Long-Range Dredged Material Management Plan
For the Intracoastal Waterway in
Miami-Dade County, Florida

March 2002
(Revised March 2003)

Long-Range Dredged Material Management Plan for the Intracoastal Waterway Miami-Dade County, Florida

Prepared for:

FLORIDA INLAND NAVIGATION DISTRICT

by

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EXECUTIVE SUMMARY

The identification and permitting of suitable dredged material management areas for the Intracoastal Waterway in Florida has proven increasingly difficult. This results from the nature of dredging, the requirements of handling and storing dredged material, and the environmental sensitivity and rapid development of Florida's coastal corridor through which the Waterway passes. In response to this situation, in 1986 the Florida Inland Navigation District (FIND) initiated a program of long-range dredged material management planning. When fully implemented, this program will provide a permanent infrastructure of management facilities for all maintenance material dredged from the 404 miles of Intracoastal Waterway channel between Fernandina Harbor in Nassau County and southern Biscayne Bay in Miami-Dade County.

The FIND's program, executed in close cooperation with the Jacksonville District, U.S. Army Corps of Engineers, comprises three main elements: (1) a two-phased plan development and property acquisition element, (2) a facility permitting and construction element, and (3) a facility operation element. Program execution begins with the development of long-range dredged material management plans for the Waterway on a county-by-county basis (Phase I of the planning and property acquisition element). Upon finalization of each plan, Phase II of the planning and property acquisition element begins with site boundary surveys, and continues with detailed environmental site characterizations, soils testing, topographic surveys, preliminary facilities design and site plans, site operation and management plans, and a summary of expected costs for site development and operation. The FIND then uses all this information to support property acquisition and facilities permitting.

This report presents the Long-Range Dredged Material Management Plan for the Intracoastal Waterway in Miami-Dade County. Similar plan documents have been completed for the Waterway in Nassau, Duval, St. Johns, Flagler, Volusia, Brevard, Indian River, St. Lucie, Martin, and Palm Beach Counties, as well as for the 15.11-mi segment of the Okeechobee Waterway in Martin County that lies seaward of the St. Lucie Lock. In addition, a comparable plan document for the Intracoastal Waterway in Broward County is in preparation. Phase II of the planning and property acquisition program element will develop the site-specific documentation described above for the recommended dredged material management sites. Barring unforeseen circumstances and/or changes in the governing conditions from those present at the time of this report, the FIND will then actively pursue acquisition of the recommended sites.

The methods used in the development of the long-range dredged material management plan for the Intracoastal Waterway in Miami-Dade County remain consistent with those used in the development of previous plan documents for the Waterway in the counties cited above. The major tasks performed as part of the present effort are as follows: (1) establishment of the 50-year material storage requirement within the Miami-Dade County project area based on historic maintenance dredging volumes and subsequent examination surveys; (2) evaluation of the remaining or potential storage capacity of existing easements and FIND-owned tracts within the project area; (3) development of a management concept or strategy appropriate to specific engineering and operational requirements, and environmental and land-use constraints; (4) identification of additional candidate sites consistent with the management concept; (5) evaluation of all candidate sites based on a standard set of criteria that reflect engineering, operational, environmental, and land-use considerations; and (6) selection of a set of primary (first-choice) and secondary (second-choice) dredged material management sites that best meet project requirements consistent with the established management concept.

The 47.92-mile segment of the Intracoastal Waterway within the Miami-Dade County project area comprises portions of three separate navigation projects — the Intracoastal Waterway, 10-ft Project, Ft. Pierce to Miami; the Miami Harbor Project; and the Intracoastal Waterway, 7-ft Project, Miami to Key West. The 14.04-mile segment of the 10-ft Project within the Miami-Dade County project area includes constructed channel dimensions of 10 ft below Mean Low Water (MLW) depth and a 125-ft base width. The 1.01-mile segment within the Miami Harbor Project includes portions of the Port of Miami Turning Basin, the Bayfront Park Channel, and the Miami River Channel. The dimensions of the Miami Harbor Project's channels exceed those of the Intracoastal Waterway, thus this Waterway segment requires no maintenance beyond that performed under the sponsorship of the Port of Miami. The 32.87-mile segment of the 7-ft Project within the Miami-Dade County project area includes constructed dimensions of 7 ft below (MLW) and a 75 ft base width.

The plan development process began with a review of engineering records at the Jacksonville District Office, U.S. Army Corps of Engineers and an analysis of data from FIND's 1999 ICWW channel survey to develop estimates for the 50-year maintenance dredging and material storage requirements of the 47.92 miles of channel within the study area. The analysis showed a projected total storage requirement of 1,234,728 cubic yards of bulked material distributed over five channel reaches. Preliminary assessment was then made of the 11 tracts totaling almost 1,198 acres the FIND controls under perpetual easement. Given that each of these easements are predominantly open water, this assessment revealed only two easements that contain significant relic spoil islands and thus met the most basic criteria of reasonable upland acreage. With some (limited) potential for continued use as dredged material management areas, these two easements were retained for further evaluation.

With the projected 50-year dredging and material storage requirements of the Waterway within the Miami-Dade County project area thus established, a management concept was then developed to guide the identification of alternative candidate sites consistent with the unique characteristics of the project area and the projected channel maintenance requirements. In this manner, unrealistic and impractical alternatives were eliminated so that the evaluation of more reasonable alternatives could proceed logically. The principles of the management concept adopted for Miami-Dade County are as follows:

(1) Given the concentration of shoaling around Bakers Haulover Inlet and the documented presence of beach-quality sediments in this segment of the Waterway, beach placement, supplemented by one or more upland material transfer or temporary storage sites, becomes the most appropriate management strategy for this channel segment.

(2) For the remainder of the project area beyond the inlet's influence and north of Government Cut, the small projected volume of shoaling supports mechanical dredging over the hydraulic dredging methods typically used for more extensive Waterway shoals. Under this approach, barges would transport the dredged material from the dredging site to small temporary storage/material transfer sites adjacent to the Waterway.

(3) Within northern Miami-Dade County, the small size and limited capacity of potential storage sites on the Waterway dictate that these sites temporarily store only the material produced by a single maintenance operation. The material must then be removed for beneficial reuse or disposal off-site before the next scheduled maintenance operation. Should even temporary storage prove impractical, these sites would serve only as material transfer points. Under this scenario, after the barges are offloaded at the transfer site, the dredged material would then be trucked to a site(s) located west of the coastal corridor. Sized to provide dry storage only for a single maintenance operation, the inland site(s) would also require that the stored material be offloaded for beneficial reuse or alternate storage before the next scheduled channel maintenance operation.

(4) From Government Cut south to the Monroe County line, given the distance the ICWW channel lies offshore Biscayne Bay's western shoreline, mechanical dredging and barge transfer remains the appropriate channel maintenance strategy. Here, the scarcity of waterfront transfer sites may preclude offloading the barges mechanically. However, the potential availability of larger upland sites within a reasonable distance of the bayfront supports transferring the dredged material hydraulically from an appropriate near-shore

barge mooring point to an upland dewatering/long-term storage site located a short distance inshore.

(5) All sites are to be operated and maintained as permanent dredged material management facilities.

Within this framework, 84 alternative candidate sites were identified — 52 identified from aerial photography and other resource materials, 26 derived from a real estate analyst's evaluation of developed, abandoned, or underused commercial properties, and six identified through discussions with local contacts. Each of the 84 alternative sites as well as the two existing easements with potential for continued use was then field inspected and evaluated under a standard set of criteria addressing engineering, operational, environmental, and land-use considerations. This process led to the selection of eight sites to form a site bank of four primary (first-choice) options and four secondary alternatives. All primary and secondary alternatives represent newly identified properties neither owned nor currently held under easement by the FIND.

A vital element in the plan development process was the participation of key federal and state agency representatives, as well as representatives of local government and interested public citizens. At critical points during Phase I of the project, a Technical Advisory Committee consisting of representatives from the FIND, the Florida Department of Environmental Protection (FDEP), the Florida Department of Community Affairs (FDCA) and the Jacksonville District, U.S. Army Corps of Engineers (USACE) met with the contractor to monitor work in progress and review technical decisions for the execution of future tasks. Continuing dialogue with relevant agency personnel supplemented these meetings. In addition, at key stages in the plan development process, the results of all efforts to that point were presented at Public Information Workshops. At the workshops, held in various public locations throughout Miami-Dade County, comment was actively solicited from representatives of local government, civic groups, and interested citizens. Input and guidance received from all those who participated in the committee meetings and workshops proved invaluable to the successful completion of the project.

Experience gained from the earlier long-range dredged material management studies completed for the Waterway in the counties cited above has demonstrated the importance of systematic documentation of dredged material management alternatives and the basis upon which these alternatives are evaluated. This Phase I report provides such information for the long-range dredged material management plan for the Intracoastal Waterway in Miami-Dade County and documents all work performed under this contract. A companion set of 23 photobased engineering plan sheets summarizes pertinent channel and site information. Phase II of this project will develop all of the detailed engineering, environmental, and survey information necessary to design, permit, and construct (as appropriate)

permanent dredged material management facilities on each of the primary sites selected. Phase II will also address cost considerations associated with these actions and will develop detailed site operation and management plans. Chapter 5.0 of this report presents a detailed scope of work for Phase II of the project.

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TABLE OF CONTENTS

EXECUTIVE SUMMARY i

ACKNOWLEDGMENTS vi

LIST OF FIGURES ix

LIST OF TABLES xi

1.0 INTRODUCTION 1

- **1.1 Background** 1
- **1.2 Project Overview** 4
  - *1.2.1 Advisory Committees and Public Workshops* 4
- **1.3 Plan Document** 6

2.0 50-YEAR MATERIAL STORAGE REQUIREMENT 7

- **2.1 Historic Analysis** 7
  - *2.1.1 Methodology* 7
  - *2.1.2 Material Quantities and Locations* 12
  - *2.1.3 Material Quality* 17
    - 2.1.3.1 Sediment Data Collection 17
    - 2.1.3.2 Sediment Physical Characteristics 19
    - 2.1.3.3 Sediment Chemistry 24
- **2.2 Existing Sites** 31
- **2.3 Existing Storage Capacity** 34

3.0 DREDGED MATERIAL MANAGEMENT ALTERNATIVES 36

- **3.1 Management Concept** 36
  - *3.1.1 Management Alternatives for Miami-Dade County* 37
  - *3.1.2 Management Concept for Miami-Dade County* 42
  - *3.1.3 Beneficial Use of Dredged Material* 43
- **3.2 Delineation of Channel Reaches** 44
- **3.3 Identification of Candidate Sites** 50
- **3.4 Site Inspections** 52

4.0 ESTABLISHMENT OF SITE BANK 65

- **4.1 Evaluation Criteria** 65
  - *4.1.1 Engineering/Operational Considerations* 66
  - *4.1.2 Environmental Considerations* 68
  - *4.1.3 Socioecomonic or Cultural Considerations* 70
- **4.2 Site Bank** 71

5.0 RECOMMENDED SCOPE OF WORK: PHASE II 86

REFERENCES 93

Appendix A Site Bank

Appendix B Other Candidate Sites

Appendix C Dike Requirements and Capacity Analysis

Appendix D Property Ownership, Primary and Secondary Sites

Appendix E Sediment Data

Appendix F Technical Advisory Committee and Interested Party Mailing Lists

LIST OF FIGURES

Figure 1.1 Project Area, Long Range Dredged Material Management Plan, Intracoastal Waterway, Miami-Dade County, Florida 2

Figure 2.1 Areas of Historic Maintenance Dredging/Recent Shoaling, Long Range Dredged Material Management Plan, Intracoastal Waterway, Miami-Dade County, Florida 14

Figure 2.2 Miami-Dade County ICWW Sediment Sampling Locations 18

Figure 2.3 Miami-Dade County ICWW Sediment Sampling Locations Located Within Survey 2000 Shoals (10-ft Project) 20

Figure 2.4 Miami-Dade County ICWW Sediment Sampling Locations Located Within Survey 2000 Shoals (7-ft Project) 21

Figure 2.5 Total Organic Carbon and Total Kjeldahl Nitrogen in Miami-Dade County ICWW Sediments 30

Figure 2.6 Existing FIND Easements, Long Range Dredged Material Management Plan, Intracoastal Waterway, Miami-Dade County, Florida 32

Figure 3.1 Reach Delineation, Long Range Dredged Material Management Plan, Channel Reaches, Intracoastal Waterway, Miami-Dade County, Florida 45

Figure 3.2 Areas of Historic Maintenance Dredging/Recent Shoaling by Reach, Long Range Dredged Material Management Plan, Intracoastal Waterway, Miami-Dade County, Florida 48

Figure 3.3a Candidate Sites, Long Range Dredged Material Management Plan, Intracoastal Waterway, Miami-Dade County, Florida 53

Figure 3.3b Candidate Sites, Long Range Dredged Material Management Plan, Intracoastal Waterway, Miami-Dade County, Florida 54

Figure 4.1a Site Bank, Long Range Dredged Material Management Plan, Intracoastal Waterway, Miami-Dade County, Florida 73

Figure 4.1b Site Bank, Long Range Dredged Material Management Plan, Intracoastal Waterway, Miami-Dade County, Florida 74

Figure 4.2 Channel Reach 1, Long Range Dredged Material Management Plan, Intracoastal Waterway, Miami-Dade County, Florida 78

Figure 4.3 Channel Reach 2, Long Range Dredged Material Management Plan, Intracoastal Waterway, Miami-Dade County, Florida 80

Figure 4.4 Channel Reach 3, Long Range Dredged Material Management Plan, Intracoastal Waterway, Miami-Dade County, Florida 82

Figure 4.5 Channel Reach 4, Long Range Dredged Material Management Plan, Intracoastal Waterway, Miami-Dade County, Florida 83

Figure 4.6 Channel Reach 5, Long Range Dredged Material Management Plan, Intracoastal Waterway, Miami-Dade County, Florida 84

LIST OF TABLES

Table 2.1 Intracoastal Waterway, 10-ft, 7-ft and Miami Projects, Miami-Dade County 8

Table 2.2 Summary of Historic Maintenance Dredging/Recent Shoaling Intracoastal Waterway, Miami-Dade County, 1938-1999 13

Table 2.3 Miami-Dade County ICWW Sediment Sampling Locations, October 2000 22

Table 2.4 Physical Characteristics of Miami-Dade County ICWW Sediment Samples 23

Table 2.5 Metal Enrichment Ratios of Miami-Dade County ICWW Sediment Samples 26

Table 2.6 Metal Concentrations of Miami-Dade County ICWW Sediment Samples [ppm] 27

Table 2.7 Detected Pesticide and PCB Concentrations of Miami-Dade County ICWW Sediment Samples [ppb] 28

Table 2.8 Detected Polycyclic Aromatic Hydrocarbon (PAH), Concentrations of Miami-Dade County ICWW Sediment Samples [ppb] 29

Table 2.9 Inventory of Disposal Easements, Intracoastal Waterway, Miami-Dade County, Florida 33

Table 3.1 Delineation of Operational Channel Reaches, Intracoastal Waterway, 10- and 7-ft Projects, Miami-Dade County 47

Table 3.2 Summary of Historical Maintenance Dredging/Recent Shoaling, Intracoastal Waterway, Miami-Dade County, 1938-1999 49

Table 3.3 Candidate Sites, Intracoastal Waterway, Miami-Dade County 56

Table 4.1 Preliminary Site Bank, Long-Range Dredged Material Management Plan, Intracoastal Waterway, Miami-Dade County 75

1.0 INTRODUCTION

This report documents the first phase of a two-phased effort to develop a 50-year plan for the management of maintenance material dredged from Intracoastal Waterway (ICWW or Waterway) channels in Miami-Dade County, Florida (Figure 1.1). Phase I, now completed, focused on the development of basic plan concepts, the definition of long-term dredging and material storage requirements, and the identification of suitable management alternatives which satisfy preliminary environmental, engineering, and operational criteria. Phase II will focus on obtaining and documenting detailed site-specific information required for the preparation and submission of permit applications for the primary or first-choice sites identified in Phase I. In addition, Phase II will address the design of site facilities and will plan the construction and continuing operation and maintenance of these sites as permanent dredged material management facilities.

The methods used in the performance of the work reported herein derive from a study that addressed similar needs of the ICWW within Nassau and Duval Counties, Florida (Taylor and McFetridge, 1986). This earlier effort, performed under the sponsorship of the Florida Inland Navigation District (FIND), served as a pilot study for the FIND's 15-year Atlantic Intracoastal Waterway Dredged Material Management Plan. The FIND's acquisition of seven upland sites has essentially completed Phase II of the Nassau-Duval study. With the construction of (to date) three dredged material management facilities intended to serve the needs of the ICWW within Nassau and Duval Counties for a minimum of 50 years, the FIND and the Jacksonville District, U.S. Army Corps of Engineers (USACE) continue to implement the plan developed within the project's first phase.

In its continuing role of Engineer to the District, Taylor Engineering has applied the same method to the needs of the Waterway in St. Johns, Flagler, Volusia, Brevard, Indian River, St. Lucie, Martin, Palm Beach, and Broward Counties, as well as to the 15.11-mi segment of the Okeechobee Waterway in Martin County that lies east (seaward) of the St. Lucie Lock. Experience gained from these earlier projects has demonstrated the importance of documenting the evaluation process used to identify management alternatives. This report provides such documentation for the long-range dredged material management plan for the ICWW in Miami-Dade County.

1.1 Background

Since its formation in 1927, the FIND has served as the local sponsor for the ICWW channel along Florida's east coast between Fernandina Harbor and Miami. As such, the FIND must provide the (USACE) with sites suitable for placing material dredged from the authorized federal navigation channel. Prior to the increased environmental awareness of the 1970's and the accompanying recognition by

various federal and state regulatory agencies of the value of estuarine wetlands, short-term economics dictated dredged material management. Engineering, cost, and operational considerations determined the design and execution of channel maintenance projects. To this end, the Trustees of the Internal Improvement Trust Fund granted to the FIND perpetual easements on significant acreage along the Waterway. A majority of these easements were located entirely within the sovereign waters of the state and included expanses of pristine salt marsh in the more northern counties and mangrove wetlands in the more southern counties. Additionally, many landowners with wetland holdings adjoining the Waterway sought to improve the development potential of their properties by granting disposal easements over these wetlands and encouraging their destruction through the unconfined placement of maintenance material. This approach, combined with the desire of the dredging contractor to maximize operational efficiency, resulted in the loss of wetlands and the proliferation of numerous small spoil mounds and islands lining the Waterway.

Because of society's increased environmental awareness and the scientific knowledge supporting it, the unconfined placement of dredged material within wetland areas no longer represents a responsible approach to the maintenance of the ICWW. Neither is it a realistic approach given present-day, agency-imposed permitting constraints. Current state and federal legislation mandates that all dredging and dredged material management activities satisfy a spectrum of environmental requirements dealing with water quality, habitat protection, threatened and endangered species, and the filling of wetlands. Specific prohibitions against the unconfined placement of dredged material in wetlands are contained in Sections 301 and 404 of the Clean Water Act (33 U.S.C. 403) administered by the U.S. Environmental Protection Agency; Section 10 of the Rivers and Harbors Act administered by the U.S. Army Corps of Engineers; and Chapters 253, 258, and 403 Florida Statutes and Chapters 17-4, 18-20, and 18-21 of the Florida Administrative Code administered by the Florida Department of Environmental Protection. In addition, local county and municipal governments typically address dredge-and-fill issues in local comprehensive planning documents within state-established guidelines. The long-range implications of these constraints have become more apparent in the ensuing years as existing sites reach capacity and as the identification and permitting of dredged material management sites become increasingly difficult. Moreover, the intensive development pressure being experienced throughout coastal Florida has made the acquisition of new sites an increasingly expensive proposition.

In order to secure its ability to maintain the ICWW within the existing framework of engineering, operational, and environmental constraints, in 1986 the FIND initiated a 15-year program of long-term planning and site acquisition to provide a means to accommodate all maintenance material dredged from the Waterway during the next 50 years and beyond. The first program element addressed the needs of the

Waterway within Nassau and Duval Counties. The program continues, now guided by a prioritization of Waterway segments, county by county, based on each county's need for immediate channel maintenance, as well as on the difficulty of providing appropriate sites within each county. This prioritization, jointly decided upon by the FIND and the USACE, identified two counties — Broward and Miami-Dade — as the final elements within the 15-year program. This Phase I report documents the development of the long-range dredged material management plan for the Intracoastal Waterway in Miami-Dade County.

