as regulated under Section 103 of the Marine Protection, Research, and Sanctuaries Act).

OFFSHORE/OCEAN DISPOSAL

Offshore disposal is an alternative that has historically been selected by the US Army Corps of Engineers (USACE) for harbor and navigation entrance channel dredged material disposal. The US Environmental Protection Agency (USEPA) has established guidelines to permit the use of ocean disposal sites. THE USEPA designates offshore disposal sites, termed Ocean Dredged Material Disposal Sites (ODMDS), under to §102 of the Marine Protection, Research, and Sanctuaries Act (MPRSA). The sites in the Hilton Head Island vicinity were considered for this alternatives analysis.

PORT ROYAL ODMDS

For offshore/ocean (§103 MPRSA) placement for the Hilton Head and Port Royal vicinity, the historical site has been the Port Royal ODMDS. This site is located approximately 10 miles offshore of the Port Royal Sound entrance. It is approximately 14 miles northeast of the south end of Hilton Head Island. The Port Royal ODMDS encompasses roughly 920 acres and averages 35 feet deep relative to mean low water (MLW).

The advantage of using a designated offshore disposal site is that the spoil site determination is completed, and authorized. The primary factor that determines whether or not the ODMDS may be used is the result of the sediment quality testing and evaluation. In the most basic terms, should the sediment quality prove acceptable, then the site would be usable.

The problems associated with use of the Port Royal ODMDS for the SIDA facilities is practicability, both from cost and logistical factors. Use of the ODMDS involves multiple

contractors and requires US Coast Guard certified ocean-going hopper scows and tugs to be utilized. This large-scale equipment must be used in conjunction with small hydraulic dredge apparatus. The large clamshell dredge equipment usually used with these scows cannot access the interior of Harbor Town or enter any of the navigation channels of the other SIDA facilities. Pumping into the scows requires considerable overflow and a relatively small surface area for material settlement. Additionally, the leakage of the fine-grained material through the scows is extremely difficult to prevent. These logistics and technological problems require double handling of the dredged material at exorbitantly high costs. These costs are further increased by the regulatory requirements for dredging to be completed only during the winter months (November to March) when the most severe offshore weather in the Atlantic Ocean is frequent. The short window demand for specialized and scarce equipment further drives up the price to a prohibitive level. An unusual operation of this sort virtually eliminates competitive bidding. The added risk of offshore operations (requiring US Coast Guard offshore vessel certifications) beyond the COLREGS line for the offshore alternative tends to increase dredging and disposal costs for winter construction.

As an example, the Port Royal ODMDS was utilized as a disposal site for the 1995-1996 Harbour Town Yacht Basin dredging event. The contract involved a hydraulic dredge for the basin, with the material conveyed to a scow in Calibogue Sound, which was then towed to the Port Royal ODMDS for dumping. Costs for this multi-leg event included a mobilization fee of \$163,000 and unit cost of \$8.67/CY (for a total dredge quantity of only 38,500 CY). Dredging efficiency was also reduced via the double handling of disposal materials.

The Port Royal ODMDS was also used for the last dredging event at South Beach and Gull Point Marinas in March 1994. It is important to recall that only SIDA's *commercial* facilities have been able to afford the excessive costs associated with disposal in the ODMDS. Gull Point Marina was issued a separate dredging permit by the OCRM and USACE, but Gull Point was fortunate enough to coordinate regulatory and fiscal timelines with South Beach. Despite this coordinated effort, which did reduce the parties' total mobilization costs, the total 1994 expenditures for both South Beach Marina and Gull Point Marina were stretched to an economic limit. Since 1995, ocean disposal costs have virtually doubled (see Exhibit A).

In 1995, Baynard Cove POA was issued a dredging permit that requires ocean placement, but the costs of this operation were well beyond the means of these owners for even a one-time event. The permit expired without implementation of a dredge program. As a predictable and manageable alternative, ocean disposal is impossible for a POA.

Ocean disposal has only been possible for Hilton Head's commercial facilities. Only Harbour Town has been able to employ this alternative more than once and not with the frequency of a proper dredged material management plan. Each effort requires a separate permit; campaign to slip owners for need and justification; a high cost assessment on the owners; and a logistically complex and unreliable contractor group involving multiple parties and expensive Coast Guard certified equipment. These past ocean disposal operations permitted the commercial facilities to effect emergency dredging events, but quantities had to be limited and the facilities must wait much longer between events than is recommended to secure the \$600,000 to \$750,000 per event (excluding soft costs and testing) that was

Exhibit A. Estimate of Costs for Ocean Disposal vs. Inshore Open Water (SIDA)

<i>Great Lakes (Ocean Disposal)</i>	
Mobilization, estimate	\$175,000 LS
3000CY Scows (2) w/ crew	\$4,400 /day
2000HP USCGS-Cert Tug w/ fuel&crew	\$6,500 /day
Crane Rental, pipeline positioning	\$3,000 LS
Supervision, OH, & Profit	\$5,000 /day
<i>Traditional Hydraulic Excavation Alt (Ocean)</i>	
Mobilization	\$178,000 LS
Unit Cost	\$3.90 /CY
<i>Dry DREdge Excavation Alt (Ocean)</i>	
Mobilization	\$45,000 LS
Unit Cost	\$10 /CY
<i>Traditional Hydraulic (Sound Disposal)</i>	
Mobilization, Open Water Sites	\$95,000 LS
Unit Price, Open Water Sites (unrestricted)	\$3.47 /CY
Unit Price, Open Water Sites (half day)	\$5.42 /CY
<i>Traditional Hydraulic (Beach Placement)</i>	
Mobilization, Beach Placement	\$97,000 LS
Unit Price, Beach Placement	\$2.91 /CY
<i>Project Requirements</i>	
Volume Estimate - Creeks & Basins	186,000 CY
Volume Estimate - Sandy Entrance Material	150,000 CY
Production Rate (hydraulic)	1,500 CY/day
Production Rate (Dry DREdge)	560 CY/day
Days Required (traditional hydraulic alt)	124 days
Days Required (Dry DREdge alt)	332 days
Great Lakes Portion (traditional hydraulic alt)	\$2,149,600
Great Lakes Portion (Dry DREdge alt)	\$5,459,071
Traditional Hydraulic Portion	\$903,400
Dry DREdge Portion	\$1,905,000

Scenario 1 - Traditional Hydraulic with Ocean Disposal

Total Project Cost	\$3,053,000
Price per CY (including mob.)	\$16.50

Scenario 2 - Dry DREdge with Ocean Disposal

Total Project Cost	\$7,364,071
Price per CY (including mob.)	\$39.50

Scenario 3 - Traditional Hydraulic with Inshore Open Water Placement (Unrestricted)

Total Project Cost	\$740,420
Price per CY (including mob.)	\$4.00

Scenario 4 - Traditional Hydraulic with Inshore Open Water Placement (Ebbs Only)

Total Project Cost	\$1,103,120
Price per CY (including mob.)	\$6.00

Traditional Hydraulic with Beach Placement (add to all Scenarios)

Total Project Cost	\$533,500
Price per CY (including mob.)	\$3.50

*Estimate prepared by ATM (June 2000). Estimate based on rental rate estimates provided by Great Lakes Dredge & Dock (May 2000), unit cost excavation estimates provided by DRE technologies (1999) and MARCOL Dredging (June 2000). Production estimates based on 1994 MARCOL/Great Lakes Dredging of Braddock Cove Creek and South Beach Marina and MARCOL (June 2000).

required to enter into contract. Now the estimated costs are even higher than the expenditure in the 1996 dredge project. Even for a facility of the size and character of Harbour Town, this is an unmanageable economic burden.

Agency review comments on previous drafts of this analysis requested justification of economic infeasibility of ocean disposal. The owner of the South Beach Marina asked his Certified Public Accountant to review the estimates prepared by ATM (see Exhibit A) and compare them to the financial data of the business operation conducted at the marina. The accountant's findings conclude that just the operational costs of the ocean disposal program will put the facility out of business (see attached letter dated 27 July 2000).

In addition to the complex logistics and related high costs for dredging and disposal, the Port Royal ODMDS is no longer designated by the USEPA. Any permits that are issued by Charleston USACE District for use of the site are on an individual basis (single event for one facility) and short-term (typically 3 years). This regulatory scenario will not achieve the goal of obtaining a permitted predictable long-term management plan (with limited periodic testing requirements) for a group of facilities. Ocean disposal is only feasible at this time as a one-time, heavily contingent, and exceedingly expensive emergency alternative until a feasible long-term management alternative can be implemented. It is not a practicable (feasible) alternative for the Applicant's project.

A recent development will likely prevent all but Port and federal use of ocean disposal sites until the ocean dumping regulations are rewritten. USEPA Region II was recently sued by an environmental group for permitting disposal operations based on the testing framework established in the Green Book. In this case the judge gave precedence to the strict wording of the out-dated Ocean Dumping Act over the scientific developments since the late 1970s and the congressionally-approved testing manual for carrying out testing and disposal decisions. The judge's interpretation suggests that the detection of *any* bioaccumulative and prohibited compound in the dredged material *requires* bioaccumulation testing for each chemical on three species. This means that Tier II is basically eliminated as an alternative and testing must begin with Tier III. This is because modern laboratory methods and regional implementation procedures produce extremely low detection limits for compounds considered bioaccumulative or prohibited under the Ocean Dumping Act. Material extracted from South Carolina estuaries will nearly always have detectable levels of bioaccumulative compounds (which are considered prohibited under the act).

As an example, the EMAP Station (CP94073) in Calibogue Sound sampled in 1994 contained a total PAH concentration of 11.23 ppb and this station represents a fairly clean and uncontaminated site (Hyland et al, 1996). The results of sediment sampling for this project detected extremely low levels of bioaccumulative chemicals at both the extraction sites and the reference areas (ATM, 2000). Chemicals of this type detected included the PAHs: Fluorene and Fluoranthene; dioxins and furans; and organotins.

Ocean placement is (for all intents and purposes) thereby eliminated as a practicable alternative for all but large Port and federal projects until the federal regulations governing ocean dumping are revised. Until new regulations are written that reestablish and update the procedures outlined in the Green Book, testing requirements will be much too extensive and

costly for smaller projects. Laboratory bioaccumulation testing (according to these procedures) for three species on the extraction site material and a reference can easily exceed the total dredging costs for a comparable dredging project utilizing upland placement. This testing is good for only one project for a one-time, short-term permit.

SAVANNAH ODMDS

The Savannah, Georgia ODMDS is located just south of the Savannah Harbor entrance channel, approximately 6 to 7 miles from the Harbor entrance. The site occupies approximately 3,500 acres with an average depth of 37 ft MLW. The Savannah ODMDS is currently designated by the USEPA for continuing disposal. However, the restrictions of the Savannah ODMDS limit disposal to “dredged material from the Savannah Harbor area” (USEPA, 1999). Therefore, material dredged from the SIDA facilities, all located in South Carolina, is not eligible for disposal in the Savannah ODMDS without petition. ATM asked the Savannah Corps District if the Harbor ODMDS could be used for all or part of SIDA’s dredged material and the reply (see letter dated 23 May 2000 from Alan Garrett attached) indicated that site was restricted for Harbor use and required USEPA approval to change the federal register restriction.