1.2 Project Overview

Phase I development of the long-range dredged material management plan for the ICWW in Miami-Dade County consists of six components: (1) establishment of the 50-year material storage requirement within the Miami-Dade County project area based on historic maintenance dredging volumes and subsequent examination surveys; (2) evaluation of the remaining or potential storage capacity of existing easements and FIND-owned tracts within the project area; (3) development of a management concept or strategy appropriate to specific engineering and operational requirements, and environmental and land-use constraints; (4) identification of additional candidate sites consistent with the management concept; (5) evaluation of all candidate sites based on a standard set of criteria that reflect engineering, operational, environmental, and land-use considerations; and (6) selection of a set of primary (first-choice) and secondary (second-choice) dredged material management sites that best meet project requirements consistent with the established management concept. This report documents each of these plan components.

1.2.1 Advisory Committees and Public Workshops

The execution of this project included, by design, a three-tiered involvement of outside reviewers and interested members of the public who commented on the long-range dredged material management plan as it developed. These three sources of input consisted of (1) a Technical Advisory Committee comprising representatives from the Florida Inland Navigation District staff, the Jacksonville District Corps of Engineers, the Florida Department of Environmental Protection, and the Florida Department of Community Affairs; (2) the Board of Commissioners for the FIND; and (3) the interested public. The following paragraphs describe these groups' involvement in the plan development process.

The Technical Advisory Committee met with members of the Taylor Engineering staff a total of four times during the course of the project to monitor work in progress and review technical decisions for the execution of future tasks. The FIND held the first meeting of the Technical Advisory Committee on

May 24, 2000, at the offices of the FDEP in Tallahassee. At this meeting, the Committee reviewed long-term Waterway requirements, the inventory of existing easements and their ability to meet these requirements, the development of the management concept, the preliminary identification of alternative candidate sites, the establishment of an initial site bank consisting of all existing easements that showed some potential for continued use and all newly identified alternative sites, and early impressions from the field inspection of all initial site bank sites. The second meeting of the Technical Advisory Committee, held August 30, 2001, at the Jacksonville District offices of the U.S. Army Corps of Engineers, reviewed the results of the site evaluation process as well as the preliminary site bank of primary and secondary alternatives for each reach of the project area derived from that evaluation. The third meeting, held January 18, 2002, also at the Jacksonville District, USACE, reviewed the first draft of the present report. Following the incorporation of several significant revisions to basic plan elements at the request of the FIND, the fourth and final meeting of the Technical Advisory Committee, *[not yet scheduled]* reviewed the report's final draft before its approval by the FIND Board of Commissioners. The plan presented in this report reflects the valued contribution of this group.

To inform the citizens of Miami-Dade County of the plan's progress and to receive additional input, the FIND held three Public Information Workshops. The FIND advertised each of these workshops in the legal notice sections of the *Miami Herald* newspaper. Additionally, to distribute meeting notices and status reports the FIND initiated a mailing list that included government representatives in Miami-Dade County and other interested parties (Appendix F). Held at Highland Oaks Park on June 6, 2000, at Crandon Park on Key Biscayne on January 22, 2002, and [*not yet scheduled*], these workshops presented the work accomplished to date and set forth the direction of the plan. The information presented and discussed at the public workshops incorporated input received from the Technical Advisory Committee.

Finally, progress made in the development of the Long-Range Dredged Material Management Plan for the Intracoastal Waterway in Miami-Dade County was discussed at the regularly scheduled public board meetings of the Florida Inland Navigation District. These public meetings are held monthly on a rotating basis in each of the 11 counties comprising the District. During Phase I of the Miami-Dade County project, progress reports and updates were presented and discussed by the FIND Board at over 15 public board meetings and workshops to date. The first draft report received Board approval at its meeting held January 25, 2002. Subsequent modifications of several plan concepts led to substantive revisions and submittal of a second, final draft report and Board approval of the revised plan *[not yet scheduled]*. The final report is scheduled to be formally adopted by the Board at its meeting of *[not yet determined]*.

The constructive and valuable input received from each of the above-described sources contributed greatly to the successful completion of the Long-Range Dredged Material Management Plan for the Intracoastal Waterway in Miami-Dade County.

1.3 Plan Document

The remainder of this report documents the entire planning process. Chapter 2.0 describes the establishment of 50-year material management requirements for various reaches of the Waterway. These projected requirements reflect historic dredging records, recent survey data, and comparison of projected dredging locations and material storage requirements with the capacities of existing disposal easements. Chapter 3.0 discusses the management concept, the identification of alternative sites, and the field inspection and initial evaluation of all candidate sites, comprising both existing easements and newly-identified candidate sites. Chapter 4.0 describes the final site evaluation process and includes the evaluation criteria used and the formation of the site bank of first- and second-choice options from the list of candidate sites. Finally, Chapter 5.0 presents a specific scope of work for plan implementation in Phase II.

2.0 50-YEAR MATERIAL STORAGE REQUIREMENT

2.1 Historic Analysis

2.1.1 Methodology

The Miami-Dade County segment of the ICWW area extends approximately 47.92 miles from its starting point 530 ft south of the Broward/Miami-Dade County line (Cut DA-1, station 0+00; ICWW mile 334.24) southward to the Miami-Dade/Monroe County line (Cut D-9, station 201+74.6; ICWW mile 382.16) in Card Sound south of Biscayne Bay. Portions of three separately authorized federal navigation projects, the Intracoastal Waterway, 10-ft Project (Ft. Pierce to Miami), the Miami Harbor Project, and the Intracoastal Waterway, 7-ft Project (Miami to Key West), comprise the Intracoastal Waterway within Miami-Dade County. The county's northernmost 530 ft that lie within Cut BW-63 are addressed as part of the long-range plan for the ICWW in Broward County. Table 2.1 lists all of the designated channel cuts (i.e., the straight line channel segments), cut lengths, and mileages measured from the northern boundary of the Miami-Dade County project area, as well as from the St. Johns River in Jacksonville (specifically, the southern edge of the Jacksonville Harbor Project, designated ICWW mile 0.0) and from Fernandina Beach (specifically, the southern edge of the Fernandina Harbor Project, designated AIWW mile 0.0).

The first step in assessing the estimated future dredging and material storage volume requirements for the project area is to document the historic shoal volumes within the Miami-Dade County segment of the Intracoastal Waterway. Baseline shoal volumes, in turn, reflect two quantities: (1) the estimated volume of material removed from the Waterway channel in all maintenance dredging operations since construction of the channel to its present project depth, and (2) the estimated volume of shoaling presently within the authorized channel based on recent (1996, 1999) sequential surveys of the Atlantic Intracoastal Waterway (i.e., the Waterway north of the St. Johns River) in Florida and the entire Intracoastal Waterway (i.e., the Waterway from the St. Johns River southward), including the Miami-Dade County channel segment. The latter quantity represents the volume of shoaling which has occurred since the last maintenance operation or which has occurred in areas not previously maintained.

The first quantity, the volume of historic maintenance dredging, derives from a detailed analysis of Jacksonville District, U.S. Army Corps of Engineers (USACE) archival records — specifically, analysis of all engineering plans and supporting documents for channel maintenance performed in the Miami-Dade County segment of the ICWW since the channel was deepened to its present project depth. The authorized depth of the Intracoastal Waterway, St. Johns River to Miami Harbor is 12 ft below Mean

Table 2.1 Intracoastal Waterway, 10-ft, 7-ft and Miami Harbor Projects, Miami-Dade County

			Mileage		
Cut	**End Station (ft)**	**Length (mi)**	**0.0 @ Cut DA-1 Sta 0+00**	**ICWW Mileage 0.0 @ DU-1**	**0.0 @ FHP AIWW Cut 34**
Intracoastal Waterway, Ft. Pierce to Miami (constructed channel dimensions: -10ft MLW X 125ft)					
DA-1	44 + 95.50	0.85	0.85	335.09	357.40
DA-2	62 + 20.70	1.18	2.03	336.27	358.58
DA-3	18 + 13.00	0.34	2.37	336.61	358.92
DA-3A	11 + 07.00	0.21	2.58	336.82	359.13
DA-4	12 + 23.50	0.23	2.81	337.05	359.36
DA-5	26 + 14.80	0.50	3.31	337.55	359.86
DA-6	15 + 16.60	0.29	3.60	337.84	360.15
DA-7	20 + 86.10	0.40	3.99	338.23	360.54
DA-8	32 + 27.50	0.61	4.60	338.84	361.15
DA-9	241 + 88.60	4.58	9.18	343.42	365.73
DA-10	15 + 66.70	0.30	9.48	343.72	366.03
DA-11	88 + 07.40	1.67	11.15	345.39	367.70
DA-12	112 + 45.30	2.13	13.28	347.52	369.83
DA-13	15 + 00.60	0.28	13.56	347.80	370.11
DA-14	33 + 21.85	0.63	14.19	348.43	370.74
Miami Harbor Project (Port of Miami Turning Basin, Bayfront Park Channel, and Miami River Channel)					
Cut A	6 + 95.63	0.13	14.32	348.56	370.87
Cut B	20 + 39.14	0.39	14.71	348.95	371.26
Cut C	11 + 85.63	0.22	14.93	349.17	371.48
Intracoastal Waterway, Miami to Key West (constructed channel dimensions: -7ft MLW X 75ft)					
D-1	11 + 59.47	0.22	15.15	349.39	371.70
D-2	32 + 81.81	0.62	15.78	350.02	372.33
D-3	82 + 88.50	1.57	17.35	351.59	373.90
D-4	807 + 14.44	15.29	32.63	366.87	389.18
D-5	21 + 75.95	0.41	33.04	367.28	389.59
D-6	425 + 83.98	8.07	41.11	375.35	397.66
D-7	60 + 50.00	1.15	42.26	376.50	398.81
D-8	97 + 50.00	1.85	44.10	378.34	400.65
D-9	275 + 61.59	5.22	49.32	383.56	405.87

Note: ICWW (10-ft Project) intersects northern edge of Miami Turning Basin at Cut DA-14, sta 25+43.3 (ICWW mile 348.28)

ICWW (7-ft Project) intersects southern edge of Miami River Channel at Cut D-1, sta 6+15 (ICWW mile 349.29)

Miami-Dade/Monroe County line Cut D-9, sta 201+74.60 (ICWW mile 382.16)

Low Water (-12 ft MLW); however, from Ft. Pierce Harbor south to Miami Harbor, financial considerations limited the channel's construction to –10 ft MLW. The USACE deepened this portion of channel to its present –10 ft MLW nominal project depth in 1965. The Jacksonville District's archives contain little information about historic dredging within the ICWW southward from Government Cut (i.e., within the Intracoastal Waterway 7-ft Project, Miami to Key West). Available records indicate that the 7-ft Project channel was constructed to Cross Bank near Plantation Key in Monroe County in 1938. Given that natural depths along the channel's authorized alignment northward from Black Point (ICWW mile 367.0) generally fall at or below the 7-ft project depth, channel construction required only minimal dredging through a limited number of sand banks from Featherbed Bank opposite Black Point southward to the Miami-Dade/Monroe County line in Card Sound.

To ensure accuracy, consistency, and completeness, a comprehensive review of all available sources of dredging information held by the Jacksonville District USACE provided an estimate of the volume of ICWW maintenance dredging since initial construction. Relevant sources included the annual Office of the Chief of Engineers (OCE) Reports, previous USACE summaries of maintenance dredging within the project area, and interviews with USACE personnel. The primary sources of information, however, remained USACE archival maintenance plan documents and examination surveys.

The compilation and reduction of historic dredging information from the various preliminary sources proved to be a difficult task. No single source had complete information, and the resolution of inconsistencies among sources was necessary prior to locating dredging plans. With this task accomplished, the records then had to be physically located under several filing systems within the district office archives and missing plans recalled from inter-division loan or from alternate storage at the Jacksonville District Dredge Depot. All relevant dredging information was verified by reference to the original plan sheets or microfiche versions of the original engineering drawings. Additional information contained in the dredging plans included shoaling areas and limits of planned dredging (referenced to the existing longitudinal stationing), the estimated dredging volume for each shoal and, in a few cases, the location of material placement.

The archival records express the volume of material dredged in previous channel maintenance operations in two forms. The first is the pre-dredging estimate, or the design volume, of required dredging. This estimate reflects the comparison of the results of a detailed pre-dredging examination survey of the authorized channel to the project design depth, plus the required advanced maintenance or overdepth dredging. The plan for the dredging operation and the bids of the dredging contractors are based on this estimate. The second estimate represents the pay volume. This estimate determines the

dollar amount the dredging contractor receives for the work and reflects the comparison of detailed pre- and post-dredging examination surveys, and therefore closely corresponds to the actual volume of material removed from the channel. Because of past contracting and recording procedures, pay volumes do not always link dredging quantities to specific dredging locations. In those maintenance operations for which the pay volume was unavailable, multiplying the design volume by a correction factor provides an estimate of the pay volume. Derived from all dredging records evaluated thus far in the FIND's long-range program, the correction factor of 1.19 represents the ratio of pay volume to design volume in those channel maintenance operations for which both quantities are known.

The analysis of historic dredging records established that within the 10-ft Project segment, eight separate maintenance dredging operations have been performed since this segment of the channel was deepened to its presently authorized depth in 1965, with the most recent maintenance dredging operation occurring in 1999. All eight operations took place within a 0.5-mi reach extending from Cut DA-9, station 22+00 (ICWW mile 339.26) to station 48+00 (ICWW mile 339.75) immediately opposite Bakers Haulover Inlet. These eight operations removed over 323,000 cy of sediment and placed this material in one of several designated beach placement sites located south of the inlet.

To provide recent data on shoaling within the Miami-Dade County segment of the Waterway, in 1996 the FIND undertook a comprehensive survey of the Atlantic Intracoastal Waterway from Fernandina Harbor southward 22.31 mi to the St. Johns River and the Intracoastal Waterway from the St. Johns River southward 348.28 mi to Miami Harbor, as well as the 15.11-mi segment of the Okeechobee Waterway in Martin County from its intersection with the ICWW to the St. Lucie Lock. Performed by Sea Systems, Inc. under the direction of Taylor Engineering, Inc., the triple sweep surveys encompassed the centerline of the authorized channel and two parallel offset lines to characterize the entire channel width. Horizontal and vertical control throughout the survey remained in accordance with USACE specifications. In December 1999, the Jacksonville District (USACE) replicated the earlier survey and extended the coverage through the Port of Miami an additional 33.88 mi southward to the Miami-Dade/Monroe County line. To evaluate the data from each survey, Taylor Engineering developed mathematical routines to integrate the three lines of survey data and calculate shoal volumes for the entire channel. The process identified shoal locations as those areas where the surveyed depths were less than the established project depth for that segment of the Waterway and calculated shoal volumes based on an additional one ft of overdepth dredging in accordance with USACE practice. The resulting volumes were taken as the *design volume* (the pre-dredging estimate) for which a corresponding *pay volume* (estimated quantity of material dredged that would reflect comparison of detailed pre-dredging and post-dredging examination surveys) was derived by the method described above.

In addition to documenting shoal volumes, the analysis of survey data revealed that, during or before the 1965 operation that established the present –10 ft MLW project depth, sections of the ICWW channel within Miami-Dade County were dredged deeper than the project depth. In particular, portions of the ICWW channel within Miami-Dade County from the northern end of Biscayne Bay (Cut DA-8) northward to the county line, most notably from the center of Dumfoundling Bay (Cut DA-2) northward, were dredged deeper than the established -10 ft project depth MLW to obtain fill for construction projects adjacent to the Waterway. However, research failed to locate accurate as-built surveys for these overdredged channel segments. Comparison of the 1996 and 1999 surveys could not provide a reasonable estimate of the shoaling rate within these areas, given the small changes in channel depth between the two surveys and the error inherent in large-scale hydrographic surveys of this type. As a result, the recent channel surveys of the Miami-Dade County project area can only reliably represent the volume of shoaling above the established –10 ft MLW project depth.

The development of plan elements which address the needs of the ICWW in Nassau, Duval, St. Johns, Volusia, Brevard, Indian River, St. Lucie, Martin, Palm Beach, and Broward Counties has demonstrated that a necessary first step in the analysis of dredging records and survey data is to establish an accurate and consistent system for cross-referencing a particular location along the ICWW to both cut and station, and channel mile. Moreover, such a system must resolve inconsistencies between project descriptions found in older engineering records and those of more recent origin. Adopting current designations of channel cut and station and referencing them to ICWW channel mileage resolved these inconsistencies. The system derives from Jacksonville District control data, as well as the original navigation project record documents that accompanied the establishment of the -10-ft MLW and the -7-ft MLW project depths in Miami-Dade County. Measuring channel mileage from the southern boundary of the Jacksonville Harbor project (ICWW mile 0.0) maintained consistency with the previous plan elements.

Notably, the 1996 channel survey introduced a necessary correction to the framework of channel mileage used in all previous plan documents comprising the long-range dredged material management program. The survey provided, for the first time, an accurate measurement of an uncontrolled segment of the Waterway through St. Augustine in St. Johns County. This uncontrolled section, within which no authorized channel location has ever been adopted, was previously estimated to be 18.80 miles in length as scaled from aerial photographs, NOAA nautical charts, and USGS topographic quadrangle maps. The 1996 channel survey determined the length of the uncontrolled section to be 19.62 miles, based on the present position of navigation aids through the uncontrolled section. The remainder of the study maintains this framework as referenced to the revised ICWW mileage. Accordingly, consistency with the revised

ICWW mileage framework requires all locations south of St. Augustine in St. Johns County referenced to ICWW channel mile in previous plan documents completed before 1997 be increased by 0.82 miles.

2.1.2 Material Quantities and Locations

Table 2.2 documents the eight separate maintenance dredging operations since the deepening of the 10-ft MLW segment of the channel to its presently authorized depth. As noted earlier, each operation took place within a 0.5-mile reach extending from Cut DA-9, station 22+00 (ICWW mile 339.26) to station 48+00 (ICWW mile 339.75) immediately opposite Bakers Haulover Inlet. These eight operations removed 323,009 cy of sediment and placed this material in one of several designated beach placement sites located south of the inlet. Table 2.2 also presents the locations and calculated volumes of shoals identified in the 1999 survey of the Miami-Dade County segment of the Waterway channel. All shoal locations are referenced both to channel cut and station and to the revised framework of ICWW mileage presented in Table 2.1. Figure 2.1 depicts the shoal locations listed in Table 2.2.

Inspection of Table 2.2 reveals the total volume of shoaling (that is, the estimated pay volume derived from the in situ shoal volume) presently within the authorized ICWW channel within the Miami-Dade County project area as 116,069 cy. Over 25% (29,089 cy) of this total occurs within the 10-ft Project segment, primarily from Dumfoundling Bay south to Bakers Haulover (ICWW mile 338.01 to mile 339.44), and in a 0.9-mile segment (ICWW mile 343.03 to mile 343.95) immediately north of the John F. Kennedy (79th Street) Causeway. The remaining 75% (86,980 cy) of shoaling presently within the authorized channel was found within the 7-ft Project segment, predominantly within a 9.4-mile reach extending northward from a point 2.9 miles north of the Miami-Dade/Monroe County line.

The 10-ft project's northernmost 3.16 miles, from the Sunny Isles Boulevard (State Road 826) Bridge (Cut DA-5, station 13+27; ICWW mile 337.30) northward to the county line, contains no shoals above –10 ft MLW. With a current –29.1 ft MLW mean depth, much of this channel segment had previously been dredged well beyond the project depth to obtain fill for development projects adjacent to the Waterway. Continuing southward, a small shoal (61 cy) lies between the spans of the Sunny Isles Boulevard (State Road 826) Bridge (Cut DA-5, station 13+72; ICWW mile 337.31), just north of the confluence of the Oleta River and the ICWW.