The USEPA requires that the Applicant perform a Supplemental Environmental Assessment (EA) to use the site. ATM asked the USEPA what specifically would be required to use the site, change the classification, and about the time frame. Their response (via email) follows:

Any material going to an ODMDS requires complete testing, i.e., all three tiers (including sediment/water column toxicity, bioaccumulation) and assessment of compliance with WQC, the first time it goes to the ODMDS. Subsequent maintenance projects would require a Tier 1 analysis, with additional testing as deemed appropriate or necessary based on the Tier 1. Regarding your question on how long it would take for the Supplemental EA, Notice of Availability, Public Notice of Proposed Rulemaking, and the Final Notice of the Change in Designation, my best guess is about 6 months, if everyone is on board and participating. SIDA would probably need to fund the EA (Doug Johnson, 25 May 2000).

These investigations reveal that while the Savannah Harbor ODMDS is a closer and safer sail from the four the dredging sites, costs would be even higher than the prohibitive Port Royal site. For use of the Savannah Harbor site, SIDA would perform the additional time-consuming and expensive items listed above including a Supplemental EA. The USACE indicated that even if these restrictions were removed, permits would still only be granted for three years.

All of the other problems of prohibitively expensive dredging and disposal costs, logistics, and testing previously discussed for the Port Royal ODMDS also apply to the Savannah ODMDS. In this regulatory, legislative, and political climate, ocean disposal cannot be considered an alternative except for large federal navigation projects. It certainly is not a practicable (feasible) alternative that is currently available to the Applicant.

OTHER SITES

There are no other designated ocean disposal sites within practicable range for SIDA facilities. Designation of a new ODMDS, specifically for SIDA, is an alternative that is not feasible. The existing sites have been subject to historical study and review and been used for ongoing federal operations. The process of obtaining a new designation would be too costly and time consuming for consideration at this time by SIDA. While the USACE is in the process of designating a deep water Port Royal ODMDS site, the site will not be available for at least another dredging cycle and does not meet the test of practicability for any SIDA members. If the site is located beyond the Baseline (COLREGS) line, all the logistical problems with dredging, dewatering, transportation, and disposal remain. A site located inside the Baseline solves many of these problems, but is regulated under Section 404 of the Clean Water Act and is considered inshore open water disposal rather than ocean disposal. Inshore open water alternatives are evaluated in the next section of this report. Obviously, the Applicant's selected inshore site (Calibogue Sound) is far more practicable and feasible than any inshore site that will be primarily intended for Port Royal harbor dredges.

FURTHER DISCUSSION AND CONCLUSIONS

Several reviewers of the draft version of this report were concerned that when an alternative was considered impracticable because of "cost" that the alternative was only "more expensive," but not prohibitively expensive. Ocean disposal fails the test for long-term practicability in several areas including the cost criterion. It is "prohibitively expensive" to most or all of SIDA members for the management of frequently dredged maintenance material. Two sections of the commentary on the 404 Guidelines are included below to help clarify this issue. The criterion of "cost" for assessing practicability does not include an assessment of the applicant's "financial standing," but alternatives must be "reasonable in terms of the overall scope/cost of the proposed project." Refer to the following comments in the appendix to the Inland Testing Manual.

Alternatives. What is practicable depends on cost, technical, and logistic factors. We have changed the word "economic" to "cost". Our intent is to consider those alternatives, which are reasonable in terms of the overall scope/cost of the proposed project. The term economic might be construed to include consideration of the applicant's financial standing, or investment, or market share, a cumbersome inquiry that is not necessarily material to the objectives of the Guidelines. We consider it implicit that, to be practicable, an alternative must be capable of achieving the basic purpose of the proposed activity.

Economic Factors. A number of commenters asked EPA to include consideration of economic factors in the Guidelines. We believe that the regulation already recognizes economic factors to the extent contemplated by the statute. First, the Guidelines explicitly include the concept of "practicability" in connection with both alternatives and steps to minimize impacts. If an alleged alternative is unreasonably expensive to the applicant, the alternative is not "practicable." In addition, the Guidelines also consider economics indirectly in that they are structured to avoid the expense of unnecessary testing through the "reason to believe test" (refer to pages 8 and 14 of "Alternatives" in Appendix A to the 1998 Inland Testing Manual).

If ocean disposal were a practicable alternative for SIDA members, it would certainly have been employed by now. Most SIDA facilities have in the past received maintenance dredging permits from both the State of South Carolina and the United States to place their maintenance material in ocean waters. But, because this option is no longer feasible for these facilities for the economic and site closing reasons detailed above, it is not being considered at this time.

In their review of the draft Alternatives Assessment, the USEPA indicated that testing for ocean disposal was cited as being too expensive for SIDA members, but that inshore open water disposal will also require testing. ATM and SIDA recognize that an inshore open water alternative will also require environmental studies and dredged material testing. Testing for inshore open water disposal will be conducted according to the still intact procedures set forth in the Inland Testing Manual. These procedures not only permit but require cost effective tiered testing that commits only those resources necessary to make factual determinations in the lowest possible tier. The available testing results from SIDA facilities and from recent area testing conducted by NOAA and the USEPA under the National Status & Trends Program and the EMAP Estuaries Program, coupled with no significant sources of pollution in the area suggest that factual determinations for these facilities will be reached in Tier II. The testing that has been performed by SIDA to make decisions for an inshore alternative were less than \$90,000 for all facilities combined. This testing will serve as a baseline for the long-term alternative selected and will require only periodic supplemental confirmatory testing in the future. Testing associated with ocean placement at this time is unpredictable and is expected to be in excess of \$100,000 for each facility for *each* short-term emergency dredging event.

The primary impetus for SIDA formation was to utilize a collaborative strategy (often recommended by the permitting agencies) to make the costs of testing possible for *all* member facilities. ATM provided SIDA with an estimate of the costs of testing, hydrography, biological studies, etc. should inshore open water placement be the only viable long-term management alternative. The broad base and representation of the group has permitted them to secure the funds necessary to see this process through to completion. The costs of continuing site management and monitoring will be borne by the stakeholders using the site(s) on a proportional basis (e.g., a charge on a cubic yard basis may be levied by the local assurer to provide for these costs). SIDA understands that all of the costs of testing, regulatory compliance, pre-project environmental studies, etc. must be considered for all alternatives evaluated. But at this time the regulatory-effected costs and uncertainties associated with open water placement under the Clean Water Act are fewer and far more manageable than those associated with ocean disposal under MPRSA. The recent lawsuit referenced above has essentially obsoleted the Green Book and thirty years of science. Even confined upland placement has become complex from a regulatory standpoint. The discharge is regulated under Section 404 of CWA and is fairly straight-forward, but terrestrial effects pathway issues are not as well understood and don't fit neatly into any existing environmental regulation legislation.

In conclusion, the long-term management costs of inshore open water placement (considered *in toto*) are expensive, but are manageable and can be funded under the SIDA collaboration. In contrast, ocean placement does not allow for long-term management

planning; reasonable testing costs that can be borne collectively; long-term testing results; routine and typical excavation, transportation, and disposal techniques; predictable dredging costs; frequent and complete maintenance efforts; and affordable incremental costs. In contrast, the incremental costs of long-term maintenance dredging to a practicable confined upland or inshore open water management alternative are expected to be expensive but affordable to all SIDA facilities. Even without consideration of testing and long-term issues, etc., the dredging, transportation, and placement costs for the ocean alternatives are prohibitive for the SIDA facilities to ever realize a dredging event. In other words, if “forced” to the ocean disposal, the Applicant’s facilities will not be dredged and in a relatively short period of time, they will become non-navigable and thereby cease to exist as functioning facilities.

OTHER ALTERNATIVES REVIEWED BY SIDA

During the numerous meetings and discussions with agency representatives over the past two years, SIDA and ATM recognized that an evaluation of upland and ocean disposal situations was necessary but did not cover the complete range of alternatives possible. Therefore, other alternatives were identified and reviewed.

Specifically, SIDA and ATM were requested to study the possible application of alternative dredging technologies (as distinguished from site selection). This would include methods such as Soloman Technologies’ “STI” and also DRE’s “Dry DREdge” technologies. In addition, methods such as wetlands restoration, wetlands creation, and wetlands nourishment (marsh spray) were reviewed. These possibilities are now reviewed and discussed (in the above order), within the parameters of the SIDA dredging project for which this application is filed.

ALTERNATIVE DREDGING TECHNOLOGIES

The use of alternative technologies was initially thought by the Applicant and its consultant, ATM, to be outside the range of the definitions of “practicable” in the federal 404(b) Guidelines and “feasible” in the OCRM Regulations. However, the latest revision (May 1999) of the OCRM Regulations requires “...careful consultation with the Department and other relevant State and Federal agencies” [R.30-12.1(2)(b)] before open water disposal can be seriously considered as an alternative. The interagency review committee and the tiered process set forth for this project in the Planning Document satisfy the “consultation” requirement, but OCRM has indicated that it interprets the intent of the regulation, which utilized language such as “seriously” and “careful consultation”, requires an explicit discussion of alternative technologies and why they are not “feasible” or “practicable” to serve as part of SIDA’s plan.

The OCRM Regulations define “feasible” as it is used in the Regulations:

Feasible (feasibility) – As used within these rules and regulations (e.g., “unless no feasible alternative exists”), feasibility is determined by the Department with respect to individual project proposals. Feasibility in each case is based on the best available information, including, but not limited to, technical input from relevant agencies with expertise in the subject area, and consideration of factors of environmental, economic, social, legal, and

technological suitability of the proposed activity and its alternatives. Use of this word includes, but is not limited to, the concept of reasonableness and likelihood of success in achieving the project goal or purpose. “Feasible alternatives” applies both to locations or sites and to methods of design and construction, and includes a no action alternative.

The 404(b)(1) Guidelines define “practicable” in “Definitions” as follows:

The term “practicable” means available and capable of being done after taking into consideration cost, existing technology, and logistics in light of overall project purposes. 40 CFR Part 230, Section 404(b)(1), Subpart A, §230.3(q).

The Supplementary Information contained in 40 CFR Part 230 also provides significant commentary on the issue of “practicability” and the requirements of alternatives analysis. A significant excerpt from this section is included here in support of the Applicant’s conclusions on its site selection process:

Alternatives: Some commenters objected at length to the scope of alternatives, which the Guidelines require to be considered, and to the requirement that a permit be denied unless the least harmful such alternative were selected. Others wrote to urge us to retain these requirements. In our judgment, a number of the objections were based on a misunderstanding of what the proposed alternatives analysis required. Therefore, we have decided to clarify the regulation, but have not changed its basic thrust. Section 403(c) clearly requires that alternatives be considered, and provides the basic legal basis for our requirement. While the statutory provision leaves the Agency some discretion to decide how alternatives are to be considered, we believe that the policies and goals of the Act, as well as the other authorities cited in the Preamble to the proposed Guidelines, would be best served by the approach we have taken.

First, we emphasize that the only alternatives, which must be considered, are practicable alternatives. What is practicable depends on cost, technical, and logistic factors. We have changed the word “economic” to “cost”. Our intent is to consider those alternatives, which are reasonable in terms of the overall scope/cost of the proposed project. The term economic might be construed to include consideration of the applicant’s financial standing, or investment, or market share, a cumbersome inquiry that is not necessarily material to the objectives of the Guidelines. We consider it implicit that, to be practicable, an alternative must be capable of achieving the basic purpose of the proposed activity. Nonetheless, we have made this explicit to allay widespread concern. Both “internal” and “external” alternatives, as described in the September 18, 1979 Preamble, must satisfy the practicable test. In order for an “external” alternative to be practicable, it must be reasonably available or obtainable. However, the mere fact of ownership or lack thereof, does not necessarily determine reasonable availability. Some readers were apparently confused by the Preamble to the Proposed Regulation, which referred to the fact the National Environmental Policy Act (NEPA) may require consideration of courses of action beyond the authority of the agency involved. We did not mean to suggest that the Guidelines were necessarily imposing such a requirement on private individuals but, rather, to suggest that what we were requiring was well within the alternatives analyses required by NEPA.

Second, once these practicable alternatives have been identified in this fashion, the permitting authority should consider whether any of them, including land disposal options, are less environmentally harmful than the proposed discharge project. Of course, where there is no significant or easily identifiable difference in impact, the alternative need not be considered to have “less adverse” impact.

Several commenters questioned the legal basis for requiring the permitting authority to select the least damaging alternative. (The use of the term “select” may have been misleading. Strictly speaking, the permitting authority does not select anything; he denies the permit if the guidelines requirements have not been complied with.) As mentioned

above, the statute leaves to EPA's discretion the exact implementation of the alternative requirement in section 403 of the Act. In large part, the approach taken by these regulations is very similar to that taken by the recent section 403(c) regulations (45 FR 65942, October 3, 1980). There is one difference; the Guidelines always prohibit discharges where there is a practicable, less damaging alternative, while the section 403(c) regulations only apply this prohibition in some cases. This difference reflects the wide range of water systems subject to 404 and the extreme sensitivity of many of them to physical destruction. These waters form a priceless mosaic. Thus, if destruction of an area of waters of the United States may reasonably be avoided, it should be avoided. Of course, where a category of 404 discharges is so minimal in its effects that it has been placed under a general permit, there is no need to perform a case by case alternatives analysis. This feature corresponds, in a sense, to the category of discharges under section 403 for which no alternatives analysis is required.

Third, some commenters were concerned that the alternative consideration was unduly focused on water quality, and that a better alternative from a water quality standpoint might be less desirable from, say, an air quality point of view. This concern overlooks the explicit provision that the existence of an alternative which is less damaging to the aquatic ecosystem does not disqualify a discharge if that alternative has other significant adverse environmental consequences. This last provision gives the permitting authority an opportunity to take into account evidence of damage to other ecosystems in deciding whether there is a "better" alternative.

Fourth, a number of commenters were concerned that the Guidelines ensure coordination with planning processes under the Coastal Zone Management Act, § 208 of the CWA, and other programs. We agree that where an adequate alternatives analysis has already been developed, it would be wasteful not to incorporate it into the 404 process. New § 230.10(a)(5) makes it clear that where alternatives have been reviewed under another process, the permitting authority shall consider such analysis. However, if the prior analysis is not as complete as the alternatives analysis required under the Guidelines, he must supplement it as needed to determine whether the proposed discharge complies with the Guidelines. Section 230.10(a)(4) recognizes that the range of alternatives considered in NEPA documents will be sufficient for section 404 purposes, where the Corps is the permitting authority. (However, a greater level of detail may be needed in particular cases to be adequate for the 404(b)(1) Guidelines analysis.) This distinction between the Corps and State permitting authorities is based on the fact that it is the Corps' policy, in carrying out its own NEPA responsibilities, to supplement (or require a supplement to) a lead agency's environmental assessment or impact statement where such document does not contain sufficient information. State permitting agencies, on the other hand, are not subject to NEPA in this manner (Appendix A to Inland Testing Manual, Pages 8 and 9; italics added for emphasis).

It is also important to state up-front that the alternative and experimental technologies under discussion here are not *placement* alternatives in the sense of providing for long-term management or other uses of the dredged material, but are alternative dredging technologies to typical hydraulic or mechanical dredging methods.

The benefits of both of these methods must be viewed in light of the lack of available upland confined disposal facilities (CDFs) or unimproved land that can be developed for long-term management as a CDF. The primary benefits of the technologies under review arises from the elimination of the large volumes of water that must be managed during a typical hydraulic dredging operation. In typical hydraulic dredging events conducted in the Southeast, the dredged material is transported to the CDF as a slurry through a pipeline that is over 85% free water. This excess water must be decanted from the dredged material and returned to the natural system. It is the need to properly manage this water that makes many CDFs so land area intensive.

The use of these technologies as the primary dredging technique for the long-term management of SIDA's dredged material does not meet the practicability test of the 404(b) Guidelines and is not feasible under the OCRM Regulations. A discussion of two

experimental technologies that are actually being used on a small scale for special projects follows.

Dry Dredge™

DRE Technologies has developed a modified small-scale clamshell dredging technology to handle many cases where sediment contamination is a problem or where upland disposal areas exist, but cannot handle large volumes of free water. The system uses a seal clamshell bucket at the end of a rigid, retraceable boom assembly mounted on a turret.



Using hydraulic motors, the bucket is forced into the sediment floor and is closed. The boom is then retracted with the “plug” of material. The boom moves the bucket to a small hopper in front of the cab mounted at the front of the floating plant; the bucket is opened; and the material is mechanically moved from the hopper to a positive displacement pump. From there the material is pumped through a pipeline to an upland area for

treatment, disposal, or transport. The material is removed at its *in situ* moisture content with usually less than 5% free water added. For material excavated from the SIDA sites, this translates to about 40% to 80% water content.

The primary advantages of Dry DREdge™ include:

- higher than typical solids concentration at the end of the pipe;
- minimization of sediment resuspension in contaminated areas; and
- very accurate and precise excavation of sediments in contaminated “hot spots.”

Because the Dry DREdge™ technology is still in its infancy and it was designed for very different applications from the ongoing management of relatively large volumes of fine-grained maintenance material coming into the SIDA waterways and basins, it has several key disadvantages for this type of work:

- 1) **Low production rate:** There are currently two Dry DREdge™ models available. The larger of these has a maximum production of about 35 CY/hr or 560 CY for a 16hr dredge-day. If this rate can be sustained, maintenance projects in the various SIDA facilities may take more than 2 months *each*, which severely hampers the operation of the facilities during dredging and limits the number of events that can be completed in a single year’s winter dredging window.
- 2) **High cost:** In addition to a \$10,000 to \$15,000 mobilization fee, the unit cost for dredging are typically around \$10/CY. When the additional costs of temporary dredged material management and truck hauling costs are added, the cost for this type



of work will likely be \$18 to \$20/CY, which is 4 to 5 times higher than comparable projects using existing upland disposal sites, or inland open water disposal.

- 3) **Limited material types:** Dry DREdge™ has not been tested with the high water content sediments found in Southeastern estuaries, but it is expected that it will work tolerably well even though free water estimates may be low for this condition and resuspension will likely be higher than in other test applications. The technology will not work in the predominantly sandy and hard-packed materials that are found at the entrances to Harbour Town Yacht Basin, Braddock Cove Creek, and Baynard Cove Creek. Additional dredging equipment would have to be mobilized for these areas and high-water content transportation and management will be likely.
- 4) **Additional management:** Probably the biggest disadvantage of this technology for the Applicant's project is that the material will still require management after it exits the Dry DREdge™ discharge pipeline. These units operate on fairly short line lengths and typically pump to areas adjacent to the excavation operation where the material can be permanently or temporarily stored for later use, treatment, or eventual disposal. The areas being considered in this project do not even have adjacent smaller upland areas suitable for spoil cell construction. While water management is significantly reduced over traditional hydraulic dredging, the material being excavated from these areas is 50% to 75% water *in situ*, which is too wet for easy management or traditional truck-hauling without a drying period.

Truck hauling creates problems in this application as previously discussed. Trucks would be required to run for the greater part of daylight hours for long periods of time. The Community Services Association (CSA) will not permit this level of truck activity on Sea Pines roads (see attached letter from CSA dated 26 March 1999). For one-time or special circumstances, small spoils cells and a single trucking event managed, but as a continuing, long-term solution for all of SIDA's material, this is completely infeasible. For example, for a 30,000 CY maintenance event for Harbour Town, a 4-acre spoil cell would be required with 5 ft high dikes and over 2,000 dump trucks required to remove the material. If that material were moved in one month, over 7 trucks an hour would have to pass through the residential roads of Sea Pines Plantation and US 278 on the balance of Hilton Head Island. The example only illustrates the need for one SIDA facility. Two other marinas and the docks and waterways for at least two other owners' association must be added to this mix. This hauling presupposes an eventual and acceptable long-term location or use for this continuing stream of material.

The truck hauling and eventual disposal location adds significant costs to the on-going project. These costs are expected to be between \$8 and \$10/CY and could be much higher. The costs of truck hauling alone (not to mention the prohibition on the activity; see CSA letter) make the project infeasible for the owners' associations and private marinas, who are participants in this application.

Soloman STI

Another technology that offers some promise for disposal site problems is STI. Like Dry DREdge™, STI seeks to eliminate contaminated sediments' dredging problems by reducing the space requirements of traditional CDFs by reducing the high volumes of water that must be managed. Unlike DryDREdge™, however, STI applies new technology at the end of the pipe instead of on the extraction and transportation end. STI has many advantages over DryDREdge™ for small and one-time operations or for operations involving contaminated sediments. These include:

- the use of traditional hydraulic dredging equipment;
- small permanent or temporary dredged material storage areas;
- reduction of water content to less than *in situ* levels.

STI processing equipment is set up in an area adjacent to the extraction site. It requires about 2,500 SF of upland area for the equipment and more for the temporary storage of the “treated” dredged material. The unit requires 200 amp-3 phase electrical service; a 30 gpm freshwater source; and a 100 gpm water source that can be saline system water. The process has two steps. The first step utilizes a polymer to aggregate and separate the material from a large portion of the water. A second step lowers water content still further using a belt press. This process is much newer than Dry DREdge™ and has not been adequately tested on the fine-grained sediments expected from the SIDA facility sediments, but the promoters of this equipment believe that the material can be taken from the 12% solids at the end of the dredge pipe to about 65-70% solids at the end of the STI process. If these assumptions are accurate, then the material for this project can be reduced in water content and therefore volume from 1.3 to 2.6 times its *in situ* condition. Using the maximum value, temporary storage and management on-site could be handled with under 2 acres of land.