The ICWW channel then passes through an area strongly influenced by Bakers Haulover Inlet. The 0.22-mi channel segment opposite Haulover Beach Park (Cut DA-7, station 9+67, ICWW mile 338.01, through Cut DA-8, station 0+00, ICWW mile 338.23) contains a 10,999-cy shoal. The 0.5-mi

Table 2.2 Summary of Historic Maintneance Dredging/Recent Shoaling
Intracoastal Waterway, Miami-Dade County, 1938 - 1999

ICWW Mileage From	ICWW Mileage To	Cut/Station From	Cut/Station To	Length (ft)	Year	Design Volume (cy)	Pay** Volume (cy)	Placement Area
337.31	337.31	DA-5 / 13+72	DA-5 / 13+72	-	1999*	51	*61*	
338.01	338.23	DA-7 / 9+67	DA-8 / 0+00	1,119	1999*	9,243	*10,999*	
339.26	339.75	DA-9 / 22+00	DA-9 / 48+00	2,600	1994	52,000	24,560	DNR R-30 TO R-31
339.28	339.75	DA-9 / 23+50	DA-9 / 48+00	2,450	1998	36,000	34,882	PL-17A3 TO PL-25
339.29	339.44	DA-9 / 23+99	DA-9 / 31+79	780	1999*	3,278	*3,900*	
339.29	339.69	DA-9 / 24+00	DA-9 / 45+00	2,100	1980	52,000	43,163	MDA-4
339.29	339.75	DA-9 / 24+00	DA-9 / 48+00	2,400	1988	59,234	59,324	MDA-4A
339.33	339.75	DA-9 / 26+00	DA-9 / 48+00	2,200	1975	69,404	69,404	MDA-3 & MDA-4
339.37	339.75	DA-9 / 28+00	DA-9 / 48+00	2,000	1991	32,000	31,279	PL-D-3B to PL-R-7
339.41	339.58	DA-9 / 30+00	DA-9 / 39+00	900	1985	34,400	34,407	
339.41	339.73	DA-9 / 30+00	DA-9 / 47+00	1,700	1969	30,000	25,990	
339.53	339.54	DA-9 / 36+60	DA-9 / 36+79	19	1999*	89	*106*	
339.72	339.81	DA-9 / 46+39	DA-9 / 51+00	461	1999*	865	*1,030*	
340.65	340.77	DA-9 / 95+69	DA-9 / 101+69	600	1999*	277	*330*	
341.84	342.01	DA-9 / 158+58	DA-9 / 167+19	861	1999*	332	*395*	
342.89	342.94	DA-9 / 213+79	DA-9 / 216+58	279	1999*	109	*129*	
343.03	343.22	DA-9 / 221+48	DA-9 / 231+07	959	1999*	1,518	*1,806*	
343.26	343.47	DA-9 / 233+48	DA-10 / 2+51	1,092	1999*	1,963	*2,337*	
343.57	343.79	DA-10 / 8+12	DA-11 / 3+61	1,116	1999*	4,409	*5,247*	
343.89	343.95	DA-11 / 8+98	DA-11 / 12+04	306	1999*	1,627	*1,937*	
344.25	344.29	DA-11 / 27+92	DA-11 / 29+86	194	1999*	254	*302*	
346.56	346.56	DA-12 / 62+06	DA-12 / 62+06	-	1999*	30	*36*	
347.24	347.29	DA-12 / 98+43	DA-12 / 100+92	249	1999*	36	*43*	
347.88	347.91	DA-14 / 4+41	DA-14 / 5+60	119	1999*	314	*374*	
348.01	348.01	DA-14 / 10+87	DA-14 / 10+87	-	1999*	49	*58*	
369.91	369.91	D-6 / 138+78	D-6 / 138+78	-	1999*	15	*18*	
370.19	370.19	D-6 / 153+51	D-6 / 153+51	-	1999*	17	*20*	
371.01	371.01	D-6 / 196+73	D-6 / 196+73	-	1999*	22	*26*	
371.14	371.14	D-6 / 203+83	D-6 / 203+83	-	1999*	21	*25*	
371.48	371.59	D-6 / 221+66	D-6 / 227+58	592	1999*	82	*98*	
371.92	372.01	D-6 / 244+97	D-6 / 249+80	483	1999*	60	*71*	
372.51	373.96	D-6 / 275+90	D-6 / 352+65	7,675	1999*	15,937	*18,965*	
374.94	375.30	D-6 / 404+69	D-6 / 423+43	1,874	1999*	451	*537*	
375.37	376.58	D-7 / 1+15	D-8 / 4+93	6,428	1999*	23,990	*28,548*	
377.13	377.16	D-8 / 34+06	D-8 / 35+23	117	1999*	137	*163*	
377.35	377.35	D-8 / 45+20	D-8 / 45+20	-	1999*	51	*61*	
377.51	379.27	D-8 / 53+76	D-9 / 49+10	9,284	1999*	32,309	*38,448*	
					Total Design Volume:	**462,575**		
					Total Pay Volume:	**439,078**		
					Dredging Volume/Year:	**11,486**		
					50-Yr Dredging Requirement:	**574,292**		
					50-yr Storage Requirement:	**1,234,728**		

* Data from 1999 channel survey performed by Sea Systems, Inc. for the Jacksonville District, U.S. Army Corps of Engineers
** Numbers in *italic* are based on the relationship: Pay Volume = 1.19 x Design Volume

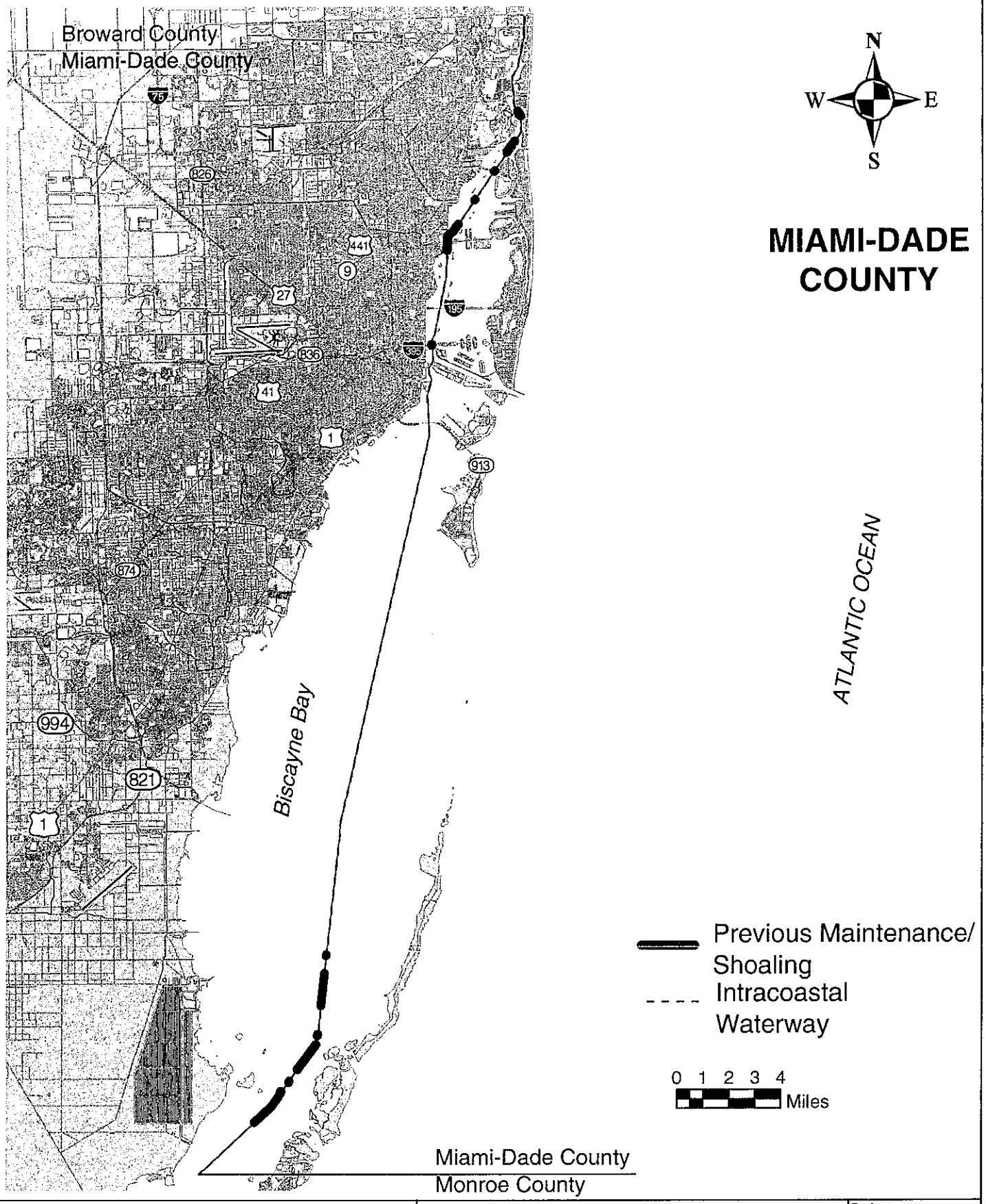

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Figure 2.1
Areas of Historic Maintenance Dredging/ Recent Shoaling
Long Range Dredged Material Management Plan
Intracoastal Waterway, Miami-Dade County, Florida

Project	C2002-036D
Revision	
Sheet	
Date	March, 2003

channel segment centered directly west of Bakers Haulover Inlet (Cut DA-9, station 23+99, ICWW mile 339.29 to station 51+00; ICWW mile 339.81) contains an additional 5,036-cy shoal. As noted earlier, all eight documented maintenance dredging operations occurred within this latter Waterway segment. These eight operations removed 323,009 cy of sediment and placed this material in one of several temporary beach placement sites located south of Bakers Haulover Inlet.

Continuing southward, a small shoal (330 cy) was found near the Broad Causeway (State Road 922) Bridge just south of the Arch Creek Marina (Cut DA-9, station 95+69; ICWW mile 340.65 to station 101+69, ICWW mile 340.77). A 395-cy shoal lies directly west of the intersection of the Biscayne Canal and the ICWW (Cut DA-9, station 158+58; ICWW mile 341.84 to station 167+19, ICWW mile 342.01). Additional, scattered minor shoals, totaling 129 cy, are located between Cut DA-9, station 213+79 (ICWW mile 342.89) to station 216+58 (ICWW mile 342.94). However, almost 40% (11,326 cy) of the shoaling within the 10-ft segment lies within a 0.9-mile segment immediately north of the John F. Kennedy (79th Street) Causeway (Cut DA-9, station 221+48; ICWW mile 343.03 to Cut DA-11, station 12+04; ICWW mile 343.95).

For the remainder of the 10-ft project area, majority of the residual shoaling occurs in isolated and widely dispersed locations. These include a small shoal (302 cy) directly west of the intersection of the Little River Canal and the ICWW (Cut DA-11, station 27+92; ICWW mile 344.25 to station 29+86, ICWW mile 344.29), an even smaller shoal (36 cy) just south of the Julia Tuttle Causeway (U.S. 195) Bridge (Cut DA-12, station 62+06; ICWW mile 346.56), scattered minor shoals (43 cy) between Cut DA-12, station 98+43 and station 100+92 (ICWW mile 347.24 to mile 347.29) near a former dredged material open-water placement site (CSA D-7; Section 2.2), and two small shoals directly north of the Venetian Causeway Bridge [(Cut DA-14, station 4+41 to station 5+60, ICWW mile 347.88 to mile 347.91 (374 cy) and Cut DA-14, station 10+87; ICWW mile 348.01 (58 cy)].

South of the 10-ft Project, the ICWW extends through 1.01 mi of the Miami Harbor Project (Cut DA-14, station 25+43.3; ICWW mile 348.28 to Cut D-1, station 6+15; ICWW mile 349.29). Given that maintenance of the Port of Miami Turning Basin, Bayfront Park Channel, and Miami River Channel removes the material that may enter the authorized ICWW channel (current average depth within this segment — 23.3 ft below MLW), the 1999 survey found no shoals above –10 ft MLW within the Miami Harbor Project segment of the ICWW.

Continuing southward, approximately 33 channel miles comprise the 7-ft Project (Miami to Key West) from the southern limits of the Miami Harbor Project (Cut D-1, station 6+15; ICWW mile 349.29)

to the Miami-Dade/Monroe County line (Cut D-9, station 201+74.6; ICWW mile 382.16). The 7-ft project's northernmost 20.61 miles from the Miami Harbor Project southward to Cut D-6, station, 138+73 (ICWW mile 369.91) contain no shoals above –7 ft MLW. With a current average depth of –10.8 ft MLW, this reach encompasses the area in which the authorized channel alignment passes through an area where natural depths fall at or below the project's 7-ft depth. As a result, no dredging was required to construct the channel to its authorized dimensions and no shoaling above the required depth has yet occurred.

From this point southward to the Miami-Dade/Monroe County line (Cut D-9, station 201+74.6; ICWW mile 382.16), every channel cut contains some shoaling. The 9.36-mile reach from Cut D-6, station 138+78 (ICWW mile 369.91) to Cut D-9, station 49+10 (ICWW mile 379.27) contains a total shoaling volume of 86,980 cy. In contrast, with a current average depth of –8.3 ft MLW, the southernmost 2.89 channel miles (Cut D-9, station 49+10 to station 201+74.6, ICWW mile 379.27 to mile 382.16) contain no shoals above –7 ft MLW.

To project the corresponding 50-year maintenance requirement for the Miami-Dade County project area, the total volume of documented shoaling (that is, its in situ pay volume) was then apportioned upward by linear extrapolation. The resulting projected dredging volume of 574,292 cy corresponds to the in situ or unbulked volume of dredging anticipated to be required throughout the county over the next 50 years. Translating the projected 50-year in situ volume of anticipated dredging into the volume of storage required to handle the dredged material must consider the bulking characteristics of the material. Bulking refers to the expansion of consolidated sediment that occurs as a result of dredging. Hydraulic dredging leads to material bulking by increasing the water content of the dredged material compared to its in situ consolidated state. Mechanical dredging also leads to material bulking, but typically to a lesser degree. After dredging and placement for long-term storage, the dredged material will begin to consolidate under its own weight. Given the appropriate conditions and sufficient time, the material may approach its original pre-dredging volume. The degree to which the material expands (bulks) depends on the physical characteristics of the sediment, as well as its relative consolidation prior to dredging. The present study uses a conservative factor of 2.0 to account for the increase in volume of the dredged material compared to its in situ volume. An additional allowance of 15 percent of the original in situ volume accounts for allowable or authorized overdredging. These conservative values reflect the USACE Jacksonville District's experience and recommendation. Multiplying the projected 50-year volume of shoaling by the effective bulking factor of 2.15 yields a projected 50-year material storage requirement of 1,234,728 cy for the Miami-Dade County project area.

Significantly, this projected 50-year material storage requirement represents the fourth lowest projected storage requirement of any of the 12 coastal counties addressed within the FIND's long-ranged dredged material management program. Broward County represents the lowest projected requirement. As revised by the results of the 1999 channel survey, the Broward County segment of the ICWW is projected to require a material storage capacity of 72,334 cy over the next 50 years, a volume less than 6% of that required by Miami-Dade County. For comparison, Volusia County represents the highest projected 50-year storage requirement among the counties that comprise the District. Again, as revised by the results of the 1999 channel survey, Volusia County is projected to require a material storage capacity of over 10.4 million cy, or over 8 times the requirement projected for Miami-Dade County.

2.1.3 Material Quality

In addition to projected material quantities, a dredged material management plan must also consider the chemical and physical properties of the sediment. Techniques employed to maintain water quality during dredging and dewatering operations depend on the material's chemistry and its physical characteristics (i.e., particle size, specific gravity, etc.). In addition, chemical and physical properties determine the dredged material's potential for reuse and, therefore, influence a dredged material management site's effective service life. In a procedure similar to that used to establish historic dredging volumes, Taylor Engineering reviewed readily available sediment chemistry and physical data for the Miami-Dade County portion of the ICWW. To supplement the historical ICWW sediment data, Taylor Engineering staff also performed a program of sediment sampling and analysis specifically for the present planning effort.

2.1.3.1 Sediment Data Collection

The Jacksonville District (USACE), the Florida Department of Environmental Protection (FDEP), and the National Oceanic and Atmospheric Administration (NOAA) provided historical sediment quality information for the Miami-Dade County portion of the ICWW. Each of the 10 USACE sediment grab samples (Figure 2.2), collected in 1999, were analyzed for metals, organochlorine pesticides, polychlorinated biphenyls (PCB), polycyclic aromatic hydrocarbons (PAH), total organic carbon, total Kjeldahl nitrogen, and percent solids. The USACE collected the samples throughout the county without regard to potential contaminant sources. The FDEP sediment data, collected between 1983 and 1992, contained information from 111 samples within the Biscayne Bay region. The NOAA data, collected in 1995 and 1996, contained information from 226 samples from randomly chosen locations within Biscayne Bay. Most of these locations fall well outside the ICWW channel. Thte information presented

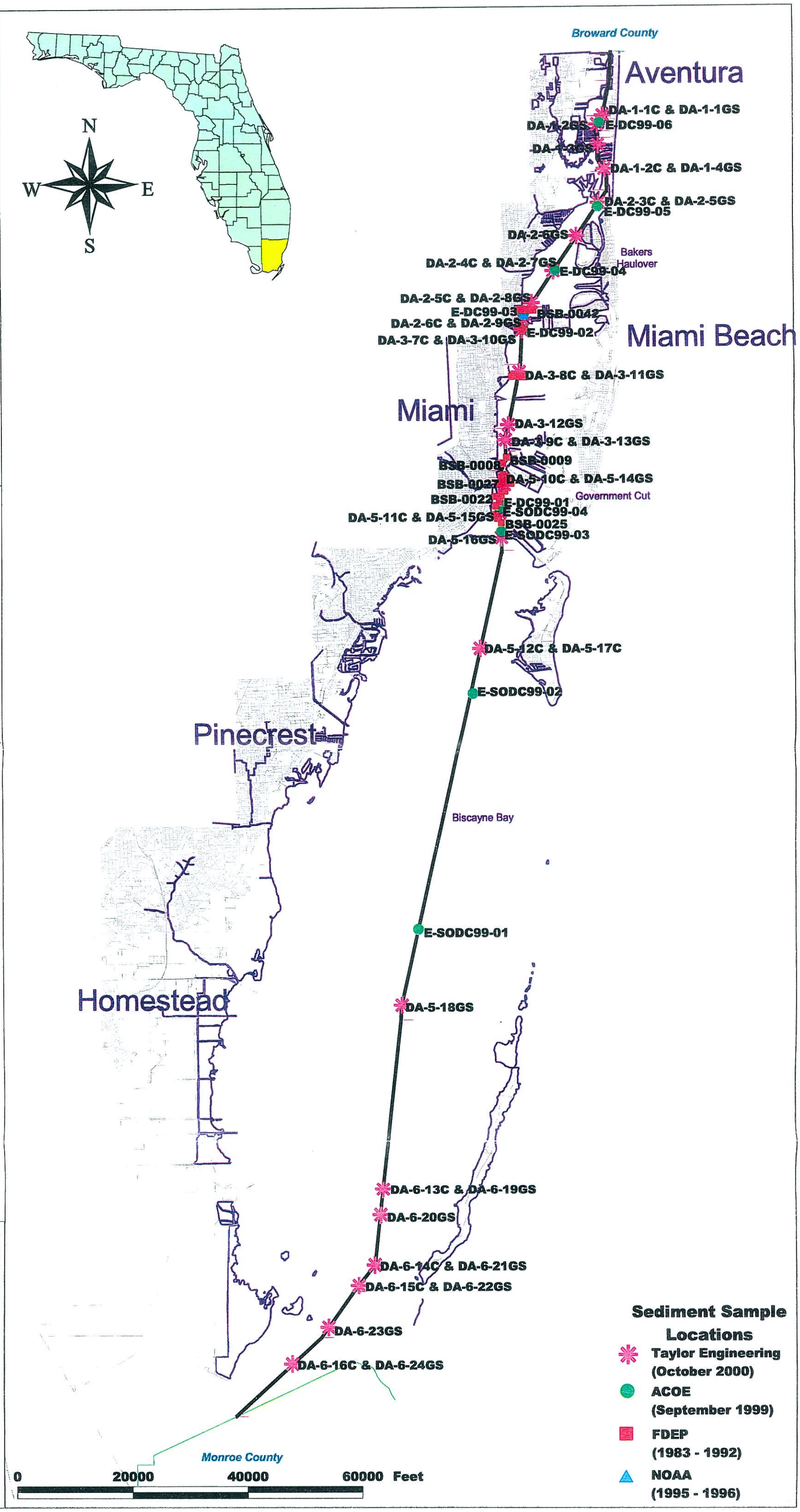

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Figure 2.2 Miami-Dade County ICWW Sediment Sampling Locations

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here represents only the data from the 11 FDEP and 1 NOAA sampling stations located in the ICWW or within 100 ft of the ICWW channel boundary (Figure 2.3). The individual PAH and chlorinated compounds (organochlorine pesticides and PCB analytes) reported in these data sets varied. These compounds are discussed in this report only if concentrations were detected above the method-reporting limit (MRL). Grain size data were not available with any of the USACE, FDEP, or NOAA data.