The procedure does however have several problems that make it impracticable for SIDA’s use as their primary management option:

- 1) **Low production rate:** Like Dry DREdge™, the process is necessarily slow. Because all the material must be processed as it exits the hydraulic dredge discharge pipe (there is not intermediate storage; this is what is being eliminated by this technology), the unit can only process 1,000 CY/day maximum. This limits excavation dredges to small models and lengthens the overall dredging time for each maintenance event. As was stated earlier, this severely hampers the operation of the facilities during dredging and limits the number of events that can be completed in a single year’s winter dredging window.
- 2) **High cost:** In addition to a \$10,000 to \$15,000 mobilization fee, the unit cost for dredging are typically around \$11/CY. Similar to DryDREdge™, when the additional costs of temporary dredged material management and truck hauling costs are added, the cost for this type of work will likely be \$20 to \$25/CY. This does not include the electrical service and fresh water that must be supplied during the entire operation. Sea Pines Plantation is already confronting major fresh water restrictions for its residents.
- 3) **Return water:** Unlike Dry DREdge™ and similar to traditional technologies, the STI process has a significant volume of return water. The water is just removed from the dredged material mechanically and much faster than in a CDF. The STI process has two return water points. The first after the polymer process and the second after belt pressing. The water leaving the first process is expected to be similar to water leaving a CDF and its potential environmental effects can be evaluated utilizing existing protocols (e.g., modified elutriate tests). The return water from the belt press is releasing water that is not typically removed from dredged material and can be thought of as the pore water that is closely associated with the solid material. The belt press water will likely contain a more concentrated level of contaminants than is typically released from dredged material dewatering processes and the means to evaluate the chemical make-up of this

water currently do not exist. The water can be significantly diluted by combining it with the discharge water from the first process, but contaminant levels are still expected to be higher than predicted by elutriate testing. Thus the obvious question: Where to dispose of this return water?

- 4) **Experimental nature of equipment:** One of the biggest problems with considering STI as a part of the primary long-term solution to SIDA's dredged material management is the experimental nature of the technology. It has not been adequately tested on these sediments and was not designed for a continuing high-volume application such as this one. Inherent in the definitions of "practicable", "feasible", and "long-term" are the ability of SIDA members to depend on the long-term availability of the technology; to competitively bid the work at each maintenance interval; and to have some assurances that after this lengthy and expensive investigation and permit process it can conclude that the technology will perform as envisioned and that there is normal recourse for change if it does not. ATM does not believe that STI can pass this type of test. Only readily available, existing technologies with enough redundancy in the market can meet these requirements.
- 5) **Additional management:** Again, as with Dry DREdge™, the biggest disadvantage of this technology for this application is that the material will still require management after it leaves the STI process. Even if the process works as planned and material has the water content and consistency of soil and does not require a confined storage area, the areas being considered for this project do not have adjacent smaller upland areas suitable for material storage. And, most importantly, the material will have to be trucked to some location for permanent disposal or use. The trucking is infeasible, and a dependable long-term disposal area must be secured.

Conclusion

The only reasonable conclusion from this review is that neither of these new dredging procedures can be a practicable (feasible) alternative for use in the Applicant's project.

ALTERNATIVE PLACEMENT TECHNOLOGY

The dredged material could be suitable for wetlands restoration, creation, or nourishment. The coarser-grained material may be used around the area margin to provide shore protection and provide for fine-grained material control during placement. The fine-grained material, which makes up the bulk of the project sediments, and long-term maintenance material could be used to elevate subtidal or intertidal areas to support marsh grasses or it could be sprayed on adjacent marshes as to elevate areas that have subsided using thin layer placement. Of these options, SIDA believes only marsh creation has any potential for alternative retention and further evaluation.

While marsh restoration would be an excellent opportunity and environmentally positive use of the material, the vegetated salt marsh region in the southern part of Hilton Head Island has not undergone significant perturbation where restoration may be accomplished. Wetland habitat that has been destroyed for the Island's predominantly residential uses usually involved the creation of islands in marsh with dredged material fill, or filling the upland margin to expand it into the marsh. Any areas of this sort that could be restored would require the removal of fill and provide no use for long-term dredged material management.

Additionally, the expansive vegetated intertidal wetlands in the area appear to be accreting material and are not suffering the subsidence that is often seen in river deltas where material is removed from the river system upstream by dredging. Spraying dredged material on the active vegetated marsh would therefore not serve as a beneficial use and creates significant logistical and potential adverse environmental impacts. The placement of dredged material in the active salt marsh is the alternative of least preference in the OCRM Regulations. See OCRM R.30-12(l)(2)(e).

This leaves vegetated salt marsh creation from other natural habitat for a closer examination. In this case, unvegetated intertidal areas or low energy subtidal areas could be elevated to the upper third of the normal diurnal tide range and planted with *Spartina alterniflora* after a sufficient period of sediment consolidation. An alternative of this type cannot serve as a long-term management site because of the nature of the project. A suitable area must be located and a definite amount of fill is placed in that area to accomplish the plan specifications. Once the fill is placed and the vegetation planted, the project is complete and no additional dredged material can be placed. This type of alternative is by its very nature a temporary one-time beneficial use option and can only be considered as part of a larger long-term plan with suitable high-capacity sites. SIDA must still be authorized to deposit the balance of its dredge spoils in an alternatives location. However, the following discussion considers the possibilities of this method in the SIDA project.

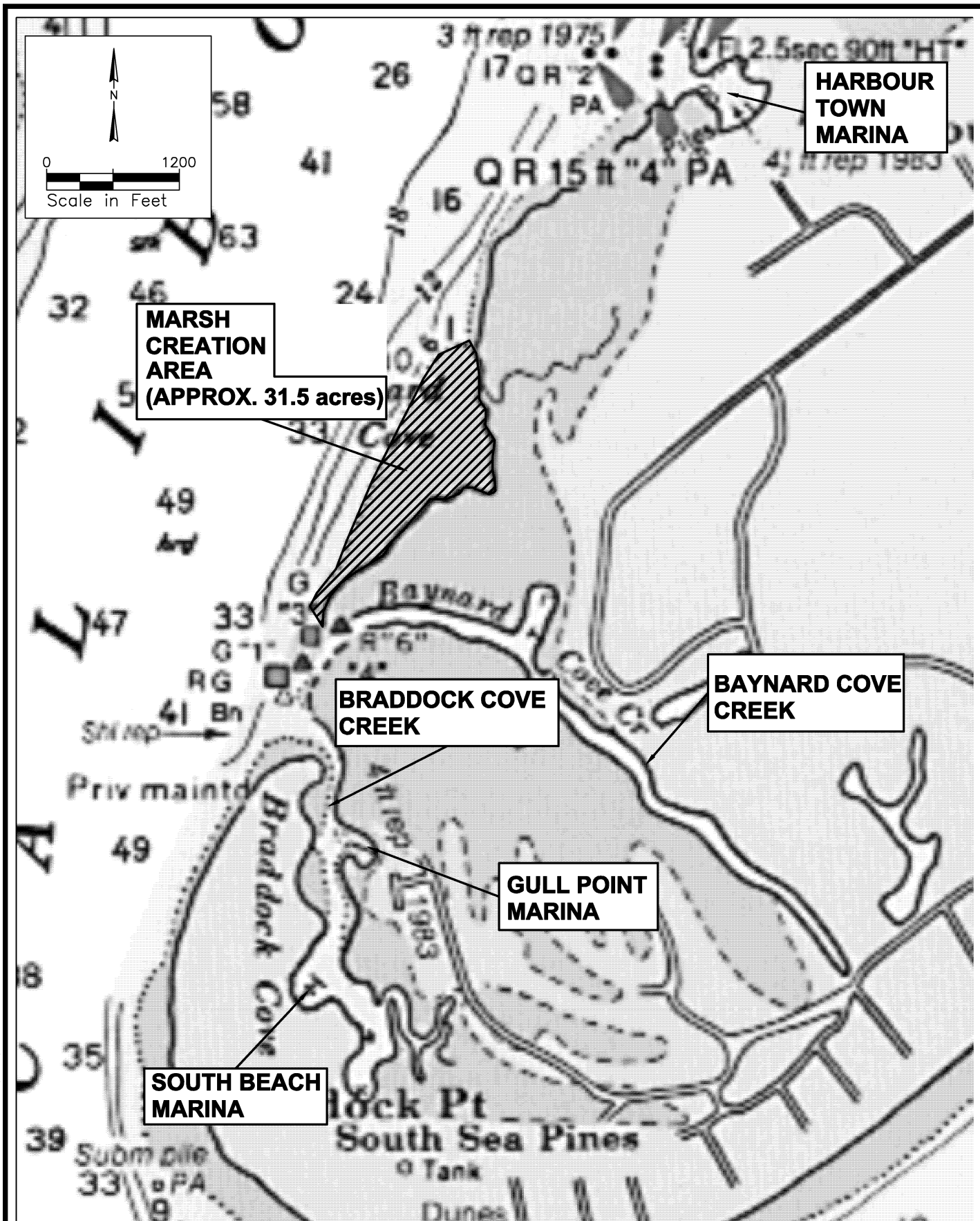
Vegetated Salt Marsh Creation

An additional evaluation by SIDA's consultants examined the potential for the creation of vegetated salt marsh habitat as a potential beneficial use of a portion of the long-term maintenance material generated by SIDA facilities. Successful salt marsh creation requires that several key factors be considered and handled properly in construction. These include:

- an appropriate location with suitable pre-project depths, large enough spatially, close to the extraction sites, in a low wave energy area (or one that can be effectively protected from high energy conditions), and accessible and workable with construction equipment;
- a workable construction plan for the filling operation, the post fill grading, and post fill vegetating effort; and
- a careful evaluation of the ecological condition now existing at the proposed site and the one replacing it.

Location and Capacity

An evaluation of potential sites in the vicinity of the SIDA facilities (see Figure 2 in the Alternatives Assessment) revealed only one location of the size and proximity necessary for a consideration of this activity. This area is a small "embayment" along the Hilton Head marsh margin between Harbour Town and the entrance to Baynard Cove (see Figure 3 for location of this area). The area is approximately 31 acres. With depth information contained



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FIGURE 3
 POTENTIAL MARSH CREATION SITE
 SOUTH ISLAND DREDGING ASSOCIATION

SOURCE: NAVCHART 11516



on the navigational charts and three small surveys of the site in March 2000, it probably could hold approximately 180,000 CY of both fine and coarse-grain dredge material.

NOAA reports an average tide range in the area of approximately 6.7 ft. The existing salt marsh grasses along the eastern border of this proposed site are growing at approximately 1 ft below MHW (i.e., 5.7 ft MLW) and can be expected to survive down to approximately 4.5 ft MLW. For effective creation and maximal use of available dredged material, the site would be elevated as high as possible without exceeding the elevation of the adjacent naturally vegetated area. Assuming an average fill depth over the entire 31 acres of 4.7 ft and a dredged material expansion factor of 30% suggests a maximum fill volume of approximately 180,000 CY. This site, if retained for further evaluation, would be able to accommodate approximately 80% of the estimated material to be removed in the initial effort and none of the future maintenance material. The 45,000 CY remaining from the initial effort would be predominately fine-grained and would have to be placed in the inshore deep-water site. All of the coarser-grained material would be required to build temporary marginal dikes for fill control and for protection of the new marsh margin from near field waves, boat wakes, and ocean swell.