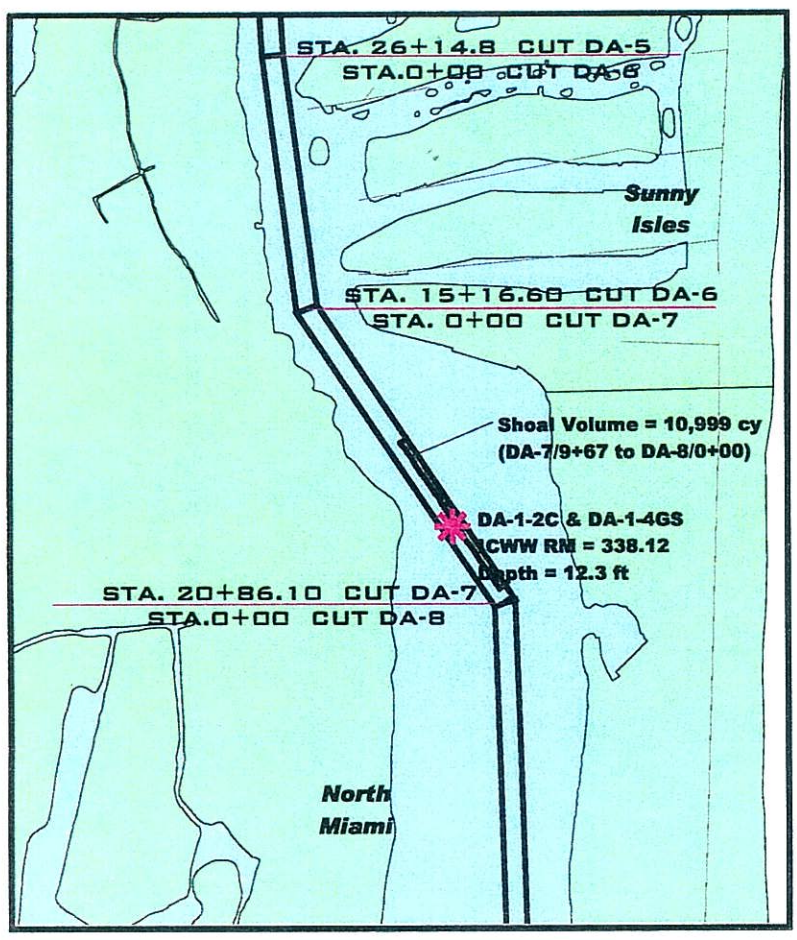
To supplement the historical ICWW sediment data, Taylor Engineering staff collected sediment samples between October 11 and October 13, 2000 from 24 locations in the ICWW channel throughout Miami-Dade County (Figure 2.4). Of the 24 sampling locations, 13 were located within or near documented shoals in both the 10-ft and 7-ft project depths (Figure 2.3 and Figure 2.4). All 24 samples were analyzed for grain size. Sixteen were analyzed for metals, organochlorine pesticides, PCBs, PAHs, total organic carbon (TOC), total Kjeldahl nitrogen (TKN), and total recoverable petroleum hydrocarbons (TRPH).

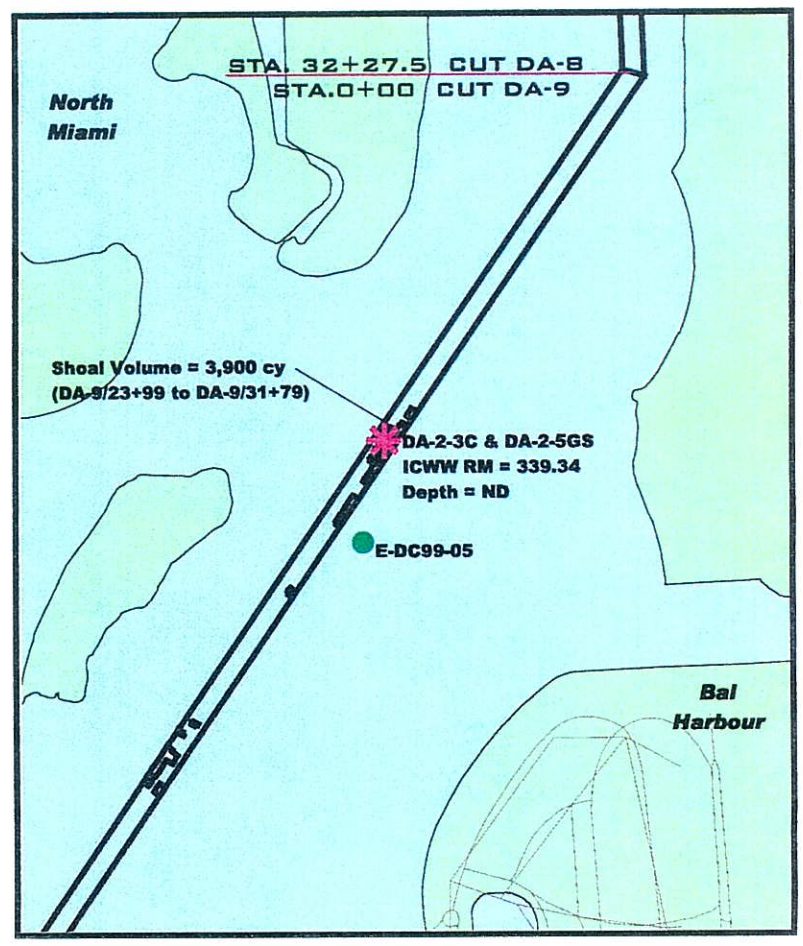
Table 2.3 lists specific sampling locations, along with a corresponding sample description and collection depth. Where possible, sediments for chemical analyses were collected from areas of expected fine-grained sediment accumulation near potential sources of contamination (heavily urbanized area, marinas, Miami River, and Little River). No samples were collected from the ICWW channel within the Miami Harbor Project, as the Port of Miami maintains this area of the channel. Sediment grab samples were collected with a stainless steel Ponar grab sampler or by diving to the ICWW bottom and scooping sediment into plastic Ziploc bags (grain size only). Grab samples were transferred to pre-cleaned containers with a stainless steel spatula. A sub-sample of each grab sample was placed in a container for grain size analysis. Columbia Analytical Laboratories, Inc. performed the chemical analyses. Ellis & Associates, Inc. performed the grain size analyses.

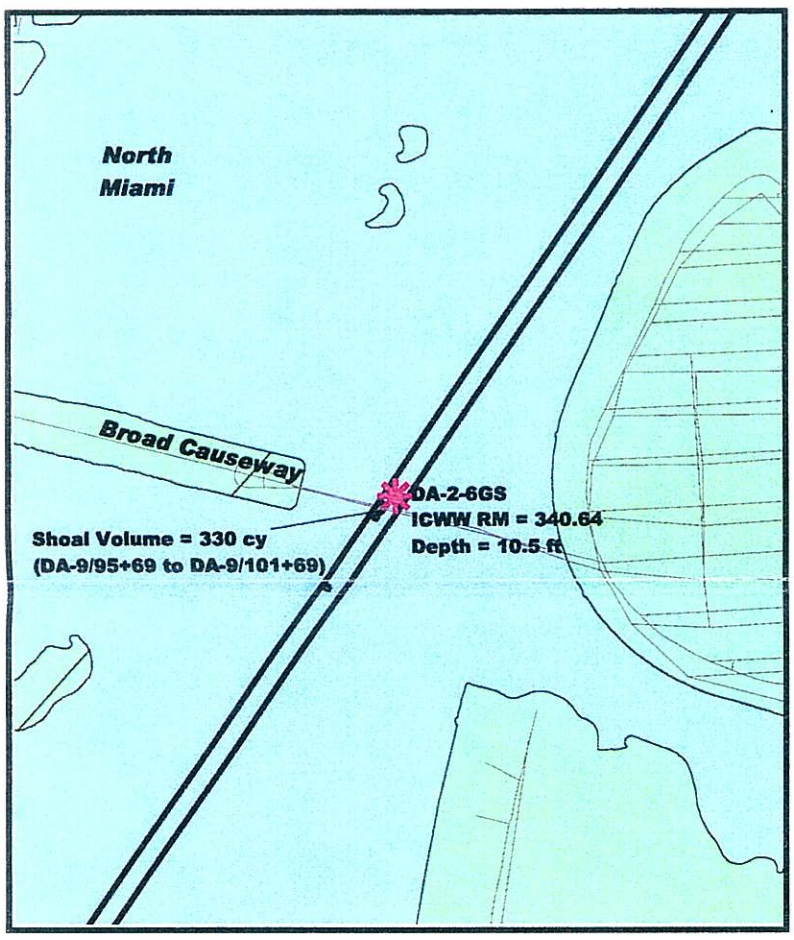
2.1.3.2 Sediment Physical Characteristics

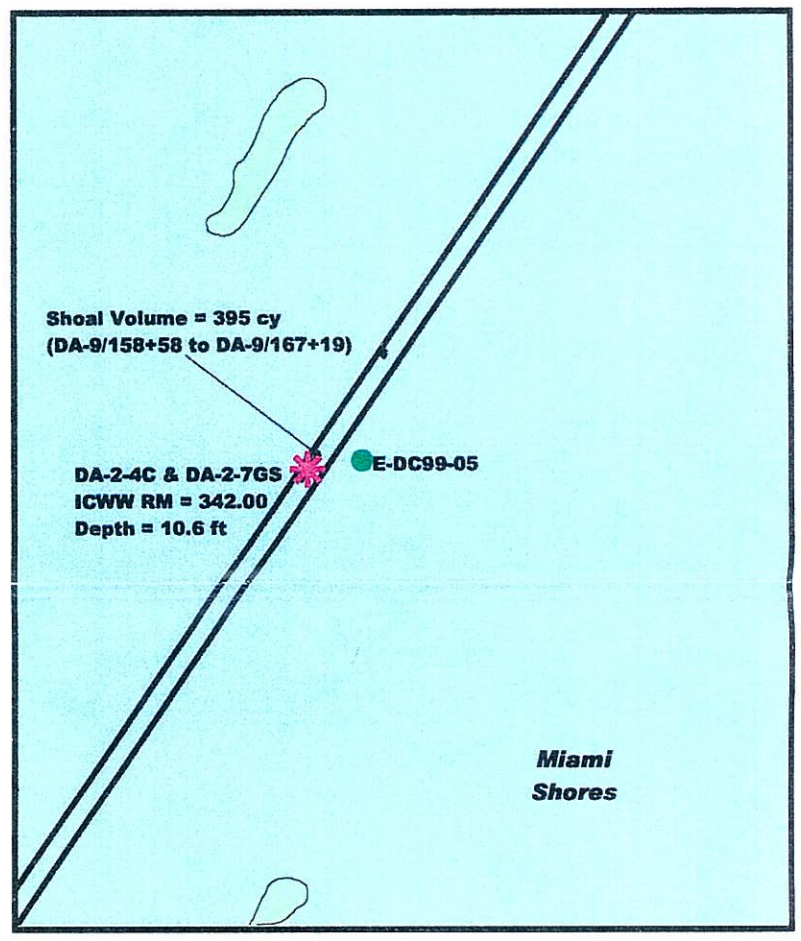
This section focuses on the physical characteristics of Miami-Dade County sediments. Physical sediment characteristics influence dredged material handling and affect sediment chemical quality. Table 2.4 summarizes and Appendix E lists physical sediment data (mean grain size, United Soil Classification System size, silt and clay content, water content, and organic matter) from the Taylor Engineering samples described in the preceding section.

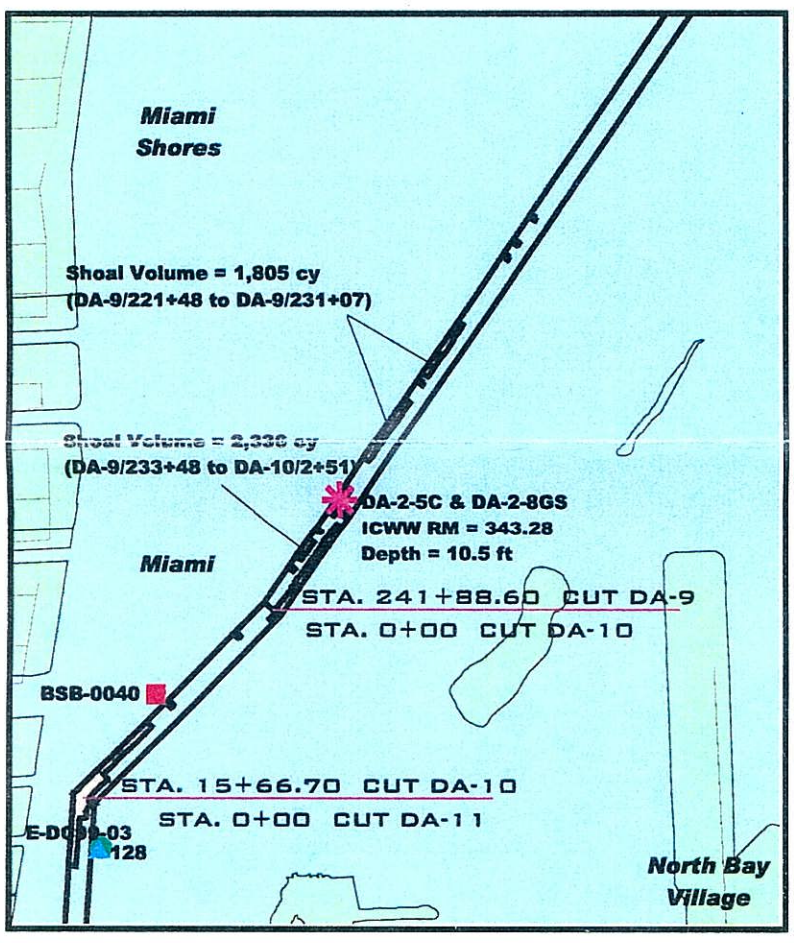
The mean grain size of the 24 samples ranged from 0.049 to 1.115 mm. Four of the samples, located between the Biscayne and the New River Canals (DA-2-8GS, DA-2-9GS, DA-3-10GS) and

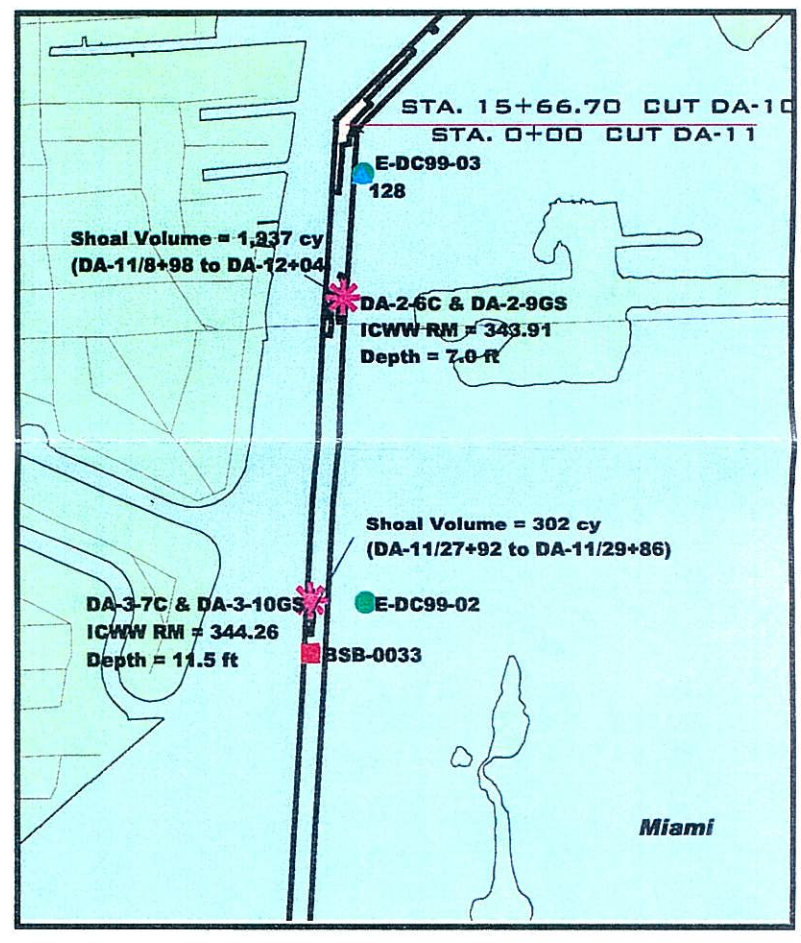












Sediment Sample (Taylor Engineering) | Sediment Sample (ACOE) | Sediment Sample (FDEP) | Sediment Sample (NOAA) | Survey 2000 Shoal

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Figure 2.3 Miami-Dade County ICWW Sediment Sampling Locations Located Within Survey 2000 Shoals (10-ft Project)

PROJECT	C1999-021
REVISION	
SHEET	
DATE	January 2001

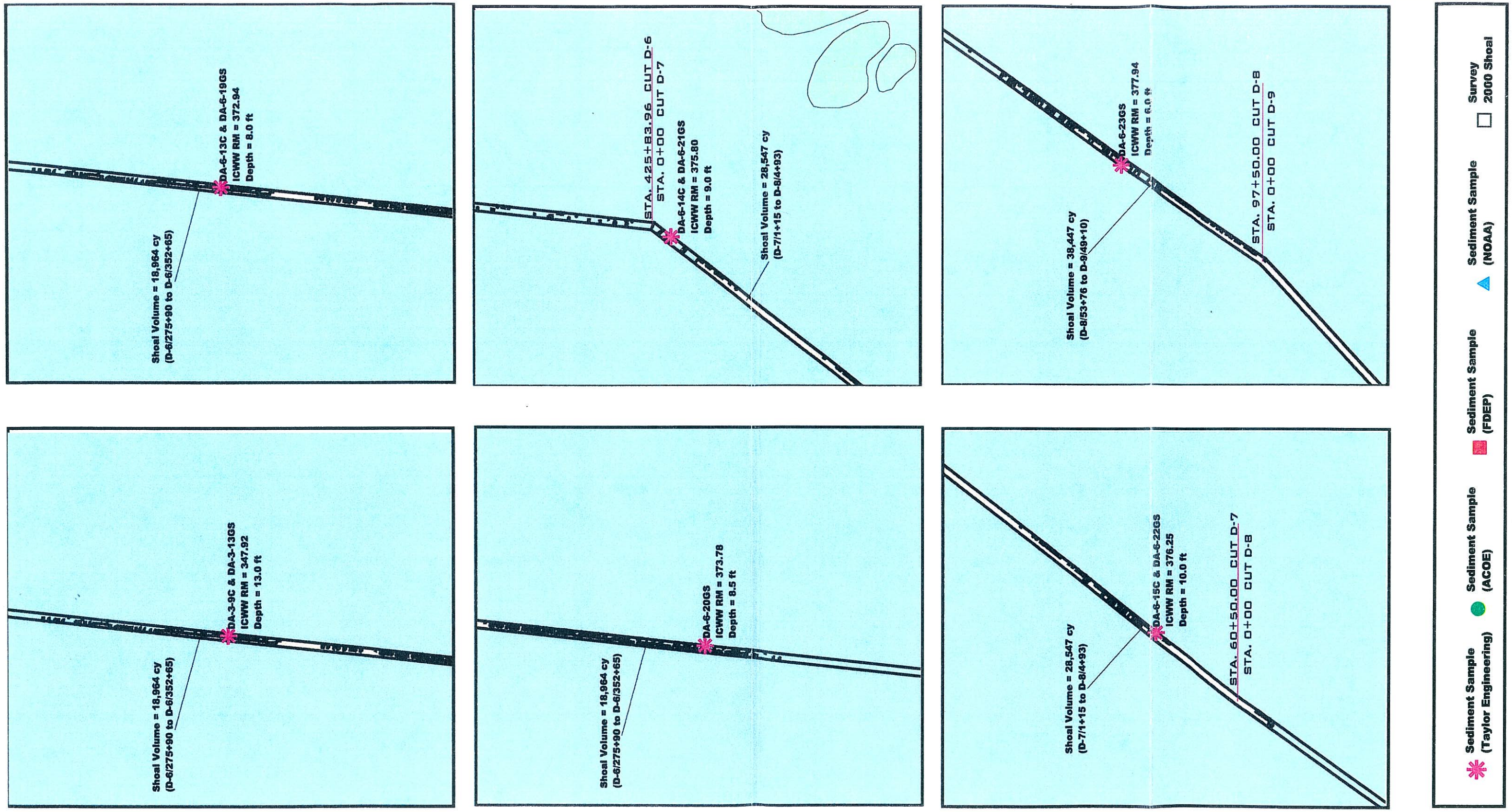

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Figure 2.4 Miami-Dade County ICWW Sediment Sampling Locations Located Within Survey 2000 Shoals (7-ft Project)

PROJECT	C1999-021
REVISION	
SHEET	
DATE	January 2001

Table 2.3 Miami-Dade County ICWW Sediment Sampling Locations, October 2000

Sample ID	*Date*	*Cut/ Station*	*ICWW RM*	*Latitude Longitude*	*Depth (ft)*	*Sample Description*	*Location*
Reach DA-1							
DA-1-1C & DA-1-1GS	10/11/00	DA-2/ 61+99	336.26	25°56'38.7" 80°07'41.0"	12.5	Brown-gray clayey sand	N of □G49[A]
DA-1-2GS	10/11/00	DA-3/ 17+60	336.60	25°56'23.7" 80°07'51.5"	13.5	Brown clayey sand	N of ΔR52[B]
DA-1-3GS	10/11/00	DA-5/ 11+62	337.27	25°55'49.2" 80°07'50.3"	17.5	ND[C]	S of □G57
DA-1-2C & DA-1-4GS	10/11/00	DA-7/ 15+31	338.12	25°55'07.3" 80°07'38.1"	12.3	Gray-brown clayey sand w/shells	Btw. □G63 & ΔR62
Reach DA-2							
DA-2-3C & DA-2-5GS	10/11/00	DA-9/ 26+20	339.34	25°54'09.6" 80°07'50.1"	ND	Gray fine sand, minimal clay	Near Bakers Haulover
DA-2-6GS	10/11/00	DA-9/ 94+80	340.64	25°53'13.6" 80°08'32.8"	10.5	Shelly sand	N of Broad Causeway
DA-2-4C & DA-2-7GS	10/11/00	DA-9/ 166+83	342.00	25°52'15.1" 80°09'17.9"	10.6	Gray-brown shelly sand	Biscayne Canal
Reach DA-3							
DA-2-5C & DA-2-8GS	10/11/00	DA-9/ 234+7	343.28	25°51'20.3" 80°10'0.00"	10.5	Fine gray silt	Adj. to ΔR22
DA-2-6C & DA-2-9GS	10/11/00	DA-11/ 10+20D	343.91	25°50'52.8" 80°10'16.9"	7.0	Fine gray silt	S of ΔR26, N JFK causeway
DA-3-7C & DA-3-10GS	10/11/00	A-11/ 28+44	344.26	25°50'34.9" 80°10'19.2"	11.5	Fine gray silt	Adj. to □G27, Little River
DA-3-8C & DA-3-11GS	10/11/00	DA-12/ 13+60	345.64	25°49'22.6" 80°10'25.6"	14.5	Fine shelly sand	N of □G35, N of Sabal Lake
DA-3-12 GS	10/12/00	DA-12/ 107+12	347.41	25°47'52.1" 80°10'47.1"	10.0	Brown sand	N of □R44
DA-3-9C & DA-3-13GS	10/12/00	DA-14/ 6+44	347.92	25°47'26.8" 80°10'53.3"	13.0	Gray-brown sand	N of Port of Miami
DA-5-10C & DA-5-14GS	10/12/00	D-2/ 2+40	349.44	25°46'10.8" 80°10'55.9"	15.5	Brown-gray sand with silt	Adj. To □G59A, Miami River
DA-5-11C & DA-5-15GS	10/12/00	D-3/ 18+41	350.36	25°45'23.6" 80°11'04.6"	10.5	Gray sand with shell fragments	S of □G65
Reach DA-4							
DA-5-16GS	10/12/00	D-3/ 61+11	351.17	25°44'41.3" 80°11'02.5"	12.0	Gray-brown sand with shells	S of William Powell Bridge
DA-5-12C & DA-5-17GS	10/12/00	D-4/ 173+66	354.87	25°41'32.4" 80°11'44.9"	11.0	Clay	Adj. to Key Biscayne
DA-5-18GS	10/13/00	D-4/ 803+64	366.80	25°31'24.3" 80°14'20.2"	10.0	Gray clayey sand	Biscayne Bay
Reach DA-5							
DA-6-13C & DA-6-19GS	10/13/00	D-6/ 298+75	372.94	25°26'05.6" 80°14'59.1"	8.0	Gray sand	Biscayne Bay
DA-6-20GS	10/13/00	D-6/ 343+25	373.78	25°25'21.6" 80°15'04.4"	8.5	Gray clayey sand with shells	Biscayne Bay
DA-6-14C & DA-6-21GS	10/13/00	D-7/ 2+68	375.80	25°23'58.2" 80°15'16.6"	9.0	Gray sand with shells	Biscayne Bay
DA-6-15C & DA-6-22GS	10/13/00	D-7/ 47+60	376.25	25°23'23.4" 80°15'46.9"	10.0	Gray sand with shells	Biscayne Bay, near ΔR8
DA-6-23GS	10/13/00	D-8/ 76+81	377.94	25°22'11.9" 80°16'45.2"	6.0	Gray sand	Biscayne Bay
DA-6-16C & DA-6-24GS	10/13/00	D-9/ 10+85	378.55	25°21'09.6" 80°17'54.0"	10.0	Gray sand	Biscayne Bay

[A] Green channel marker, denotes right channel boundary of ICWW channel (heading north)
[B] Red channel marker, denotes left channel boundary of ICWW channel
[C] ND = No Data

Table 2.4 Physical Characteristics of Miami-Dade County ICWW Sediment Samples

Station	*Mean Grain Size (phi)*	*(mm)*	*USCS Size*[A]	*Silt + Clay (%)*	*Water (%)*[B]	*Organic Matter (%)*[C]
Reach DA-1						
DA-1-1GS	2.64	0.160	Fine Sand	19.3	34.6	3.11
DA-1-2GS	3.43	0.093	Fine Sand	32.2	-	-[D]
DA-1-3GS	0.16	0.892	Medium Sand	2.0	-	-
DA-1-4GS	0.47	0.720	Medium Sand	4.3	28.1	2.16
Reach DA-2						
DA-2-5GS	2.72	0.151	Fine Sand	7.6	34.3	3.99
DA-2-6GS	0.26	0.837	Medium Sand	2.5	-	-
DA-2-7GS	0.31	0.809	Medium Sand	3.6	33.8	2.86
Reach DA-3						
DA-2-8GS	4.36	0.049	Silt	68.5	49.7	6.86
DA-2-9GS	3.93	0.066	Silt	60.3	58.9	6.67
DA-3-10GS	4.02	0.062	Silt	59.3	64.3	9.43
DA-3-11GS	1.04	0.486	Medium Sand	4.1	28.5	1.70
DA-3-12GS	1.65	0.319	Fine Sand	2.6	-	-
DA-3-13GS	1.50	0.354	Fine Sand	2.4	19.8	0.326
DA-5-14GS	1.70	0.307	Fine Sand	5.3	20.6	1.22
DA-5-15GS	1.49	0.355	Fine Sand	2.7	23.1	0.64
Reach DA-4						
DA-5-16GS	-0.16	1.115	Medium Sand	1.2	-	-
DA-5-17GS	3.94	0.065	Silt	61.6	54.5	6.07
DA-5-18GS	0.94	0.520	Medium Sand	16.9	-	-
Reach DA-5						
DA-6-19GS	1.46	0.365	Fine Sand	1.9	21.8	1.13
DA-6-20GS	1.49	0.356	Fine Sand	2.8	-	-
DA-6-21GS	1.40	0.380	Fine Sand	6.1	29.8	1.84
DA-6-22GS	1.51	0.351	Fine Sand	2.2	20.3	0.797
DA-6-23GS	1.81	0.285	Fine Sand	4.4	-	-
DA-6-24GS	1.60	0.330	Fine Sand	2.5	20.4	1.52

[A] USCS = United Soil Classification System
[B] Water Content = 100 – Total Solids (%)
[C] Organic Matter = Total Organic Carbon * 2.5 (Trefry et al., 1990)
[D] "-" = Total solids and total organic carbon were not analyzed for these samples

adjacent to Key Biscayne (DA-5-17GS) were classified as silt (i.e., possessing a mean grain diameter between 0.074 and 0.002 mm). These four samples contained between 59.3 and 68.5% silt- and clay-size particles. Thirteen of the twenty-four samples were classified as fine sand under the Unified Soils Classification System (USCS) (i.e., possessing a mean grain diameter between 0.42 and 0.074 mm). The remaining seven samples were classified as medium sand (i.e., possessing a mean grain diameter between 2.0 and 0.42 mm). Three of the samples classified as fine or medium sand contained more than 10% fine material (silts and clays). The coarsest sediments as expected, were generally found within Biscayne Bay and away from highly urbanized areas.

Of particular interest in the ICWW is the distribution and composition of fine-grained, organic-carbon rich sediments. These sediments, commonly called muck, are of concern given their potential effects on water quality and benthic communities and their tendency to accumulate pollutants. Based on Trefry et al.'s (1990) definition of muck (>60% silt and clays, >50% water, and >10% organic matter), none of these samples from the Miami-Dade County ICWW are classified as muck.

2.1.3.3 Sediment Chemistry

This section focuses on the chemical characteristics of Miami-Dade County ICWW sediments. Chemical contaminants enter Miami-Dade County coastal waters from non-point (agricultural and urban stormwater runoff, atmospheric pollutant deposition, marine craft operation, etc.) and point (industrial and municipal wastewater effluent, etc.) sources. Contaminants, over time, may accumulate in the underlying sediments. Sediment-associated contaminants prevalent in urbanized areas include metals (e.g., arsenic, cadmium, chromium, copper, lead, nickel, zinc, and mercury), pesticides, polycyclic aromatic hydrocarbons (PAHs), and polychlorinated biphenyls (PCBs).

Some sediment constituents, such as metals, are natural components of sediments and should only be considered contaminants when their concentrations exceed natural levels. PAH may have natural or man-made origins. Other constituents, such as pesticides and PCBs that do not occur naturally can be considered contaminants when present at any concentration. However, the presence of a contaminant does not necessarily indicate that it will cause adverse effects during dredging or dredged material placement. Expression of contaminant effects depends on a variety of factors, including the contaminant concentration and chemical properties and other sediment characteristics (e.g. type of sediment, grain size, organic content). In particular, fine-grained sediments have a tendency to adsorb hydrophobic contaminants and therefore are more likely to contain potentially toxic concentrations. As an initial screening process, Phase I evaluated sediment quality information with interpretive tools developed by the FDEP. The objective of this screening was to determine whether Miami-Dade County ICWW sediments contain contaminants at levels that would require additional investigation or might necessitate special dredging and sediment handling procedures.

- Sediment Analytical Results

Metals

Nine sediment metals were analyzed by atomic adsorption or inductively coupled plasma spectroscopy following hydrofluoric acid sediment digestion. One of these metals (aluminum) is considered a major element and is naturally abundant in most geologic formations. The other eight metals are considered trace elements and potential contaminants whose concentration may become enriched by human activities. Only when metal concentrations exceed natural levels should they be considered pollutants. The natural occurrence of metals at variable concentrations complicates the evaluation of metal values. However, the FDEP has described a method for determining natural ranges of metal

concentration based on statistical relationships between metals and a common reference element, aluminum (Schropp and Windom, 1988). These relationships permit the calculation of metal enrichment ratios (i.e., the ratio of measured metal concentration to maximum predicted natural concentration), where enrichment ratios greater than one indicate that a metal exceeds the natural range.

Table 2.5 lists metal enrichment ratios for historical (USACE, FDEP, NOAA) and recent (Taylor Engineering) Miami-Dade County sediments samples. Enrichment ratios for all of the metals in the five samples south of Key Biscayne were less than one, indicating that metals in these sediments fall within natural ranges. However, many of the 33 samples from Key Biscayne north to the county line contained lead (24 samples) and zinc (21 samples) above natural ranges (enrichment ratios from 1.06 to 8.40). Some sediments in this area also appeared enriched with arsenic (2 samples), cadmium (7 samples), chromium (5 samples), copper (8 samples), nickel (1 sample) or mercury (8 samples). Most of the sediments with multiple enriched metals were near the Miami River or Little River.

Another approach to interpreting contaminant concentrations in coastal sediments is based on the likelihood of a contaminant causing adverse effects on aquatic organisms. To evaluate the potential for biological impact, the FDEP prepared biological effects based sediment quality guidelines for several metals, pesticides, PAHs, and other compounds (MacDonald, 1995). The Threshold Effects Level (TEL) indicates a contaminant concentration below which adverse effects are unlikely. The Probable Effects Level (PEL) represents a concentration above which adverse effects are usually observed. Table 2.6 lists the PEL, TEL, and measured metal concentrations in the Miami-Dade County ICWW samples.

Metal concentrations in all five samples south of Key Biscayne were below the TEL. Although metal concentrations in sediments from Key Biscayne north to the county line were generally below the TEL, several exceptions occurred. In these 33 samples, mercury exceeded the PEL in three samples and nickel exceeded the PEL in one sample. Metal concentrations exceeded the TEL for arsenic (8 samples), cadmium (2 samples), chromium (3 samples), copper (6 samples), and mercury (9 samples) at several stations from the vicinity of the Miami River north to Bakers Haulover.

Pesticides, PAHs, and PCBs

Taylor Engineering and USACE sediment samples were analyzed for 26 individual chlorinated compounds (19 organochlorine pesticides and 7 PCB analytes) and 18 aromatic compounds (PAHs) by EPA Methods 3550/8081, 3550/8082, and 3550/8270. Appendix E lists the specific compounds analyzed and their reporting limits for the Taylor Engineering samples. The FDEP and NOAA data included a

varied number of individual chlorinated compounds (organochlorine pesticides and PCB analytes) and PAHs (aromatic compounds) analyzed with EPA or similar methods.

Table 2.5 Metal Enrichment Ratios of Miami-Dade County ICWW Sediment Samples

Station	*As*	*Cd*	*Cr*	*Cu*	*Pb*	*Ni*	*Zn*	*Hg*
Taylor Engineering								
DA-1-1C	0.44	<0.27[A]	0.15	**1.43**	**2.77**	0.17	**5.87**	<0.43
DA-1-2C	0.73	0.16	0.20	0.80	**3.27**	0.22	**3.04**	<0.43
DA-2-3C	0.57	0.16	0.31	0.36	**1.27**	**8.40**	**1.38**	<0.43
DA-2-4C	**4.75**	0.31	0.22	0.60	**5.18**	0.21	**4.19**	<0.43
DA-2-5C	**1.14**	0.56	0.33	**1.37**	**4.49**	0.33	**3.29**	<0.43
DA-2-6C	0.58	0.72	0.49	**2.05**	**7.70**	0.41	**3.90**	<0.43
DA-3-7C	0.72	0.67	0.48	**2.09**	**6.15**	0.43	**4.06**	0.96
DA-3-8C	0.65	0.24	0.30	0.69	**4.33**	0.17	**3.56**	<0.43
DA-3-9C	0.36	<0.37	0.11	0.30	**2.86**	0.09	**1.29**	<0.43
DA-5-10C	0.55	0.19	0.22	**1.15**	**4.27**	0.19	**3.86**	<0.43
DA-5-11C	0.88	<0.51	0.21	0.40	**2.51**	0.32	**1.53**	<0.43
DA-5-12C	0.64	0.09	0.26	0.54	**1.33**	0.48	0.83	<0.43
DA-6-13C	0.37	<0.39	0.24	0.07	0.50	0.24	0.40	<0.43
DA-6-14C	0.30	<0.40	0.22	0.15	0.53	0.29	0.42	<0.43
DA-6-15C	0.23	<0.44	0.10	0.05	0.45	0.07	0.54	<0.43
DA-6-16C	1.00	<0.49	0.26	0.10	0.69	0.30	0.77	<0.43
USACE								
E-DC-99-01	0.05	<0.18	0.06	0.22	0.28	<0.09	0.21	<0.24
E-DC-99-02	0.16	0.83	0.16	0.65	**1.35**	<0.08	0.68	0.67
E-DC-99-03	0.25	**1.58**	0.26	0.89	**2.01**	<0.08	**1.06**	**1.05**
E-DC-99-04	0.27	0.62	0.06	0.22	0.49	<0.08	0.35	<0.24
E-DC-99-05	0.07	<0.15	0.02	0.04	0.06	<0.07	0.05	<0.24
E-DC-99-06	0.13	0.38	0.09	0.54	0.72	<0.10	0.90	0.43
E-SODC99-01	0.11	0.87	0.14	0.10	0.22	<0.12	0.07	<0.24
E-SODC99-02	0.11	<0.22	0.04	0.08	0.20	<0.12	0.10	<0.24
E-SODC99-03	0.10	<0.21	0.01	0.06	0.15	<0.12	0.11	<0.24
E-SODC99-04	0.03	<0.19	0.03	0.14	0.18	<0.10	0.14	<0.24
FDEP								
BSB-0006	0.32	0.51	1.00	**2.56**	**7.29**	0.39	**3.04**	**11.43**
BSB-0009	0.15	**4.03**	0.37	0.76	**3.14**	0.13	**2.91**	**3.92**
BSB-0010	0.25	0.84	0.50	0.97	**3.73**	0.26	**1.35**	**12.38**
BSB-0023 (1985)	0.33	**1.27**	**2.19**	0.57	**1.50**	0.00	**1.52**	0.67
BSB-0023 (1989)	0.46	0.88	0.24	0.99	**4.09**	0.14	**2.09**	0.23
BSB-0025 (1985)	0.21	**1.35**	**2.51**	0.28	0.90	0.00	0.99	**1.10**
BSB-0025 (1989)	0.57	0.55	0.27	**1.47**	**3.04**	0.19	**1.80**	0.40
BSB-0028 (1985)	0.26	**1.03**	**2.67**	0.98	**1.58**	0.00	**2.04**	**1.48**
BSB-0028 (1989)	0.36	**1.05**	0.19	0.68	**3.03**	0.13	**5.30**	0.19
BSB-0033	0.41	**1.42**	**1.72**	**2.04**	**8.40**	0.00	**3.12**	**1.67**
BSB-0040	0.47	0.70	**4.90**	0.52	**2.42**	0.00	0.76	**1.36**
NOAA								
128	0.50	0.56	0.71	**1.84**	**8.22**	0.24	**3.60**	0.90

[A] Metal enrichment values were calculated with detection limit values
[B] Numbers in **BOLD** indicate values exceed natural range (natural range = 1.00)

Table 2.6 Metal Concentrations of Miami-Dade County ICWW Sediment Samples [ppm]