Besides capacity and ecological issues (discussed below), the location also presents other concerns that must be further addressed before a construction plan could be developed. The small embayment along this shoreline suggested it as a possible location, but why is this area not vegetated now? Near field wave focusing and impacts from long-period ocean swell may create a condition in this area that could make it very difficult to protect the marsh once created. The existing marsh is protected primarily by a broad intertidal mudflat and



secondarily by live and dead oyster beds and a shelly beach along parts of the vegetated margin. The currents and deep water of the Calibogue sound do not permit the reconstruction of this mudflat along the new margin, so a hard solution such as a rock revetment may be necessary to protect this new area from waves. Such a solution, however, would likely be too expensive to make it feasible for this project. An effective rock rubble revetment along this new margin could cost in excess of \$500,000, if permitted.

Construction and Logistics

It is expected that the construction of a vegetated salt marsh in the area proposed would present several difficulties for both the marsh construction plan developer and the construction contractor. The larger issues involve fill control during placement and protection of the new marsh margin from wave activity.



For the placement to be cost-effective, fill controls must utilize the dredged material available to construct a temporary dike along the new waterward margin that would be fitted with one or more weir boxes during construction. Ideally, this dike would extend around the entire proposed area so that fill control can be extended to protecting the existing vegetated salt marsh resource. It is, however, unlikely that sufficient coarse-grained material exists to build a dike around the entire area

or that the dredging contractor can provide the type of surgical placement necessary to build this dike. The existing soils would make it extremely difficult to place the material with the dredge pipe and then subsequently rework it with heavy equipment. The dike along the new margin could be lowered after filling is finished by working from a barge. The weir boxes could be removed in a similar fashion. The dike along the existing marsh margin would however be “landlocked” and difficult to rework with heavy equipment after filling operations are complete. Fill retention along the existing marsh boundary would need to be accomplished using the existing elevation and shell faces. While the filling operation could be closely observed to ensure that this area would be minimally impacted, the risk to this resource must be considered.

After the design elevation has been achieved and a sufficient period of time allowed for dewatering and densification of the material placed, the dikes along the margin would be lowered to permit the natural movement of tidal waters over the entire area at high tide. The material cut down would be placed along the waterward slope of the dike to flatten it out and provide additional shore protection for the marsh.

The marsh area would then be planted from a flat bottom boat that draws very little water along a suitable planting grid with nursery stock *Spartina alterniflora*. Planters may also be able to work at lower tides with mats if the material densifies enough to permit this practice. Natural propagation can also be expected to occur from seeds and from rhizoming of the adjacent stock.



Ecology and Regulations

While saltmarsh habitat is often considered in the classical literature of the field to be one of the most important and productive habitats in the world, careful consideration must be given to the natural habitat that is being replaced and the regulations governing it. The Low Country in this region is dominated by active vegetated salt marsh and the creation of additional habitat of this type is not expected to serve any immediate natural resource

management needs of the local stewards of this environment. The existing habitat in this area (see the navigation chart #11516 and the Bluffton quadrangle) is dominated by intertidal mudflat and to a lesser degree subtidal shallow water soft bottoms flats.

The Environmental Sensitivity Index (ESI) Maps covering this area indicate that this area is important to shellfish and birds and that it is also important to juvenile fishes. While vegetated intertidal salt marsh is not particularly threatened, expansive active intertidal mudflats are extremely important and this habitat is not nearly as abundant as the proposed vegetated marsh that would replace it. During the reconnaissance level field surveys conducted in March 2000 to better understand this area and its potential as a marsh creation site, significant live oyster reef was observed at low tide, together with diverse and abundant shore birds feeding on the flat.

Secondly, the OCRM Regulations recognize the importance of intertidal mudflat habitat and the potential sensitivity of this system to dredged material placement. The regulations clearly do not permit the placement of dredged material in mudflats when upland or deep-water placement alternatives are available. This regulation would also cover the marsh spray alternative that was rejected above.

Deposition of Dredged Material

(a) Upland disposal of dredged material shall always be sought in preference to disposal in wetlands. Vegetated wetlands and mudflats shall not be utilized for disposal of dredged material unless there are no feasible alternatives. Any other wetlands should not be utilized for disposal of dredged materials when other alternatives exist;

(b) Open water and deep water disposal should be considered as an alternative if highland alternatives are not feasible. However, open and deep-water disposal sites should be seriously considered only after careful consultation with the Department (OCRM) and other relevant State and Federal agencies.

The only conclusion to be derived from this review is that vegetated salt marsh creation is not an available option to SIDA.

SUMMARY OF ABOVE ALTERNATIVES

This section of the Site Selection document has reviewed the use of new, alternate dredging technologies, and also the potential for beneficial use of the dredged materials for salt marsh restoration and creation. The conclusion is that neither of these opportunities is a satisfactory solution to the question of where to deposit the spoils from SIDA's project. The marsh creation alternative suggested greater promise because of an adjacent area to the sites to be dredged that could potentially be used for placement of spoils, and beneficial uses should always be sought, but the displacement of existing habitat, the clear implications of the Regulations, and the construction-related issues do not result in a positive option for this process.

Beach Placement Alternative

During ATM's study of the sites to be dredged under this application, it was determined that there are areas at the mouth of the channels into both Braddock Creek and Harbour Town Yacht Basin in which the accumulated deposits are coarser-grained materials. Following a recommendation from the interagency meetings conducted during the site selection studies, ATM fully evaluated a beach placement for these coarser-grained materials, as an alternative to commingling them with the finer-grained (silt and clay-sized) materials to be pumped into the open waters of Calibogue Sound.

The sites selected from the ATM survey are along the shoreline of Calibogue Sound at locations oceanward (but adjacent to) the excavation sites at the mouths of Braddock Creek and Harbour Town's entrance channel. Placing the material oceanward (i.e., downdrift) of the excavation site effectively bypasses littoral drift sediments, and thus benefits the downdrift shorelines. Beach profile nourishment is the beneficial result. SIDA has therefore included two beach profile nourishment sites as feasible alternatives in the permit application. This alternative has been discussed with regulatory and resource agencies and was received positively.

INSHORE OPEN WATER (404) DISPOSAL

Since neither upland nor offshore sites are practicable for the fine-grained maintenance sediments that represent the bulk of the cyclical maintenance burden, the remaining alternative (per the Guidelines), is inshore open (deep water) disposal. The advantages of open water disposal, for example in the deep channel area of Calibogue Sound, include both logistical and cost parameters. The selected locations for open water disposal in Calibogue Sound will be as close to SIDA facilities as possible while still minimizing any potential environmental impacts, which eliminates the requirement for double handling of dredge materials and multiple contractors. This alternative also requires a minimum of submerged pipeline, which (for protected water applications) is more costly for the contractor to maintain than typical floating pipeline. The ideal open water site is also inshore of the Baseline of the Territorial Sea (COLREGS line), avoiding the need for US Coast Guard certified ocean going equipment. Specification of sites inside the COLREGS line also changes the regulatory authority of the operation from Section 103 of MPRSA to Section 404 of the Clean Water Act (CWA). Cost savings are realized as a result of the logistical benefits as well as costs associated with the development and maintenance of an upland CDF. There will however be ongoing costs associated with site management and monitoring. It should also be noted that this is the *only* alternative class of dredge disposal that has complete national guidance documentation—that is, the aforementioned Inland Testing Manual (USEPA/USACE, 1998a).

ALTERNATIVES MATRIX AND SELECTION

In order to summarize and compare the results of the alternatives analysis, a matrix was attempted with a numerical ranking of each factor compared. However, the appropriate weighting factors for each criteria were difficult to apply (i.e., since most of the alternatives were included/omitted based on legal and technological criteria). The quantitative matrix was abandoned and a qualitative matrix was developed to summarize the results of this study in a convenient tabular format.

SIDA Dredge Disposal Alternatives Evaluation Matrix

Alternatives	Technological				Legal	Social	Environmental		Economic	
	Long Term Capacity	Equipment Needs	Operation Logistics	Site Access	Availability & Ownership	Aesthetics	Regulatory Preference	Environmental Issues	Site Development Costs	Dredging Costs
1. Upland Disposal										
a. Lawton Stables Tract	X	M	M→L	L	X	L	H	M	M→H	M
b. Calibogue Cay CDF	L→X	M	M	M	X	L	H	M	M→H	M
c. Other Areas – HHI	X	M	L→H	M	X	M→L	H	M	H	M
d. Buck Island	X	M	M	M	X	M	H	M	M→H	L→M
e. Barataria and Bull Isl.	L→H	M→H	M→L	L	X	M	H	M	H	M→H
f. Haig Point	X	M→H	M→L	L	X	M→L	H	M	H	M→H
2. Ocean/Offshore Disposal										
a. Port Royal ODMDS	H	H	L	M	L	H	M	L	M	H
b. Savannah ODMDS	H	H	L	M	X	H	M	L	M	H
c. New Designation	H	H	L	M	L	H	M	L	H	H
3. Open Water Disposal										
a. Calibogue Sound	H	L	H	H	H	M	L	M	L→M	M
b. Nearshore Profile Nourishment	H	L	H	H	M	M	H	H	L	M

Matrix Notes:

Long Term Capacity: L-minimum/short term, M-moderate, H-long-term
 Equipment Needs: L-minimum, M-typical land and sea, H-multiple contractors/means
 Operation Logistics: L-most difficult, M-typical dredge/disposal, H-least difficult
 Site Access: L-difficult/limited access, M-sufficient access/typical, H-easiest access
 Availability/Ownership: L-unlikely use, H-likely use
 Aesthetics: L-poor, M-acceptable/typical social concern, H-no objections
 Regulatory Preference: L-third option, M- second option, H-first option
 Environmental Issues: L-most difficult/involved to permit, M-moderate permitting effort
 Site Development and Dredging Costs: L-least expensive, M- typical costs, H-most expensive
 X- not a possibility (all criteria)

In their response to the draft version of this document, the US Fish and Wildlife Service (USFWS) commented that beyond cost, logistics, and technical criteria; the overall goal of the 404 Guidelines is to select the *least environmentally damaging alternative*. The program adopted by SIDA was designed to designate the *least environmentally damaging practicable alternative* as a long-term management plan. Because the OCRM Regulations consider upland CDF placement and ocean disposal less damaging *a priori*, this document considered alternatives in these categories first. Inshore open water placement is being

considered because there are *no other practicable long-term dredged material management alternatives*. Inshore open water placement is the least environmentally damaging practicable alternative. The program laid out in the Planning Document recognizes that it must be shown that this alternative will not “contribute to significant degradation of water of the U.S.” But, it also must be remembered that “significant” is not here being used in the statistical sense. The following excerpt is from the EPA’s commentary on the 404 Guidelines:

Section 230.10(c) provides that discharges are not permitted if they will have “significantly” adverse effects on various aquatic resources. In this context, “significant” and “significantly” mean more than “trivial”, that is, significant in a conceptual rather than a statistical sense. Not all effects which are statistically significant in the laboratory are significantly adverse in the field. See Page 15, Other Requirements for Discharge, in Appendix A to the 1998 inland Testing Manual.