Station	*Al*	*As*	*Cd*	*Cr*	*Cu*	*Pb*	*Ni*	*Zn*	*Hg*
Taylor Engineering									
DA-1-1C	1,639	4.78	*<0.08*	3.26	12.0	10.5	1.50	57.5	*<0.09*
DA-1-2C	871	5.37	0.039	2.96	4.95	7.87	1.52	19.1	*<0.09*
DA-2-3C	462	2.86	0.033	3.35	1.65	1.95	**46.4**	5.57	*<0.09*
DA-2-4C	436	**22.9**	0.065	2.29	2.68	7.63	1.11	16.2	*<0.09*
DA-2-5C	2,199	**14.8**	0.182	8.15	13.2	21.0	3.37	39.6	*<0.09*
DA-2-6C	3,364	**9.83**	0.263	15.3	**24.2**	**48.9**	4.84	63.5	*<0.09*
DA-3-7C	3,294	**12.0**	0.244	14.9	**24.4**	**38.5**	5.14	65.2	**0.201**
DA-3-8C	706	4.20	0.056	4.01	3.91	8.98	1.11	19.3	*<0.09*
DA-3-9C	508	1.88	*<0.08*	1.26	1.43	4.70	0.50	5.53	*<0.09*
DA-5-10C	150	1.39	0.030	1.29	3.14	2.96	0.70	7.11	*<0.09*
DA-5-11C	154	2.27	*<0.08*	1.23	1.11	1.77	1.18	2.86	*<0.09*
DA-5-12C	1,504	6.64	0.027	5.21	4.33	4.74	4.17	7.65	*<0.09*
DA-6-13C	404	1.69	*<0.08*	2.37	0.31	0.70	1.24	1.45	*<0.09*
DA-6-14C	370	1.30	*<0.08*	2.06	0.64	0.70	1.45	1.45	*<0.09*
DA-6-15C	257	0.81	*<0.08*	0.78	0.19	0.46	0.30	1.44	*<0.09*
DA-6-16C	178	2.81	*<0.08*	1.65	0.29	0.54	1.15	1.60	*<0.09*
USACE									
E-DC-99-01	15,400	2.40	*<0.10*	4.4	5.4	5.3	*<2.0*	9.9	*<0.050*
E-DC-99-02	19,200	**8.30**	0.50	13.0	17.8	**30.5**	*<2.0*	38.7	**0.140**
E-DC-99-03	22,200	**14.30**	**1.00**	23.1	**26.3**	**50.4**	*<2.0*	66.3	**0.220**
E-DC-99-04	23,700	**15.90**	0.40	5.9	6.8	13.0	*<2.0*	22.8	*<0.050*
E-DC-99-05	25,600	4.00	*<0.10*	2.2	1.2	1.6	*<2.0*	3.7	*<0.050*
E-DC-99-06	11,800	4.70	0.20	5.8	11.6	11.3	*<2.0*	36.0	0.090
E-SODC99-01	7,430	3.20	0.40	6.6	1.8	2.5	*<2.0*	2.0	*<0.050*
E-SODC99-02	7,320	3.00	*<0.10*	1.7	1.3	2.2	*<2.0*	2.9	*<0.050*
E-SODC99-03	8,420	2.90	*<0.10*	0.5	1.1	1.8	*<2.0*	3.4	*<0.050*
E-SODC99-04	12,600	1.30	*<0.10*	1.7	3.2	2.9	*<2.0*	6.0	*<0.050*
FDEP									
BSB-0006	2,400	4.37	0.17	26.0	**25.7**	**36.3**	4.1	39.0	**2.40**
BSB-0009	1,113	1.30	**1.08**	6.3	5.3	9.0	1.0	21.7	**0.823**
BSB-0010	1,900	2.97	0.26	11.5	8.7	15.7	2.5	14.7	**2.60**
BSB-0023 (1985)	625	2.00	0.29	27.5	3.1	2.9	-1.0	7.6	**0.140**
BSB-0023 (1989)	545	2.55	0.20	2.8	5.0	7.1	0.8	9.5	0.048
BSB-0025 (1985)	520	1.15	0.30	28.5	1.4	1.5	-1.0	4.4	**0.230**
BSB-0025 (1989)	1,300	5.40	0.16	5.1	11.0	9.8	1.6	15.0	0.085
BSB-0028 (1985)	2,000	3.25	0.33	**63.0**	9.0	6.9	-1.0	23.0	**0.310**
BSB-0028 (1989)	455	1.80	0.22	2.0	3.1	4.6	0.7	21.1	0.039
BSB-0033	3,200	6.70	0.51	**52.5**	**23.5**	**51.5**	-1.0	49.0	**0.350**
BSB-0040	1,150	4.10	0.19	**85.5**	3.7	7.1	-1.0	5.8	**0.285**
NOAA									
128	4,495	**10.27**	0.22	26.3	**25.0**	**64.4**	3.2	72.0	**0.190**
TEL	-	7.24	0.676	52.3	18.7	30.2	15.9	124.0	0.130
PEL	-	41.60	4.210	160.0	108.0	112.0	42.8	271.0	0.696

[A] Numbers in *ITALICS* indicate values below method reporting limit
[B] Numbers in **BOLD** indicate values equal to or greater than TEL
[C] Numbers in **BOLD UNDERLINE** indicate values equal to or greater than PEL

Table 2.7 summarizes the detectable concentrations of organochlorine pesticides and total PCBs and the associated TEL and PEL (MacDonald, 1995). Chlorinated pesticides and PCBs were below detectable limits in the USACE and Taylor Engineering sediment samples. No pesticides were detected above the TEL. Three sampling locations (BSB-0009, BSB-0033, and 128) exhibited total PCB concentrations above the TEL. BSB-0033 and 128 lie near the Little River; BSB-0009 lies near Government Cut.

Table 2.7 Detected Pesticide and PCB Concentrations of Miami-Dade County ICWW Sediment Samples [ppb]

Analyte	*BSB-0009*	*BSB-0023 (1985)*	*BSB-0025 (1985)*	*BSB-0028 (1985)*	*BSB-0033*	*BSB-0040*	*128*	*TEL / PEL*
Pesticides								
4,4'-DDD	-[A]	-	-	-	-	-	0.19	1.22 / 7.81
4,4'-DDE	-	-	-	-	-	-	1.58	2.07 / 374
Chlordane	-	-	-	-	-	-	0.27	2.26 / 4.79
PCBs								
Total PCBs	**93**[B,C]	6	5.5	5.5	**150**	7	**32.32**	21.6 / 189

[A] "-" = These compounds were not analyzed for

[B] Total PCBs reported for the FDEP samples represent the sum of the reported PCB Aroclor analytes

[C] Numbers in **BOLD** indicate values equal to or greater than TEL

PAHs were detected in 17 of the 38 analyzed sample locations, all between Key Biscayne and the north county line. Table 2.8 summarizes the concentration of PAHs detected and the associated TEL and PEL (MacDonald, 1995). While most detectable PAH were below the TEL, one sample (DA-2-6C) contained four PAH above the TEL — acenaphthylene, fluoranthene, benzo(a)pyrene, and dibenz(a,h)anthracene. Dibenz(a,h)anthracene was detected above the TEL at seven sampling stations throughout the northern portion of Miami-Dade County. Concentrations of fluoranthene exceeded the TEL at 5 stations between Bakers Haulover and Government Cut. Only one sample, BSB-0033, also located in this general area, contained a PAH (phenanthrene) above the PEL.

TOC, TKN, TRPH

In addition to the chemicals discussed above, total organic carbon (TOC), total Kjeldahl nitrogen (TKN), and total recoverable hydrocarbons (TRPH) (EPA Method 3550/FL-PRO) were analyzed to determine whether the ICWW sediments in Miami-Dade County contain atypical concentrations of these chemicals. TOC and TKN were compared to the results of statewide sediment data collected by the FDEP from natural coastal sediments from 1984 to 1990. Figure 2.5 shows the results from Miami-Dade County sediments superimposed over the FDEP data. A regression equation and 95% confidence intervals were calculated for log-transformed FDEP data to establish typical ranges for organic carbon and nitrogen in Florida sediments. Stations DA-2-3C and DA-6-16C, both located within areas of fine sediments, appear slightly enriched in organic carbon relative to nitrogen. The remaining stations contained organic carbon and nitrogen concentrations within the expected range. TRPH concentrations ranged from 10 to 64 ppm. Currently no interpretive tools (i.e., enrichment ratios, TEL/PEL guideline) exist for TRPH. However, these values are well below the FDEP's soil cleanup guidelines for TRPH (340 ppm residential, 2,500 ppm industrial).

Table 2.8 Detected Polycyclic Aromatic Hydrocarbon (PAH) Concentrations of Miami-Dade County ICWW Sediment Samples [ppb]

Analyte	*DA-1-1C*	*DA-1-2C*	*DA-2-3C*	*DA-2-4C*	*DA-2-5C*	*DA-2-6C*	*DA-3-7C*	*DA-3-8C*	*DA-3-9C*	*DA-5-10C*	*DA-5-11C*	*DA-5-12C*	*BSB-0023 (1985)*	*BSB-0025 (1985)*	*BSB-0028 (1985)*	*BSB-0033*	*128*	*TEL / PEL*
Naphthalene	6.6U[A]	U[B]	6.6U	6.6U	6.6U	6.6U	6.6U	U	U	U	U	6.6U	-[C]	-	-	-	7.6	34.6 / 391
2-Methylnaphthalene	6.6U	U	6.6U	6.6U	6.6U	6.6U	6.6U	U	U	U	U	6.6U	-	-	-	-	6.4	20.2 / 201
1-Methlnaphthalene	6.6U	U	6.6U	6.6U	6.6U	6.6U	6.6U	U	U	U	U	6.6U	-	-	-	-	4.1	NG[D]
C1-Naphthalenes (Methyl)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	10.5	NG
C2-Naphthalenes (Ethyl)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	9.5	NG
C3-Naphthalenes (Propyl)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7.5	NG
C4-Naphthalenes (Butyl)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7.5	NG
2,6-Dimethylnaphthalene	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3.2	NG
Biphenyl	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.1	NG
Acenaphthylene	6.6U	U	6.6U	6.6U	6.6U	**14**[E]	6.6U	U	U	U	U	6.6U	-	-	-	-	**7.8**	5.9 / 128
Acenaphthene	6.6U	U	6.6U	6.6U	6.6U	6.6U	6.6U	U	U	U	U	6.6U	-	-	-	-	3.6	6.7 / 88.9
1,6,7-Trimethylnaphthalene	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.7	NG
Fluorene	6.6U	U	6.6U	6.6U	6.6U	6.6U	6.6U	U	U	U	U	6.6U	-	-	-	-	2.5	NG
C1-Fluorenes (Methyl)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2.6	NG
C2-Fluorenes (Ethyl)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4	NG
C3-Fluorenes (Propyl)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	14.8	NG
Phenanthrene	6.6U	11	6.6U	6.6U	6.6U	30	11	U	U	7.1	U	6.6U	<100	<100	<100	**<u>1200</u>**[F]	30.2	86.7 / 544
1-Methylphenanthrene	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6.5	NG
Anthracene	6.6U	U	6.6U	6.6U	6.6U	18	6.6U	U	U	U	U	6.6U	<100	<100	<100	**100**	16.1	46.9 / 245
C1-Phenanthrenes/Anthracenes	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	25.3	NG
C2-Phenanthrenes/Anthracenes	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	16.7	NG
C3-Phenanthrenes/Anthracenes	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	11.8	NG
C4-Phenanthrenes/Anthracenes	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	11.8	NG
Dibenzothiophene	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.8	NG
C1-Dibenzothiophenes (Methyl)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3.3	NG
C2-Dibenzothiophenes (Ethyl)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4.8	NG
C3-Dibenzothiophenes (Propyl)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	10.6	NG
Fluoranthene	26	36	18	17	28	**120**	48	24	14	27	15	24	**200**	100	**150**	**350**	**137.6**	113 / 1490
Pyrene	11	21	6.6U	6.6U	7.9	88	21	8.8	U	12	U	6.6U	<100	<100	<100	**450**	126.4	153 / 1400
C1-Fluoranthenes/Pyrenes	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	69.9	NG
Benz(a)anthracene	7.6	11	6.6U	6.6U	6.6U	48	13	8.4	U	7.1	U	6.6U	<100	<100	<100	200	68.6	74.8 / 693
Chrysene	9.6	14	6.6U	6.6U	6.6	100	21	12	U	10	U	6.6U	-	-	-	-	101.9	108 / 846
C1-Chrysenes (Methyl)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	50	NG
C2-Chrysenes (Ethyl)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	25.6	NG
C3-Chrysenes (Propyl)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3	NG
C4-Chrysenes (Butyl)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	9.9	NG
Benzo(b)fluoranthene	27	26	18	17	28	140	48	28	14	25	U	6.6U	<100	<100	<100	2450	152.7	NG
Benzo(k)fluoranthene	9.6	13	6.6U	6.6U	7.9	96	19	13	U	10	U	6.6U	-	-	-	-	49.5	NG
Benzo(e)pyrene	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	70.4	NG
Benzo(a)pyrene	25	26	6.6U	6.6U	28	**120**	45	27	U	22	U	6.6U	-	-	-	-	**89.9**	88.8 / 763
Perylene	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	22.4	NG
Indeno(1,2,3-cd)pyrene	34	33	6.6U	6.6U	39	88	60	32	U	29	U	6.6U	-	-	-	-	63.1	NG
Dibenz(a,h)anthracene	6.6U	**20**	6.6U	6.6U	**27**	**42**	**38**	**20**	U	**18**	U	6.6U	-	-	-	-	**13.1**	6.2 / 135
Benzo(g,h,i)perylene	22	22	6.6U	6.6U	24	60	39	22	U	19	U	6.6U	-	-	-	-	63.3	NG
Total PAH	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**1349.6**	312 / 1442

[A] Number preceding "U" indicates elevated reporting limit due to low % solids in sample
[B] U = Not detected at or above the reporting limit of 3.3 ppb
[C] "-" = These compounds were not analyzed for
[D] NG = No Guidelines, TEL & PEL sediment quality assessment guidelines have not been established by the FDEP
[E] Numbers in **BOLD** indicate values equal to or greater than TEL
[F] Numbers in **<u>BOLD UNDERLINE</u>** indicate values equal to or greater than PEL

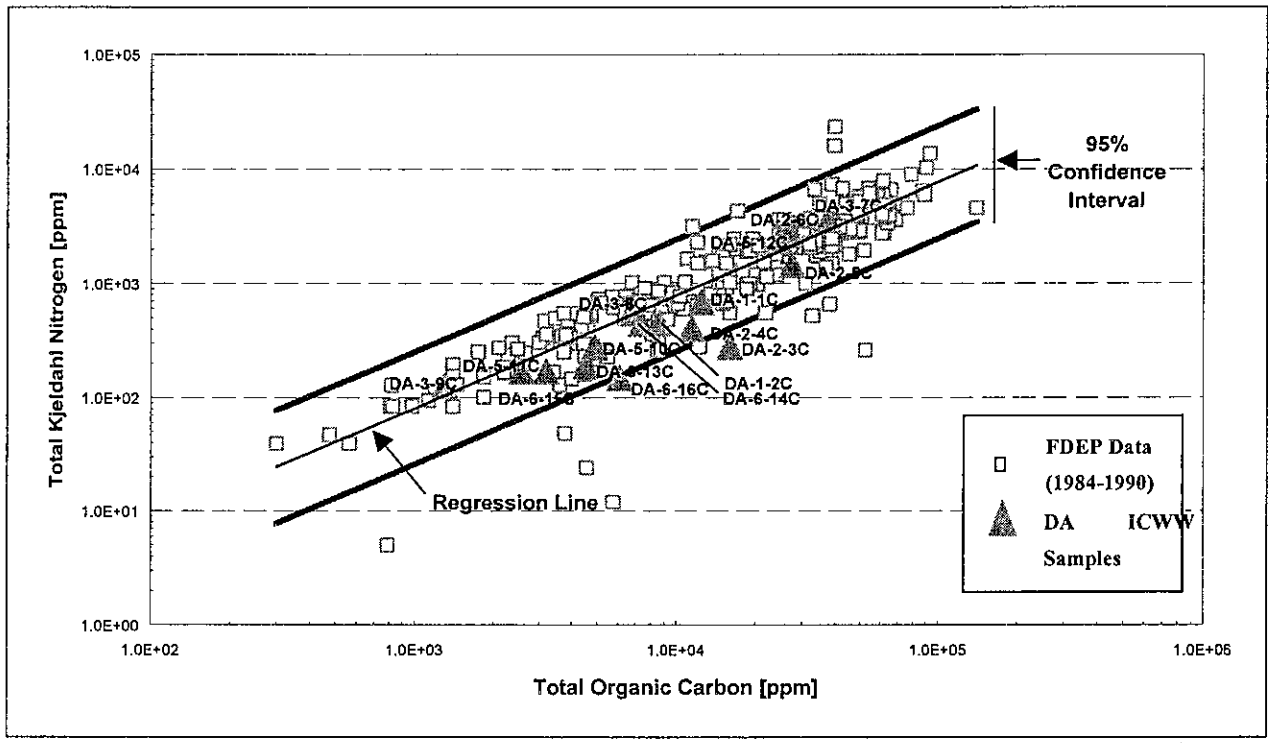


Figure 2.5 Total Organic Carbon and Total Kjeldahl Nitrogen in Miami-Dade County ICWW Sediments

- Summary

Sediment data evaluated for this management plan included readily available historical data and data collected specifically for this planning effort. Although numerous sediment data are available for Miami-Dade County, this review was restricted to data collected from or within 100 ft of the ICWW. The sediment samples Taylor Engineering collected specifically for this project were from areas considered most likely contaminated due to the presence of fine sediments and proximity to urban areas.

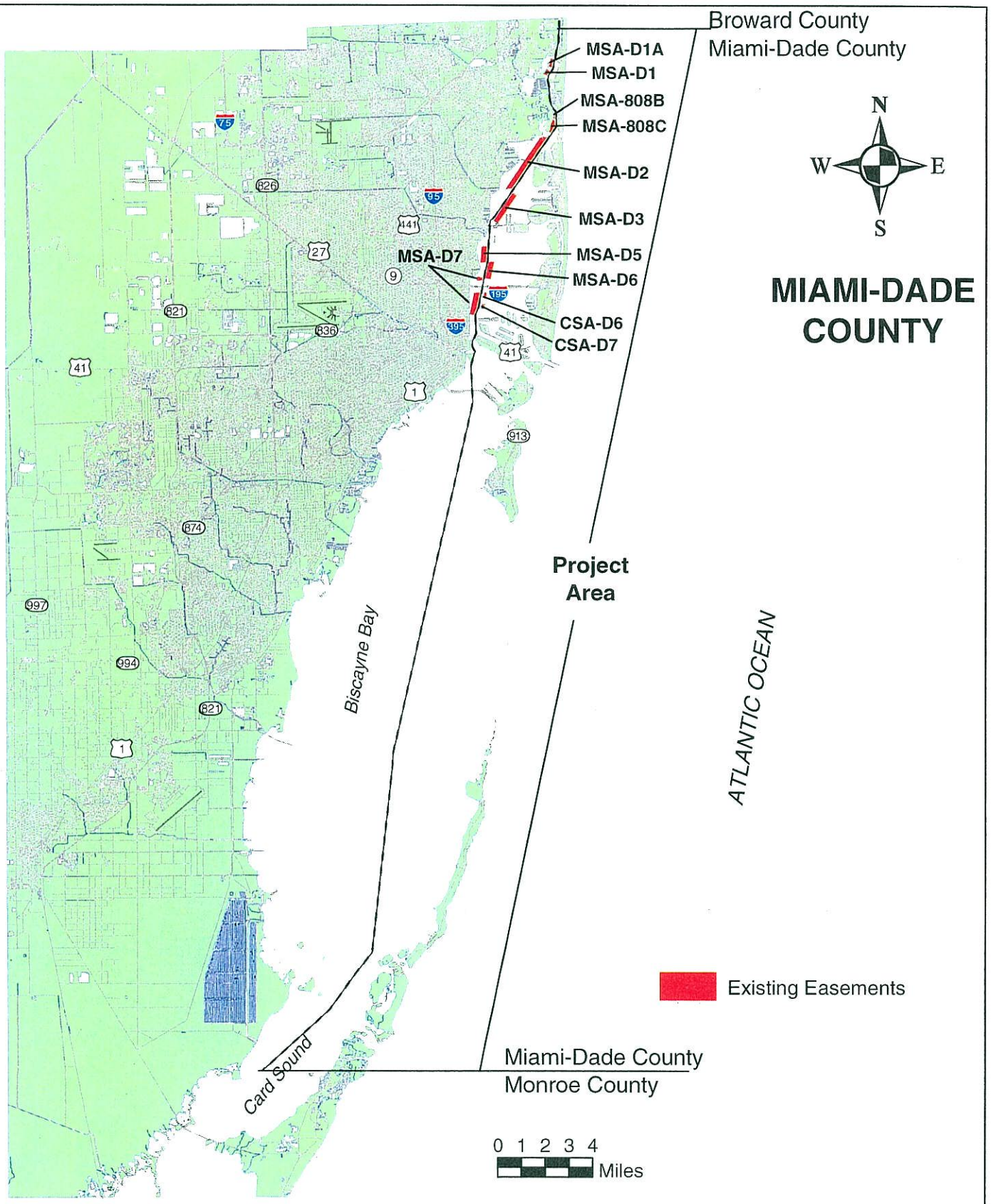
Miami-Dade County ICWW sediments north of Key Biscayne contain higher concentrations of contaminant metals, PCBs, and PAHs than found in previous ICWW sediment studies. Two metals (lead and zinc) exceeded expected natural ranges at many sampling stations in this area. Several of these stations were also enriched with from one to four additional metals. Several metal concentrations exceeded TEL guidelines (two to nine locations per metal) or the PEL guideline for mercury (three locations). No organochlorine pesticides were detected at concentrations above the TEL. PCB were detected at only seven locations; PCB exceeded the TEL at three of these locations. PAHs were detected in 17 of the 38 sampling locations, generally at concentrations below the TEL. Only two locations, both near the Little River, contained more than one PAH exceeding the TEL. Stations near the Miami River, Little River, and Bakers Haulover contained the greatest variety and magnitude of sediment contaminants.

Nutrient concentrations were generally low and within typical estuarine ranges. TRPH concentrations were relatively low. In contrast to these samples from the northern portion of Miami-Dade County, all of the samples located south of Key Biscayne contained natural, relatively low or undetectable concentrations of metals, PCBs, and PAHs.

The results of this initial sediment quality screening show that sediments in various parts of the Miami-Dade County ICWW contain one or more contaminants that exceed screening guideline concentrations. The presence of these contaminants reflects the urban and industrial development of the surrounding areas. Based on these results, additional sediment quality tests will be required prior to each dredging operation to determine whether specific shoals contain contaminants at levels that would require special dredging or material handling techniques to comply with local state, and federal regulations. Such tests may include bulk sediment chemistry, elutriate chemistry, contaminant leachability, or sediment toxicity. Specific testing requirements will be determined in consultation with the appropriate regulatory agencies.

2.2 Existing Sites

Review of all relevant Jacksonville District USACE Real Estate maps and Control Data sheets for the Intracoastal Waterway 10-ft Project (Jacksonville to Miami) and 7-ft Project (Miami to Key West) and 1994 FIND blueline aerials (1 in.=200 ft) of the project area reveals that the FIND controls through perpetual easement 11 tracts within the Miami-Dade County project area. Figure 2.6 and Table 2.9 present FIND's complete inventory of dredged material easements within Miami-Dade County. Table 2.9 also summarizes the results of the preliminary easement evaluation process. Of the 11 tracts within the inventory, nine were originally intended to support channel maintenance operations as indicated by their MSA (Maintenance Spoil Area) designation. The remaining two tracts controlled by the FIND apparently were intended to support channel construction only as indicated by their CSA (Construction Spoil Area) designation. Both tracts within this latter group are essentially open water areas that lie 500 ft east of the ICWW right-of-way. CSA D-6 appears to contain only a submerged bank, while CSA D-7 contains a portion of a less than 3-acre spoil island. As discussed in Chapter 3.0, given that open water placement of dredged material remains an inappropriate dredged material management strategy for the Miami-Dade segment of the ICWW, neither easement offers any realistic potential for continued dredged material management.



TAYLOR ENGINEERING INC. 9000 Cypress Green Drive, Suite 200 Jacksonville, Florida 32256	Figure 2.6 Existing FIND Easements Long Range Dredged Material Management Plan Intracoastal Waterway Miami-Dade County, Florida	Project C2002-036D Revision Sheet Date March, 2003

Table 2.9 Inventory of Disposal Easements, Intracoastal Waterway, Miami-Dade County

FIND Designation	USACE Tract No.	ICWW Mile	Total Acreage	Useable Upland Acreage	Containment Capacity (cy)	Comments
MSA D-I-A	1259	335.86 – 336.22	28.93	0	N/A	Open water
MSA D-1	1258	336.27 – 336.62	22.90	0	N/A	Open water
MSA 808-B	13509E-1	338.22 – 338.53	8.27	0	N/A	Open water
MSA 808-C	13509E-2	338.54 – 339.16	44.40	0	N/A	Open water
MSA D-2	1282	339.39 – 341.97	410.00	10.75	54,444	Portion of Sandspur Island, open water w/smaller islands, portion of 123rd St. (Broad) Causeway
MSA D-3	1283	342.12 – 343.84	210.00	Minimal	N/A	Open water, small islands
MSA D-5	1285	344.79 – 345.47	98.00	6.44	17,569	Open water, portion of spoil island (Legion Picnic Island Park)
MSA D-6	1286	345.47 – 346.19	114.78	Minimal	N/A	Open water, small islands
MSA D-7	1287	346.10 – 347.79	230.00	0	N/A	Open water
CSA D-6	18401E-1	346.82 – 347.09	16.52	0	N/A	Open water/portion of spoil bank
CSA D-7	18401E-2	347.31 – 347.53	13.77	<3.0	N/A	Open water/portion of spoil island

Similar considerations eliminate seven of the nine remaining tracts originally designated to support channel maintenance operations. Each contain only open water or minimal spoil islands of less than 3 acres. The remaining two, although also predominantly open water, contain islands of sufficient size (greater than 5 acres) to offer, at least at this preliminary stage, some realistic potential for development as dredged material management areas and thus merit further evaluation. Each is described below.

Both of these easements lie within northern Biscayne Bay near documented shoal areas. The more northerly — designated MSA D-2 — contains approximately 10.75 ac of a 16.81-acre spoil island known as Sandspur Island. Located directly opposite Bakers Haulover Inlet, the island is managed under the jurisdiction of the Oleta River State Recreation Area, Florida Department of Environmental Protection. Under the joint sponsorship of the FIND and the Metro-Dade Department of Environmental Resource Management, the island has been extensively restored by removing invasive exotic vegetation and replanting native species. Mangroves protected by rock revetments have been reestablished along the

island's eastern shoreline, and a mangrove impoundment connected to the bay by a rock-lined channel has been constructed. On weekends, the island receives heavy use by boaters and picnickers.

Located south of the John F. Kennedy (79th Street) Causeway, the second easement —designated MSA D-5 — includes approximately 6.44 ac of the 8.2-ac Legion Picnic Island Park. With much of it densely wooded, the island receives little public use. The center of the island shows evidence of previous dredged material placement with only slightly more than five acres classified as upland. Mangroves fringe the islands northern, western, and southern shorelines.

2.3 Existing Storage Capacity

A preliminary evaluation of the two sites controlled by the FIND that initially showed some potential for future dredged material management estimated each site's potential material storage capacity. At this preliminary level of the site evaluation process, two criteria were of primary consideration: (1) to the greatest extent possible, the placement of dredged material must be confined to upland areas, and (2) a site's capacity represents the capacity of an earthen basin constructed from on-site soils to receive, dewater and store the dredged material. However, as discussed in the development of the project's Management Concept presented in Chapter 3.0, such an approach may not represent a site's best use, nor the most appropriate dredged material management strategy for the Miami-Dade County project area. However, at this preliminary stage of the evaluation, estimating a site's maximum capacity based on the criteria listed above still served as a useful screening tool.

In addition to the USACE Real Estate Maps and FIND aerial base maps, three other resources guided the evaluation. These include: (1) 1994 and 1995 color-infrared aerial photography from the National High Altitude Photography (NHAP) Program of the U.S. Geological Survey (USGS) (1:24,000 scale); (2) USGS Topographic Quadrangle Maps, 7.5-minute series (1:24,000 scale); and (3) National Wetlands Inventory maps from the U.S. Department of the Interior, U.S. Fish and Wildlife Service (1:24,000 scale).

To begin the evaluation, the useable upland area of each site was first estimated by inspection of the 1994 FIND aerial basemaps (1 in. = 200 ft), guided by color-infrared photography, and USFWS wetland inventory maps. As discussed in Section 3.4, on-site inspection later refined this initial estimate of useable upland area. Further analysis then established whether the useable upland area could provide adequate material for dike construction and whether the resulting capacity within this area supported further consideration of the site. A set of relationships were developed (Appendix C) in which the

required volume of dike material, the volume of dike material available on-site, and the resulting storage capacity are expressed in terms of a set of independent variables including dike crest elevation above grade, mean site elevation, depth of excavation, dike side slope, width of dike crest, and required minimum freeboard. For the purposes of this preliminary evaluation, a standard dike geometry was applied. Selected parameter values are within the range of standard practice for similar sites used for previous maintenance events. Given sufficient area, these include a 15-ft crest elevation above grade, a 1V:3H side slope, a 12-foot crest width, and a minimum freeboard plus ponding allowance of 4 ft. On smaller sites, such as the island sites being evaluated here, dike height was typically limited to less than 15 ft by restricting the depth of excavation to less than 5 ft below the site's estimated mean grade elevation.

The result of the preliminary capacity analysis, presented in Table 2.9, indicates that the maximum capacity achievable within the two sites presently controlled by the FIND is 72,013 cy. Comparison of this potential capacity with the projected 50-year material storage requirement for the Miami-Dade County segment of the ICWW (1,234,728 cy, Table 2.2) shows that the existing capacity represents less than 6% of the projected 50-year storage requirement of the Miami-Dade County segment of the ICWW. Each site's use for conventional containment basin construction and long-term material storage is limited by insufficient area to provide a reasonable storage capacity and lack of road access. Moreover, use of these sites may not represent the most cost-effective or operationally efficient means to provide even this limited storage capacity.

The lack of appropriate available storage capacity within the county suggests the need to identify and evaluate additional alternative sites. The characteristics of the most appropriate long-term dredged material management strategy for the Miami-Dade County project area, in turn, dictate the criteria by which these sites are identified and evaluated. The following chapter develops the characteristics of this plan — the project's *Management Concept*.

3.0 DREDGED MATERIAL MANAGEMENT ALTERNATIVES

3.1 Management Concept

Within every maintenance dredging operation lies a set of guiding principles that reflect the attitudes and constraints of the project sponsor, the project engineer, and the contractor. Historically, the operation's participants have not explicitly stated these principles (i.e., the *Management Concept*), but rather have allowed them to evolve primarily through the need to quickly address a critical shoaling problem and the desire to maximize operational efficiency and short-term economy. Thus, before the initiation of the FIND's Long-Range Dredged Material Management Program in 1986, long-term goals such as environmental stewardship received little serious consideration. Within Florida, this approach resulted in the loss of wetlands and the numerous small mounds and islands now lining portions of the ICWW as the dredging contractor sought to place material as close as possible to the dredging area. Owners of wetlands fronting the Waterway were often eager to receive material from local dredging projects and thereby render their land more developable and valuable. For the extensive mangrove-estuarine system that once characterized the Intracoastal Waterway corridor in Southeast Florida, including Miami-Dade County, this approach often led to the unconfined placement of dredged material within mangroves, the loss of estuarine habitat, and the degradation of local water quality.

With increased scientific knowledge and environmental awareness, this approach no longer appears responsible, nor even possible, given present-day agency reviews and permitting requirements. Concerns about water quality have led to the placement of dredged material within diked areas to increase retention time and ensure that return water quality meets established standards. Modern society now recognizes wetlands, particularly mangrove swamps, as among the most biologically productive ecosystems and resources that justify conservation. However, accommodating wetland preservation within a dredged material management plan typically requires the acquisition of upland properties for development as dredged material management facilities. In the high growth, intensively developed ICWW corridor within Miami-Dade County, developmental pressures and land-use conflicts make such acquisitions both difficult and expensive. As has become increasingly apparent through the implementation of the FIND's dredged material management program, these conflicts can only be resolved through long-range planning and the development of a dredged material management concept that addresses environmental and socioeconomic (land-use) constraints, as well as engineering and operational requirements. As such, the management concept constitutes the foundation that underlies the resulting management plan.

3.1.1 Management Alternatives for Miami-Dade County

The selection of the most appropriate material placement strategy forms the central issue guiding the development of a management concept for the ICWW in Miami-Dade County. Four basic alternatives are available for consideration:

- Ocean Disposal
- Open Water Placement (Spoil Island Creation)
- Beach Placement
- Centralized Upland Storage

The following paragraphs discuss each of these alternatives with respect to its applicability to Miami-Dade County's unique requirements.

Ocean disposal of material dredged from the ICWW remains an unrealistic option for the Miami-Dade County project area. Ocean disposal requires the transport of dredged material from the dredging site to an authorized offshore disposal area. For the Miami-Dade County project area, this condition would result in a very inefficient and thus costly operation for the following reasons. The dredge (hydraulic or mechanical) must first load the material into a hopper barge capable of transiting the relatively shallow depths of the ICWW. Once filled to its (draft-limited) capacity, the contractor must then haul the barge to an appropriate point at which to transfer the material to a deep-draft seagoing barge for transport to an authorized offshore placement site. A review of offshore disposal areas currently authorized by the U.S. Environmental Protection Agency to receive dredged material identified an approved offshore placement site 3.6 nautical miles east-southeast of the Port of Miami (the only deep-water port within the project area). Thus, given the concentration of shoaling centered around Bakers Haulover Inlet, material transfer at the Port of Miami would require hauling each shallow-draft barge an average one-way distance of 11 channel miles to Government Cut, then transferring the material to a deep-draft barge for the final 3.6 miles to the offshore placement site. A smaller but still significant concentration of shoaling within the project area's southernmost 9.5 miles would require a barge to be hauled a minimum 22 miles to reach Government Cut. The availability of alternative management strategies, discussed later in this chapter, cannot justify the inefficiency and resulting cost of this type of operation.

In addition to cost, present and future regulatory restrictions suggest that ocean disposal may be an inappropriate dredged material management strategy for the Waterway in Miami-Dade County. Presently, regulation limits the use of ocean disposal to those projects for which no other feasible management alternative can be identified. As the remainder of this report documents, such is not the case for the

Miami-Dade County project area. In addition, ocean disposal treats dredged material as a waste product suited only for disposal. This attitude contradicts present regulatory philosophy that values dredged material as a resource appropriate for recovery and reuse, a philosophy that initiated the FIND's long-range dredged material management program and that continues as one of its fundamental principles. Given the likely increase in future regulatory restrictions on the use of ocean disposal as well as the certain increase in the cost of obtaining the required permits, reliance on ocean disposal remains an inappropriate strategy for the long-term maintenance of the Waterway.

Open water placement represents a second alternative management strategy for material dredged from the Miami-Dade County segment of the ICWW. This particular method of material disposition was perhaps the most widely used approach before the growth of today's environmental regulatory programs that address wetland and benthic habitat protection. Discussions with representatives of the relevant regulatory agencies have repeatedly confirmed that open water placement within Florida's Intracoastal Waterway, as well as the estuaries through which it passes (e.g., Biscayne Bay, Indian River) carries unacceptable environmental impacts in terms of the destruction of wetlands or the degradation of benthic habitat. In addition, the FIND's dredged material management program intends to provide a permanent infrastructure of material management facilities that can support the long-term maintenance of the Waterway. Even if the initial placement operation could receive the necessary permits, the creation or expansion of open water islands represents a one-time opportunity for material placement. Successive placement operations would require the filling of additional open water areas, a process that would only lead to increased regulatory scrutiny. As a result, open water placement represents an unacceptable dredged material management strategy for Miami-Dade County.

Beach placement represents the third material management alternative considered for Miami-Dade County. Beach placement — that is, placing within a designated placement site dredged material compatible with the native beach sands — constitutes an approach to dredged material management that the State of Florida actively encourages. The FIND also regards this approach as an essential strategy for channel reaches which, based on historic data, are likely to contain beach quality sediments. These conditions are most typically encountered immediately adjacent to tidal inlets where Waterway shoals are formed primarily by sand driven through the inlet by waves and tides. Such conditions are present within the Waterway near Bakers Haulover Inlet. As discussed in Section 2.1.3, available sediment data suggests that shoal material in this channel segment comprises predominantly fine to medium sand with a relatively minor (<5%) component of silts and clays. Analysis has not yet quantified the degree of compatibility between the shoal material and the native beach sands. However, a high degree of compatibility is anticipated, consistent with the assumption that these shoals derive from littoral material driven through the inlet. Thus, beach placement will likely constitute the primary dredged material management strategy for the channel segment adjacent to Bakers Haulover Inlet.

In contrast, sediment data from the remainder of the project channel suggests greater variability in the quality of channel sediments. At the Port of Miami (Government Cut), roughly centered within the northern one-half of the Miami-Dade County project area, the greater depths within the Harbor Project's turning basin likely act as a sediment trap and limit the deposition of sand introduced though the inlet in the adjacent ICWW channel. North and south of the port, sediments are generally categorized as fine sand, but typically contain >5% finer material and thus appear less appropriate for beach placement. The inlet's restricted impact as a source of ICWW shoal material suggest that most ICWW shoal material in the northern portion of the project area likely derives from upland sources introduced through the discharge of the many canals and channelized tributaries to the Waterway or from the redistribution of sediment already within the Waterway.

South of the port, the authorized channel alignment passes through an area where natural depths generally fall at or below the project's 7-ft depth. Construction of the 7-ft project channel required dredging only through a limited number of sand banks within the project area's southern 9.5 miles. Recent survey has documented shoaling in these same areas, most likely as a result of the redistribution of sediments by the same tidal forces that originally formed the banks. Sampling and analysis (Section 2.1.3) has shown channel sediments in this area to be a mix of fine sand, shell, silt, and marine clays. As a result, the future compatibility of material dredged from the southern portion of the Miami-Dade County project area with native beach sands remains uncertain. Prudence dictates that, except for the channel segment adjacent to Bakers Haulover Inlet, beach placement should not form the primary dredged material management strategy. However, should event-specific analysis document that ICWW shoal material is suitable for beach placement, the FIND will cooperate with local interests in placing that material on the beach.

For all areas of the Miami-Dade County segment of the Waterway beyond the sedimentary influence of Bakers Haulover Inlet, centralized upland storage remains the preferred method of dredged material management. However, the specific conditions of Miami-Dade County dictate a modified form of the strategy of centralized upland storage compared to that previously developed for and applied to the Waterway in the other counties that comprise the Florida Inland Navigation District. Previous plans assumed the use of hydraulic dredging techniques as dictated by the relatively large volumes of dredging required, and the availability of relatively large sites within a reasonable distance of the Waterway. Upland storage, as previously applied, refers to the use of a diked containment area with appropriate outlet flow control structures. A hydraulic dredge pumps the dredged material in a sediment-water slurry to one end of the containment area, which thus serves as a settling basin within which the dredged sediment settles out of the transporting water. The basin outlet structure and pipeline then return the

residual, clarified water to the Waterway. The dewatered sediment then remains in the basin until, after multiple maintenance operations, the basin nears its design capacity. Ideally, given enough available acreage each basin's design provides sufficient capacity for the full 50-year projected storage requirement for the reach that basin is designated to serve. At or before the point at which the basin nears its design capacity, the material is removed from the basin for reuse or permanent storage elsewhere, and the basin's capacity is restored for continued use.

Such a strategy does not appear appropriate to the conditions within the Miami-Dade County project area. Outside of the influence of Bakers Haulover Inlet, and with the notable exception of the project area's southernmost segment in southern Biscayne Bay and northern Card Sound, the relatively small volumes of shoaling documented within the Waterway channel may not justify the use of a hydraulic dredge. Moreover, the intensive development throughout the Waterway corridor and the relative lack of vacant land within a reasonable distance of the Waterway channel precludes the dedication of sufficient acreage for the construction of a conventional containment basin.