SUMMARY

The Applicant has considered and reviewed all potential sites located within a reasonable geographical area surrounding the sites to be permitted under this application. The Calibogue Cay POA has determined that the use of their CDF by any SIDA members for even a portion of the material requiring management would reduce the overall capacity of the site for the future management of Calibogue Cay dredged material and will therefore not consider amending the covenant restrictions to permit this use. The Lawton Stables Tract is not available as an alternative to any SIDA member for the reasons discussed above for any portion of member dredged material needs. There are no other upland property(ies) of sufficient size that are available to SIDA members for new site development. As discussed above, potential upland sites located on neighboring islands are not available due to refusals by the owners.

The Applicant, through its consultant ATM has identified an alternative (i.e., beach profile nourishment; placement of sandy material in the water column in front of adjacent beaches) that may be practicable for Harbour Town, South Beach, Gull Point, and the Baynard Creek POA for a portion of their dredged material. ATM suggests that since this alternative is not feasible for all of the proposed dredged material, that it be pursued concurrently with the inshore open water placement option. The confluence of each of these facility’s approach channels with Calibogue Sound suffers a sand shoaling problem consistent with normal alongshore transport of sandy material along beaches. This shoaling problem is actually the most critical component of facilities’ maintenance. Sometimes as soon as a year following maintenance dredging, this shoaling can reduce navigability of these entrances. It appears that this material may be compatible with the sand on adjacent non-recreational beaches and that dredged material from these shoals can be “artificially bypassed” by dredging and placement on adjacent downdrift beaches or in the nearshore area in front of these beaches. Environmental requirements such as grain size must be studied and addressed and technical issues such as material thickness and the practical segregation of the sand from the fine-grained material using a hydraulic dredge must also be addressed. This alternative will permit the periodic and inexpensive “reopening” of the entrances between

normal maintenance events. A small dredge could be mobilized to complete both jobs every two years, or as required. The Applicant includes this alternative within its application for a permit.

Filed prior to SIDA's permit application was a two-volume report prepared by ATM entitled, "Dredged Material Environmental Effects Evaluation, SIDA LTMS, Calibogue Sound, Hilton Head, SC." This report provides detailed results of the sample analyses of the sediments to be excavated from the project sites. Also, a modeling study of the disbursement of the dredge plume as projected to be pumped into 404 sites in Calibogue Sound is an attachment to the application.

SIDA has conducted thorough studies of the characteristics of the bottom sediments and benthic epifaunal and infauna in Calibogue Sound. They have amply considered available documentation of marine life and cycles in Calibogue Sound. Currents, tidal flows, water temperatures during proposed dredging periods, and other relevant data have been collected and studied to ascertain the results of this proposed inshore disposition of dredge materials.

The ATM studies reasonably and soundly conclude that there will not be any materially adverse effects to the waters of Calibogue Sound, or to the marine and vegetation life in Calibogue Sound, if SIDA members are granted a permit to dispose of their dredge materials into these 404 waters. SIDA submits that it has fully complied with all requirements of Section 404(b)(1) of the Clean Water Act, the Inland Testing Manual, and applicable OCRM Regulations, and is fully qualified to receive the permit in accordance with its pending application.

An intensive Sound mapping investigation was conducted to determine the best and least impactful areas for material placement. The investigation included both remote sensing techniques and direct benthic sampling of the Sound bottom. A bathymetric survey and complete sidescan sonar coverage of over 1,200 acres was conducted. From this, seven potential habitat zones were established and each represented by at least 8 benthic grab samples taken with an approved modified Young-type device. Additionally, potential live hardbottom areas were trawled with an oyster dredge to determine the extent of larger sessile epifaunal organisms. From these data, two deeper water open-water sites were selected for proposed dredged material discharge. Placement by near-surface underwater hydraulic discharge was modeled for dispersion and fate. The proposed locations of the selected sites are illustrated in the permit application drawings.

SIDA further submits that the requested 404 open water sites in Calibogue Sound are the only practicable, feasible disposal sites available for the proposed dredging projects under this application. Considering all factors that comprise "practicable" under the federal Guidelines and "feasible" under the South Carolina OCRM Regulations, this is the only reasonable conclusion to be reached when the permitting agencies make a final decision on this application. Further, to deny this application will result in continuing accumulation of silt materials in the proposed sites, such that navigation will soon become impossible except on the very high tide periods, which is contrary to the public interest and would be violative of the standards established in applicable federal and state laws, rules and regulations.

SIDA recognizes the need for, and accepts responsibility for, a reasonable monitoring program, both throughout the actual dredging project and for a reasonable time period thereafter, in order to provide all interested parties with confirming data that the project has not materially impacted the environment and waters of Calibogue Sound. Modeling programs prepared by ATM provide an excellent delineation of the necessary parameters of those monitoring studies required to achieve the necessary goals. The data and information derived will be invaluable when evaluating future projects - for SIDA or for other applicants - that are proposed under the inland open-water rules and regulations.

FINAL CONCLUSION

SIDA has conducted a study that fully exhausts all possible alternatives for site selection under this dredging permit application. It has also engaged highly qualified consultants to examine and determine the effects of the proposed inland open water disposal of the materials to be dredged.

One must conclude that SIDA does not have any other practicable or feasible disposal site available, applying the regulatory definitions that are applicable to this application.

The scientific studies also require a determination that the placement operation can be conducted and the site managed so that there will not be any unacceptable adverse effects to the waters and marine environment if the permit is granted and the project is implemented.

SIDA therefore submits that the application should be granted, and all necessary permits to proceed (federal and state) should be granted.

REFERENCES

- ATM (1998a). Dredged Material Management Alternatives Analysis for South Hilton Head Island, Planning Document. Report prepared for South Island Dredging Association by Applied Technology & Management, Inc, Charleston, SC, 31 August 1998.
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- Hyland, J.L., T.J. Herrlinger, T.R. Snoots, A.H. Ringwood, R.F. Van Dolah, C.T. Hackney, G.A. Nelson, J.S. Rosen, and S.A. Kokkinakis (1996). Environmental Quality of Estuaries of the Carolinian Province: 1994. (Annual Statistical Summary for the 1994 EMAP-Estuaries Demonstration Project in the Carolinian Province). NOAA Technical Memorandum NOS ORCA 97. Charleston, SC, July, 1996.

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- USEPA/USACE (1998b). Implementation Memorandum for "Evaluation of Dredged Material Proposed for Discharge in Waters of the U.S. - Testing Manual" Inland Testing Manual. 12 February 1998.
- USEPA (1999). Ocean Dumping Sites Designated on a Final Basis. Office of Water internet website, accessed 31 March 1999.

**APPENDIX - RELEVANT CORRESPONDENCE
(LETTERS INCLUDED)**

<i>AUTHOR</i>	<i>RECIPIENT</i>	<i>DATE</i>
CSA	SIDA/Richard Sonberg	July 1, 2000
Sea Pines Company/Thomas Norby	SIDA/Richard Sonberg	August 14, 2000
CSA	ATM/W. Samuel Phlegar	March 26, 1999
Calibogue Cay/Robert M. Willock	SIDA/Richard Sonberg	June 30, 1999
Calibogue Cay/Robert M. Willock	SIDA/Richard Sonberg	May 10, 2000
Vaux & Marscher/William Marscher	SIDA/Richard Sonberg	June 22, 2000
Welles Murphey, Jr.	SIDA/Richard Sonberg	March 24, 1999
A.L. Loomis, III	SIDA/Richard Sonberg	May 4, 2000
Haig Point/Benny K. Jones	SIDA/Richard Sonberg	April 5, 1999
CESAS/T. Alan Garrett	ATM/Robert H. Semmes	May 1, 2000
Sutton/Brian Sutton, CPA	South Beach Marina/Alan Pollard	July 27, 2000
CESAS/T. Alan Garrett	ATM/Robert H. Semmes	May 23, 2000

July 1, 2000

Mr. Richard T. Sonberg, President
South Island Dredging Association
175 Greenwood Drive
Hilton Head Island, SC 29928

RE: Upland Dredge Disposal Sites in Sea Pines Plantation

Dear Dick:

A year ago I wrote to Sam Phlegar of Applied Technology & Management when he inquired about use of upland sites within Sea Pines Plantation by members of South Island Dredging Association ("SIDA"). This is an update to that letter. I will again review the various undeveloped uplands that might appear to be a possible disposal site for spoils from dredging projects conducted by members of SIDA, in order to further confirm that such sites in fact are not usable for such a purpose, at any time.

1. Calibogue Cay site. This tract of approximately 15 acres, which is within a designated "forest preserve" on the Sea Pines Plantation land use maps, has been designated as a dredge spoils site, but the restrictive covenants for the Calibogue Cay subdivision strictly limit the site's use to spoils that are dredged from the Calibogue Cay "back creek." I know from recent meetings with residents on Calibogue Cay that their local dredging association is planning a dredge in the near future, and will utilize the full capacity of the site for their project.

CSA's legal counsel advises that the use of the Calibogue Cay site for dredging projects other than the Calibogue Cay back creek would require an amendment to the subdivision's covenants, and that requires an affirmative vote by 100% of the current property owners. I know that many property owners in the subdivision will not agree to such an amendment. Thus, this upland site is not available to SIDA, at any time.

2. Lawton Stable tract. This is a 21+ acre tract at the junction of

Greenwood Drive and Plantation Drive, as shown on the Sea Pines maps. This tract is owned by Sea Pines Company, who advises that it will not allow its use by SIDA for disposition of dredge spoils.

There are restrictive covenants filed in the Beaufort County land records which specifically apply to the Lawton Stables tract. The land is restricted to specifically described recreational and commercial uses, none of which can be interpreted to include disposition of dredge spoils; however, there is a specific exception in the covenants that allows the use of lakes on the tract as "a disposal area for dredged bottom material from the Harbour Town Yacht Basin, so long as such disposal material is subsequently covered by the surface water of such lakes." Under this covenant, a lake of approximately two acres was created at the northerly end of the Lawton Stables tract for use during the 1982 Harbour Town dredging project. However, all of the spoils that were pumped to the site at that time are still in the lake, and it has water depth of approximately two feet. In other words, the lake does not have any additional capacity to receive dredge spoils from a Harbour Town dredging project. There are not any other lakes on the Lawton Stables tract that could be used by Harbour Town under the provisions of the restrictive covenants.

Additionally, the existing lake is frequently a habitat for water fowl, and its location makes it a high profile site that greatly adds to the ambience of the Lawton Stables tract as well as the surrounding residential properties. Even if Sea Pines Company were inclined to give permission for its use (which it is not), a high dike would have to be built around the perimeter to contain the spoils, and then they would have to be trucked out of Sea Pines for final disposal. The number of heavy trucks, the traffic congestion resulting from such traffic, and the damage to the roads within Sea Pines, all constitute unacceptable conditions, such that CSA's board of directors would not allow this to occur in any event. On the basis of these problems, SIDA and its members should not plan to use the Lawton Stables tract for its pending dredge project. It is not available.

3. Forest Preserve. This is a large (approximately 605 acres) land tract in the northeasterly corner of Sea Pines Plantation. It is owned by Sea Pines Company and the Sea Pines Museum and Forest Preserve Foundation, who have told SIDA that it cannot be considered as a dredge disposal site. As can be readily discerned by its identifying name, all of this land is covered

by separate restrictive covenants, filed in the land records of Beaufort County, which make it a "forest preserve" and strictly limit the use of the land to wildlife habitat, outdoor recreation, and waste water treatment and sanitation purposes. All activities within this forest preserve are closely monitored by Sea Pines Company, CSA, South Island Public Service District, the Forest Preserve Committee, and also various environmental associations. The Forest Preserve is already fully utilized for the specific purposes allowed in the covenants, and it has been the "scene of controversy" when uses that are not within the strict limits of the covenants have been attempted, or even suggested. The letters from the management of Sea Pines Company clearly take this site out of consideration for its use in the SIDA dredging project.

4. Egret Island. This is a small island just south of Baynard Creek which is now owned by White Hat Properties (Mr. Frank Guzzio, principal). At high tide it has approximately 3 acres of upland, and it is surrounded by wetlands. It is designated for residential use, which under the restrictive covenants in Sea Pines would not allow its use as a dredge spoils site.

In addition, there is no road access to Egret Island, so it would be impossible to construct the necessary dikes, etc. to convert it into a confined disposal facility. Finally, Mr. Guzzio has stated that he intends to use the property for residential purposes, and will not allow its use for disposal of dredge spoils. It is not available for use in the SIDA dredging project.

5. Other Open Land Sites. There are only three other "upland" sites within Sea Pines Plantation that are open land and not privately owned and designated for development as residential property. All of them are southerly of the Baynard Creek area (actually between Baynard Creek and the northerly boundary of the Gull Point subdivision). They are delineated on the Sea Pines maps as "open space." They are owned by CSA.

Each of these tracts is restricted as to use by long-existing "land use covenants" that are filed in the land records of Beaufort County. They are specifically designated as "Open Space Areas" on filed plats, and may only be used for purposes that will maintain their natural, scenic resources and enhance the wildlife, game and migratory birds that frequent them. It is expressly prohibited in the covenants to cut any trees, bushes or

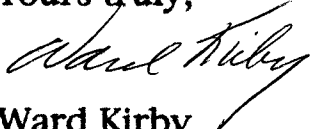
shrubbery, to make any gradings of the soil, or take any other action that would violate their existing appearance and environmental uses. The covenants state that "no unsightly or offensive material shall be placed upon such Open Space Area." Our legal counsel, Vaux & Marscher, opine in an opinion letter dated June 22, 2000 that pumping dredge spoils onto these sites would be a direct violation of that prohibition.

Previous suggestions that one or more of these Open Space Areas could be used as a dredge disposal site has brought swift opposition from adjacent property owners within Sea Pines. CSA's board of directors will not consider the use of any of these open space sites for disposition of dredge spoils, for all of the above reasons. They cannot be considered to be available to SIDA's members for any dredging purpose.

All other lands within Sea Pines Plantation are specifically designated for development purposes and are privately owned. Even if a suitable, unrestricted tract could be found in the Plantation, it would be necessary to remove the spoils to another location after the dredging is completed. As noted above, the large number of trips over the Plantation's narrow, low speed limit roads by heavy dump trucks would be intolerable and, therefore, not permitted. Bear in mind it would take about 100 truckloads a day (12 trucks per hour) for almost a year to remove the spoils of the proposed SIDA project to a remote location outside Sea Pines. The resulting traffic congestion, spillage on the roads and rights-of-way, and damage to road surfaces are adverse conditions that are not acceptable to CSA, who has legal responsibility for road maintenance in the Plantation.

For all of the above reasons, SIDA and its members should not consider use of upland sites within Sea Pines for their pending dredging project. There are none available.

Yours truly,



Ward Kirby
Executive Vice President



August 14, 2000

Mr. Richard T. Sonberg
President
South Island Dredging Assoc., Inc.
175 Greenwood Drive
Hilton Head Island, SC 29928

Re: Dredging Sites on Sea Pines Company Property

Dear Dick:

Six years ago, I wrote to Ward Kirby, Executive Vice President for Community Services Associates for Sea Pines property owners, when he inquired about use of upland sites owned by Sea Pines Company to dispose of dredge spoils from sites owned or controlled by members of South Island Dredging Association ("SIDA"). The answer Sea Pines Company at that time, for several reasons, was no, SIDA cannot place its dredge spoils at the Lawton Stables property, or within the Sea Pines Forest Preserve.

You have kept me informed about the studies undertaken by SIDA in preparation to file an application for a dredging permit. I am aware that your study of samples from the sites to be dredged indicate no presence of contaminants. However, that does not alter the position of this Company with regard to the two upland sites in question. Even "clean mud" would be highly objectionable on our properties.

As you know, both the Lawton Stables tract and the Forest Preserve tract are covered by restrictive covenants, and are specifically designed for uses that would be greatly impaired by depositing spoils from your proposed dredging project. The Company must respectfully decline to change our prior position that these tracts are not available to SIDA under any circumstances.

Sincerely,

Thomas A. Norby, Sr.
Director of Corp. Community Services

cc: Mike Lawrence
Ward Kirby

March 26, 1999

Mr. W. Samuel Phlegar, P.E.
Vice President
Applied Technology & Management, Inc.
P.O. Box 20336
Charleston, SC 29413-0336

Re: Calibogue Cay Upland Disposal Dredge Site

Dear: Mr. Phlegar:

Community Services Associates, Inc. (CSA) does not see the Calibogue Cay site as a viable dredge disposal location for at least three reasons.

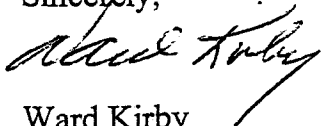
First: The covenants that pertain to that site limit its use, stating that it is for "the exclusive use of those properties that are along Back Creek." To use this site for disposing of dredge material from all other locations within Sea Pines Plantation would require unanimous agreement from all property owners on Calibogue Cay to lift these limits. It has been clearly expressed to representatives of CSA that no such agreement would be possible.

Second: To utilize this site for disposing of approximately 226,000 cubic yards of material from an initial dredge of all locations within Sea Pines would require construction of a diked 13-acre area with dike heights of 13' to 15' above existing elevations. None of the surrounding property owners or the Sea Pines Architectural Review Board would ever allow such a structure to be built in this open space and marsh area.

Third: If the site could be used and such a dike built the removal of the dredged material, after draining, would require approximately 7,500 truckloads to be removed. This amount of heavy truck traffic on residential streets could be not allowed. The roads would be destroyed and the residents could not tolerate such traffic in the Plantation.

I hope these points give you the information you need from CSA that the Calibogue Cay site is not a viable and economic upland disposal location.

Sincerely,



Ward Kirby
Executive Vice President

cc: John Fraser, III
SIDA Board

Robert M. Willock
Calibogue Cay Dredging Association
2 N. Calibogue Cay
Hilton Head, SC 29928

June 30, 1999

Mr. Richard Sonberg, President
South Island Dredging Association
175 Greenwood Drive
Hilton Head, SC 29928

RE: Calibogue Cay Creek Spoils Site

Dear Dick:

The spoils site on Calibogue Cay Creek should not be considered as an alternative for the use of SIDA as it is going to be used by this Association for its 1999 dredge. This would fill the site to capacity. You should review the Sea Pines covenants concerning use by others than this Association. Based on our current use and the attitudes of the property owners, you should consider this site as totally unavailable.

Sincerely,



Robert M. Willock
President

**ROBERT M. WILLOCK
CALIBOGUE CAY DREDGING ASSOCIATION
2 North Calibogue Cay
Hilton Head, SC 29928**

May 10, 2000

Mr. Richard Sonberg, President
South Island Dredging Association
175 Greenwood Drive
Hilton Head, SC 29928

RE: Calibogue Cay Creek Spoils Site

Dear Dick:

This is an update to my letter to you on June 30, 1999, regarding the use of the dredge spoils site behind Calibogue Creek.

As you know, the members of the Calibogue Cay Dredging Association still plan to dredge the back creek. We are completing engineering for the disposal site and plan to update our permit in the near future. Based on information provided by our consultants, there will not be any excess capacity in the spoils pit for use by any third party.

Also, we now have confirmation from several property owners on Calibogue Cay that they will not consent to any amendments to the restrictive covenants for this area. Thus, the disposal site can only be used for disposition of dredge spoils from Calibogue Creek. In others words, this site is not available to any member of South Island Dredging Association either now or at any time in the future.

Sincerely,



Robert M. Willock
President

VAUX & MARSCHER, P.A.

ATTORNEYS AND COUNSELORS AT LAW

1251 May River Road

Post Office Box 769

Bluffton, SC 29910

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ROBERTS VAUX
WILLIAM F. MARSCHER, III

F. WARD BORDEN SC, DC & VA
GRAY B. TAYLOR
PAULA M. KILGORE
HECTOR F. ESQUIVEL
ROBERT CRAIG SMITH, LLM

rick.marscher@vaux-marscher.com

FLETCHER M. JOHNSON, Jr.
GEORGE W. HARRELL, Jr., SC & GA
MAC DUNAWAY District of Columbia Only

June 22, 2000

Richard Sonberg
South Island Dredging Association
175 Greenwood Drive
Hilton Head Island, SC 29928

In Re: Use of "Open Space" for dredge spoil disposal

Dear Mr. Sonberg:

Pursuant to the request of Ward Kirby, please allow this letter to inform you that this firm is of the opinion that the disposal of dredge spoil on "Open Space" as defined pursuant to the Restrictive Covenants of September 7, 1974 recorded in the Office of the Register of Deeds for Beaufort County, South Carolina in Deed Book 224 at Page 1036 (the "74 Covenants") and as term "Open Space" is defined in the various Class 'A' Single Family Residential Covenants (the last of which was recorded on April 1, 1970 in the Office of the Register of Deeds for Beaufort County, South Carolina in Deed Book 173 at Page 46 (the "Class A Covenants"), is not permitted.

Under the 74 Covenants, the Open Space is to remain in an "undeveloped condition, free of homes and commercial structures..." The Sea Pines Plantation Company, the owner of the Open Space at the time of the 74 Covenants, retained certain rights regarding the use of Open Space and the right to dispose of dredge spoil on Open Space was not a right which was retained.

Under the Class A Covenants, to "insure that land designated as Open Space will remain as undeveloped and natural woodland, shoreline or tidal marshland... no building, tent, trailer or other structure... shall be erected or caused to be placed on ... Open Space." Further these covenants prohibit altering the "general topography of the landscape, river frontage or creek frontage...". No reservation of the right to install or maintain a dredge

OTHER OFFICES:

9 POPE AVENUE EXECUTIVE PARK
HILTON HEAD ISLAND, SOUTH CAROLINA

DEL WEBB'S SUN CITY
OKATIE, SOUTH CAROLINA

spoilage area was made by Sea Pines Plantation Company at the time the covenants were put in place.

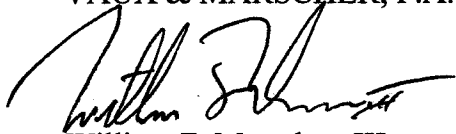
Like wise, the various covenants encumbering the Sea Pines Forest Preserve do not provide for the use of the property as a dredge spoil disposal site. In that portion of the Forest Preserve designated as Wildlife Habitat Zone "shall be continued in their present condition..." This would prevent the establishment of a dredge spoil area in the Wildlife Habitat Zone. The Outdoor Recreation Zone is restricted to uses related to outdoor activities such as fishing, horseback riding, picnics, jogging, and similar activities. The disposal of dredge spoil would not be consistent with these activities and therefore not a permitted use. That portion of the Forest Preserve dedicated to Environmental Sanitation Zone is presently utilized by the Public Service District and solid waste disposal. Notwithstanding the prior use, the requirements imposed by the Forest Preserve Covenants would preclude a dredge spoil site.

Based upon the foregoing, I am of the opinion that no dredge spoilage sites can be located on Open Space within Sea Pines Plantation or within the Forest Preserve, subject to the exception of the Open Space located at the north end of Deer Island, which is specifically designated as a spoilage site for the exclusive use as a spoil site the dredging of Back Creek.

Should you have any questions regarding the above, please feel free to call.

I remain,

VAUX & MARSCHER, P.A.



William F. Marscher, III

WFM\nb

WELLES MURPHEY, JR.

BUCK ISLAND
HILTON HEAD, SC 29928

(843) 681-6818

MARCH 24, 1999

MR. RICHARD SONBERG, PRESIDENT
SOUTH ISLAND DREDGING ASSOCIATION
17 N. CALIBOGUE CAY
HILTON HEAD ISLAND, SC 29928

SENT VIA FAX
363-5173

RE: DISPOSAL OF DREDGE MATERIALS ON BUCK ISLAND

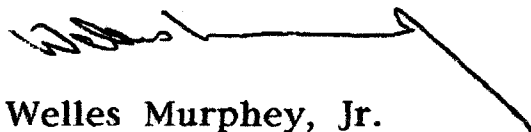
Dear Dick:

About a year ago I consented to allow you and your Association's consulting engineers to visit Buck Island, which I own, in order to ascertain its feasibility as a site to deposit dredge spoils from dredging operations in Sea Pines Plantation, including South Beach Marina, Braddock/Baynard Creek, and Harbour Town Marina.

After the site visit, you advised me that your consultants did not think the area on the north end of Buck Island is sufficiently large to accept all of the spoils from your planned dredging project. Since then I did some inquiry on my own, and this is also my conclusion. Further, the accumulation of the dredge spoils would significantly alter the terrain on my island, which is not what I desire. There probably are other objections, too.

In view of these problems, I must respectfully decline to further consider any plan that would involve the deposit of dredge spoils on Buck Island. I am sure you understand this decision.

Yours truly,



Welles Murphey, Jr.

A. L. LOOMIS, III
SUITE 900
237 PARK AVENUE
NEW YORK, N.Y. 10017
—
212 808-3535
FAX: 212 808-3540

May 4, 2000

Mr. Richard T. Sonberg
President
South Island Dredging Association
17 North Calibogue Cay
Hilton Head Island, SC 29928

Re: Bull and Barataria Islands

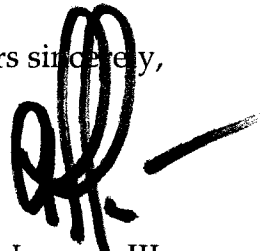
Dear Mr. Sonberg,

Both you and your association's consulting engineers have inquired about the possible use of upland sites on Bull and Barataria Islands for the disposition of spoils from a dredging project planned in Sea Pines Plantation. My answer to the inquiry is "NO".

The Loomis family owns both of these islands which are located in South Beaufort County, South Carolina, northwesterly across Calibogue Sound from Hilton Head Island. We have specific plans for these properties, both presently and in the future, and any disposition of dredge spoils onto the surface of either island is just not within our contemplation.

I wish you and the members of your association well in your efforts to revitalize your tidal waterways, but please do not include Bull and Barataria Islands in your plans.

Yours sincerely,

A handwritten signature in black ink, appearing to be 'A.L. Loomis III', with a long horizontal stroke extending to the right.

A. L. Loomis III

HAIG POINT, INC.
P.O. DRAWER 7319
HILTON HEAD ISLAND, SC 29938
843-866-9208
FAX: 843-842-4047

April 5, 1999

Mr. Richard T. Sonberg, President
South Island Dredging Association
175 Greenwood Drive
Hilton Head Island, SC 29928

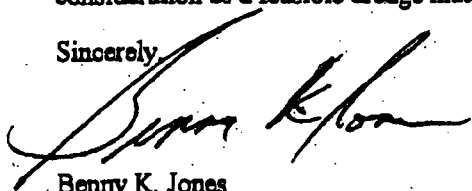
RE: Dredged Material Upland Disposal Sites, Haig Point, Daufuskie Island, SC

Dear Mr. Sonberg:

This letter is provided in response to a request made by your consultant, Applied Technology & Management, Inc., regarding potential upland disposal areas in Haig Point, Daufuskie Island, SC.

Haig Point is a Planned Unit Development located on Daufuskie Island, SC. The project is nearing completion and there are no dredge disposal areas available. Please eliminate Haig Point from further consideration as a feasible dredge material location.

Sincerely,



Benny K. Jones
Vice. Pres. of Construction

cc: Robert Semmes, ATM



DEPARTMENT OF THE ARMY

SAVANNAH DISTRICT, CORPS OF ENGINEERS
P.O. BOX 889
SAVANNAH, GEORGIA 31402-0889

REPLY TO
ATTENTION OF:

May 1, 2000

Operations Division

Robert H. Semmes
Applied Technology and Management Inc.
2770 NW 43rd Street, Suite B
Gainesville, Florida 32606-7419

Dear Mr. Semmes:

I received your letter dated April 25, 2000 concerning the Atlantic Intracoastal Waterway dredged material disposal areas near Ramshorn Creek in South Carolina. The U.S. Government has a perpetual disposal easement over these state-owned tracts of land. Use of these lands for projects other than the Federal navigation project would substantially reduce their useful lives and ultimately increase the cost of Federal dredging operations. For this reason, non-Federal use of the tracts adjacent Ramshorn Creek is not possible.

If you would like to discuss this issue further, please contact me at (912) 652-5058.

Sincerely,

A handwritten signature in black ink that reads "T. Alan Garrett".

T. Alan Garrett
Operations Navigation Manager

INDEPENDENT ACCOUNTANT'S REPORT
ON APPLYING AGREED-UPON PROCEDURES WITH RESPECT
TO THE ECONOMIC FEASIBILITY OF OCEAN DISPOSAL FOR
SOUTH BEACH MARINA, LLC



To: Alan Pollard, South Beach Marina, LLC
Steven Brooks, PE, SC DHEC
Mark Purcell, CESAC-CO-P

At your request, I have performed certain agreed-upon procedures, as enumerated below. These procedures were performed solely to assist you in evaluating the financial impact of the proposed ocean dredge solution on South Beach Marina, LLC. I performed this engagement in accordance with standards established by the American Institute of Certified Public Accountants. The sufficiency of these procedures is solely the responsibility of the specified users of the report. Consequently, no representation is made regarding the sufficiency of the procedures described below, either for the purpose for which this report has been requested, or for any other purpose.

ANALYSES and PROCEDURES:

Verify mathematical accuracy of "Project Cost" and "Price per CY" for each scenario provided by Applied Technology & Management.

Verify mathematical accuracy of cycle costs, annual reserve amounts, and estimated NOI, as provided by South Beach Marina.

Compare "Tax return NOI" for 1998 and 1999 to "Ordinary income (loss)" per 1998 and 1999 tax returns filed by South Beach Marina, LLC.

ASSUMPTIONS:

The following assumptions were made in determining the impact of the two ocean disposal costs upon the financial health of South Beach Marina, LLC.

- a. \$16.50 per cubic yard, the lowest ocean disposal cost
- b. 6 year cycle length
- c. Braddock Creek and South Beach Marina post dredge depth of 8' at MLW.

BRIAN A. SUTTON CPA, PA

52 NEW ORLEANS ROAD

SUITE 302

HILTON HEAD ISLAND

SOUTH CAROLINA

29928

843.842.4021

843.842.2336 FAX

FINDINGS and CONCLUSIONS:

All amounts enumerated above are mathematically correct. The tax return NOI data provided by South Beach Marina LLC agrees with the Ordinary income (loss) figures filed by South Beach Marina during tax years 1998 and 1999.

If the assumptions identified above were to hold true, then based on an average of the marina's last two years of operation as summarized by the "Tax return NOI" for 1998 and 1999, the marina would sustain annual operating losses in excess of \$250,000. Such sustained losses would preclude the marina from operating as a going concern.

Alternatively, with costs associated with the DryDredge Ocean Disposal option, at \$39.50 per cubic yard, the marina would sustain even greater annual operating losses.

Accordingly, this analysis indicates that a traditional ocean disposal dredge or a DryDredge ocean disposal solution would put South Beach Marina, LLC out of business.

I was not engaged to, and did not perform, any procedures on any other data provided by South Beach Marina or Applied Technology & Management. Accordingly, no opinion is expressed herein regarding the reasonableness of the assumptions provided or the correctness of the underlying data.

This report is intended solely for the use of South Beach Marina, LLC in conjunction with its filing of a dredge permit with the South Carolina Office of Coastal Resource Management and the U.S. Army Corps of Engineers. It should not be used by any other party who has not agreed to the procedures or who has not assumed responsibility for the sufficiency of the procedures for this purpose.

Brian D. Sutton, CPA, PA

July 27, 2000



DEPARTMENT OF THE ARMY

SAVANNAH DISTRICT, CORPS OF ENGINEERS

P.O. BOX 889

SAVANNAH, GEORGIA 31402-0889

REPLY TO
ATTENTION OF:

May 23, 2000

Operations Division

Robert H. Semmes
Applied Technology and Management Inc.
2770 NW 43rd Street, Suite B
Gainesville, Florida 32606-7419

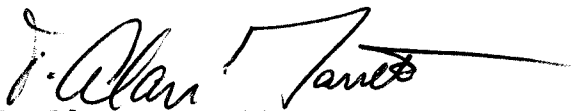
Dear Mr. Semmes:

I received your letter dated May 12, 2000 concerning the use of the Savannah Harbor Ocean Dredged Material Disposal Site (ODMDS) for materials proposed to be dredged by the South Island Dredging Association. As you know, the Environmental Protection Agency has restricted the site to use by the U.S. Army Corps of Engineers in its federal channel maintenance operations. A change in this designation would rest with the EPA and would require a modification to their final ruling.

To begin this process, you must submit an application to the EPA. EPA would then begin evaluation procedures including public notices and an environmental assessment. You may desire to contact them in order to ascertain how long this process would take and to get additional information on the actual modification process.

If you would like to discuss this issue further, please contact me at (912) 652-5058.

Sincerely,


T. Alan Garrett
Operations Navigation Manager