However, the potential availability of small parcels directly fronting the Waterway suggests a modified upland storage strategy. Although possessing inadequate area for the construction of a multiple-use containment basin as needed to support hydraulic dredging, these sites can provide sufficient area for the offloading, short-term storage, and eventual transfer of material produced by a single mechanical dredging operation. Under this strategy, a mechanical dredge (i.e., clamshell) would excavate the shoal material and place the sediments into an adjacent barge. Upon reaching its capacity, the barge would then be hauled the relatively short distance to the offloading/storage site. Given deep-water access and an improved (bulkheaded) shoreline, a clamshell or backhoe would then transfer the relatively dry material to trucks or to a temporary stockpile on site. Such use would require only a minimal area for barge offloading and temporary material storage. Lacking deep-water access and an improved shoreline, slightly larger sites (i.e., >5 acres) could support the construction of a single-use containment basin that would allow the barge to be moored nearby and the sediment to be re-slurried and offloaded hydraulically. Implicit in either strategy is the need to remove the material off-site for beneficial reuse or disposal at a landfill before the next channel maintenance operation.

Should even temporary storage prove impractical or locally unacceptable, these small sites fronting the Waterway would serve only as material transfer points. Under this alternative scenario, the dredged material, after being offloaded from the barges at the transfer site, would then be trucked to a temporary storage site located farther west. The likely high per-acre cost of acquiring property located even well west of the coastal corridor dictates that the inland site(s) also be sized to provide storage only

for a single maintenance operation. As a result, like the small waterfront storage sites, the inland site(s) would also require that the stored material be offloaded before the next scheduled channel maintenance.

Notably, several other factors argue against the use of inland storage sites. In addition to the potential for unacceptably high acquisition costs, development costs for the inland storage sites would also be quite high. Given the level of regulatory protection afforded the Biscayne Aquifer that underlies much of Broward and Miami-Dade Counties, permitting conditions would likely require lining each site to prevent saline leachate from the stored sediment from contaminating local groundwater supplies. Similar concerns would also dictate that each site provides a system to control and collect the saline stormwater runoff from the stored material as well as its leachate. Absent adjacent tidal or marine waters, the saline discharge (leachate or runoff) from each site would have to be treated to reduce its chloride content before release to existing ditches or canals would be allowed. Conversely, preserving the sediment's salt content by covering the stockpiled material would likely render the material unsuitable for most beneficial reuse applications (e.g., construction fill, agricultural applications, etc.). Thus, the cost of acquiring suitable inland storage sites and the complexity of developing and operating these sites consistent with likely permitting constraints suggest that, to the greatest extent possible, temporary storage be restricted to waterfront sites.

Near Bakers Haulover Inlet, upland storage/material transfer will also serve an essential complementary role to the primary strategy of beach placement. Several reasons dictate the need for such complementary upland staging areas. First, the feasibility of beach placement depends highly on the quality of the sediment. Although sediment near Bakers Haulover Inlet will likely continue to be primarily sand and thus suitable for beach placement, future unforeseen circumstances could temporarily alter that trend. Extreme storms or other unanticipated mechanisms of uncontrolled runoff could form isolated shoals that contain sufficient fine-grained sediment to render the material unsuited for beach placement. Second, regulatory review may impose seasonal restrictions on beach placement related to protected species (e.g., sea turtles) or other habitat concerns coincident with critical shoaling. The refusal of the local community at large or of specific upland property owners to accept additional beach fill material or provide temporary easements could also produce unforeseen delays. For these reasons, prudence dictates the inclusion of an upland material transfer/temporary storage capability as an essential part of a beach placement strategy.

As mentioned above, the conditions found in the southern portion of the project area, within southern Biscayne Bay and northern Card Sound, suggest a slightly modified version of the upland storage/material transfer strategy described above. The area's predominantly rural/agricultural character

means that significant upland tracts within a reasonable distance of the shoreline remain potentially available. Typically, these tracts possess sufficient area to allow construction of a conventional dewatering basin. The more extensive shoaling in this channel segment (almost 87,000 cy in situ volume) also suggests that hydraulic dredging could be the more efficient dredging technique. However, the distance that the Waterway channel lies offshore in this area (up to 6 miles opposite Black Point) precludes pumping the dredged material from the dredging site within the authorized channel directly to a containment facility. Therefore, mechanical dredging would appear to be the more appropriate strategy. After loading, the barge would then transport the dredged material from the dredging site to a near shore mooring point. There the barge could be offloaded either hydraulically with the material transferred via pipeline to the containment facility, or mechanically with the material then trucked to an inland site for long-term storage.

3.1.2 Management Concept for Miami-Dade County

The preceding discussion leads to the following definition of the most appropriate dredged material management concept for the Intracoastal Waterway in Miami-Dade County:

(1) Given the concentration of shoaling around Bakers Haulover Inlet and the documented presence of beach-quality sediments in this segment of the Waterway, beach placement, supplemented by one or more upland material transfer or temporary storage sites, becomes the most appropriate management strategy for this channel segment.

(2) For the remainder of the project area beyond the inlet's influence and north of Government Cut, the small projected volume of shoaling supports mechanical dredging over the hydraulic dredging methods typically used for more extensive Waterway shoals. Under this approach, barges would transport the dredged material from the dredging site to small temporary storage/material transfer sites adjacent to the Waterway.

(3) Within northern Miami-Dade County, the small size and limited capacity of potential storage sites on the Waterway require that these sites temporarily store only the material produced by a single maintenance operation. The material must then be removed for beneficial reuse or disposal off-site before the next scheduled maintenance operation. Should even temporary storage prove impractical, these sites would serve only as material transfer points. Under this scenario, after the barges are offloaded at the transfer site, the dredged material would then be trucked to a site(s) located west of the coastal corridor. Sized to provide dry storage only

for a single maintenance operation, the inland site(s) would also require that the stored material be offloaded before the next scheduled channel maintenance.

(4) From Government Cut south to the Monroe County line, given the distance the ICWW channel lies offshore Biscayne Bay's western shoreline, mechanical dredging and barge transfer remains the appropriate channel maintenance strategy. Here, the scarcity of waterfront transfer sites may preclude offloading the barges mechanically. However, the potential availability of larger upland sites within a reasonable distance of the bayfront supports transferring the dredged material hydraulically from an appropriate near-shore barge mooring point to an upland dewatering/long-term storage site located a short distance inshore.

(5) All sites are to be operated and maintained as permanent dredged material management facilities.

The dredged material management concept, defined above, provides an essential focus to the planning process by establishing minimum standards and criteria for the identification and evaluation of candidate dredged material management sites.

3.1.3 Beneficial Use of Dredged Material

The beneficial use of the material dredged from the ICWW channel will complement, but not replace, the need to secure and develop dedicated, permanent upland facilities as described above. Typically, beneficial use of dredged material provides for only a single disposition of the material and thus does not replace the need for a permanent management facility. Moreover, such beneficial uses typically first require processing (that is, dewatering and drying) the dredged material in a containment facility or by other means. Examples of one-time beneficial use options include the creation or restoration of wetland or upland (i.e., spoil island) habitat. An example of the beneficial use of dredged material specific to the Miami-Dade County project area is the planned closure of the Munisport Landfill. The City of North Miami requires up to 500,000 cy of material to close this landfill, presently scheduled for FY2003-2004. The City has approached the FIND to consider such use for maintenance material removed from the Waterway. Notably, present USACE planning for channel maintenance does not anticipate any dredging within adjacent segments of the ICWW within the nest three years. Thus, it appears unlikely that any material from the ICWW will be available to contribute to the City's requirements consistent with its stated schedule for closure of the landfill.

The FIND encourages the approved reuse of dredged material. Indeed, the reuse of dredged material directly benefits the FIND by restoring capacity and thereby extending the design service life of its storage facilities. However, the maintenance requirements of the Waterway will likely continue long after the completion of any single project. As a result, the beneficial reuse of dredged material, in itself, cannot provide the needed long-term management capability for the ICWW and does not eliminate the need for the FIND to secure a permanent, dedicated dredged material management capability.

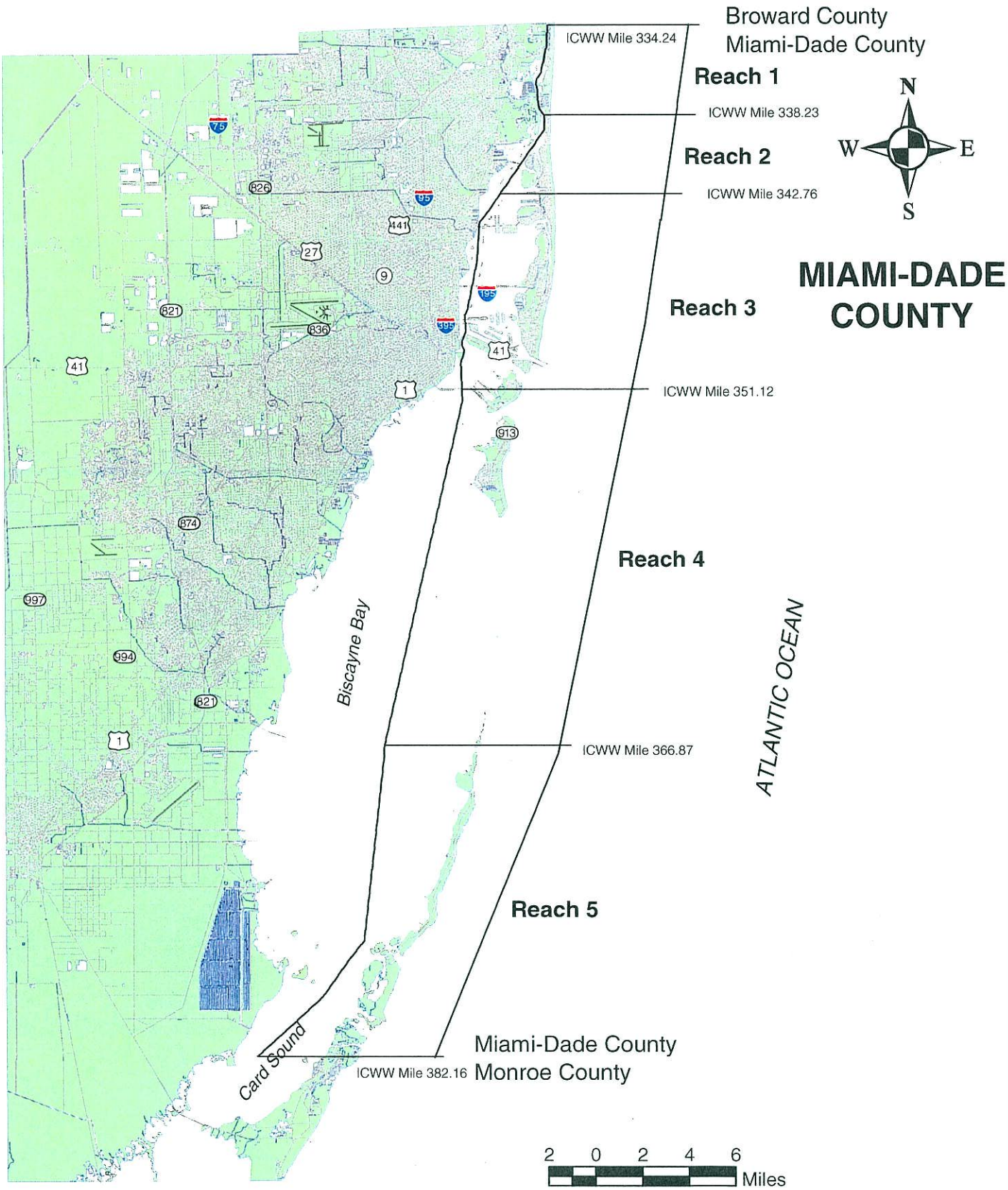
3.2 Delineation of Channel Reaches

The preceding dredged material management concept enabled the logical delineation of operational channel reaches within the Miami-Dade County segment of the Waterway. The resulting delineation reflects consideration of fundamental criteria embodied in the management concept — historic shoaling patterns, sediment quality, projected material transfer and storage requirements, area demographics, and site availability. When considered collectively, the individual constraints imposed by each of these factors dictated the logical segmentation of the channel for the management of dredged material as discussed below. Ideally, operational reaches are defined such that one or at most two sites will serve each reach's management requirement consistent with its specified management strategy.

As discussed above, beach placement has been and will continue as the core management strategy for the channel segment nearest Bakers Haulover where most of the documented shoaling lies and beach-quality sediments likely dominate. Accordingly, the area characterized by beach-quality sediments will define one reach. A second reach will then encompass the remaining distance from the vicinity of Bakers Haulover north to the Broward County line, with a third reach extending from the southern limit of inlet-dominated sediments southward to the vicinity of Government Cut, the Miami Harbor Project, and the southern terminus of the 10-ft Project segment of the ICWW.

Continuing southward, approximately 33 channel miles comprise the 7-ft Project from Government Cut south to the Monroe County line. The low projected dredging requirement, the environmental protection afforded much of the area and, given the distance offshore the channel lies throughout most of this segment, the limited number of upland sites directly accessible from the channel suggest that no more than two reaches define the remainder of the project area. One or at most two additional inland sites will also be selected to provide the needed long-term storage requirement as discussed above.

The above considerations led to the definition of five reaches, ranging from 3.99 miles to 15.75 miles in length, within the Miami-Dade County project area. Figure 3.1 presents the resulting delineation



TAYLOR ENGINEERING INC. 9000 Cypress Green Drive, Suite 200 Jacksonville, Florida 32256	Figure 3.1 Reach Delineation Long Range Dredged Material Management Plan Intracoastal Waterway Miami-Dade County, Florida	Project C2002-036D Revision Sheet Date March, 2003

also summarized in Table 3.1. Figure 3.2 presents the locations of previous maintenance dredging and documented shoals by channel reach. Table 3.2 organizes by channel reach the previous summary of recent shoaling as presented in Table 2.2. Table 3.2 also presents the projected maintenance dredging volumes and the corresponding 50-year material storage requirements for each reach. As an indication of the relative shoaling rate within each reach, the mean volume of maintenance dredging required annually per channel mile is also included.

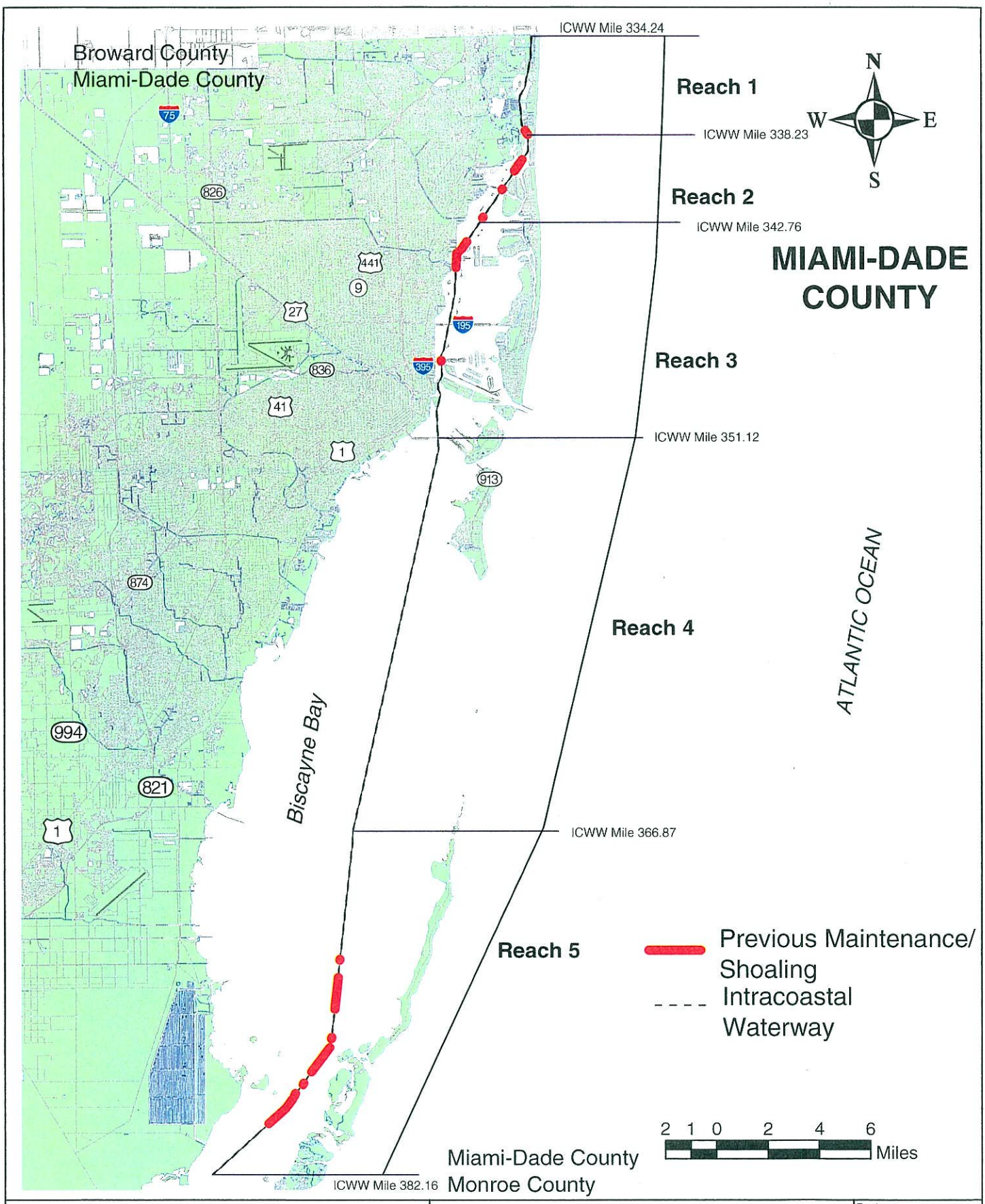
Reach I, the northernmost reach, extends from a point 530 ft south of the Broward/Miami-Dade County line (ICWW mile 334.24; Cut DA-1, station 0+00) southward 3.99 miles to a point opposite the northern end of Haulover Beach County Park (ICWW mile 338.23; Cut DA-8, station 0+00), approximately 1.2 miles north of Bakers Haulover. The projected 50-year material storage capacity for this reach, 33,972 cy, represents less than 3% of the projected requirement for the entire Miami-Dade County project area. Available data describes the channel sediments within this reach as gray to brown, clayey sand, with a decreasing fine-grained component nearer the inlet. Given the small volume of shoaling since the channel was deepened to its present –10 ft MLW, future maintenance is projected to be required no more than once every 10 – 20 years. Based on a 20-year maintenance interval, each operation should require an average storage volume of 13,589 cy.

Reach II extends southward 4.53 miles from the end of Reach I to 1.2 miles north the J.F. Kennedy (N.E. 79th Street) Causeway (ICWW mile 342.76; Cut DA-9, station 178+50) and corresponds to the vicinity of Bakers Haulover Inlet. All historic maintenance dredging documented within the Dade County project area since the channel was constructed to its present dimensions has occurred within this reach. The projected 50-year storage requirement for this reach, 1,009,795 cy, represents almost 82% of the total requirement for the project area. One of the two existing easements determined to have some dredged material management potential fall within this reach, with the other lying just south. Available sediment data confirm that channel sediments within this reach consist primarily of beach quality material. Given that this channel segment has required eight separate maintenance operations since its 1965 deepening to the present –10 ft MLW depth, future maintenance is projected to be required about once every four to five years. Based on a five-year maintenance interval, each operation should require an average storage volume of 100,980 cy.

Reach III extends from the southern end of Reach II southward 8.36 miles to the Rickenbacker Causeway (ICWW mile 351.12; Cut D-3, station 57+80). This reach encompasses the southernmost 5.52 miles of the 10-ft Project, 1.01 miles within the Miami Harbor Project (including the Port of Miami Turning Basin, the Bayfront Park Channel, and the Miami River Channel), and the northernmost 1.83

Table 3.1 Delineation of Operational Channel Reaches, Intracoastal Waterway, 10- and 7-ft Projects, Miami-Dade County

Reach	From	To	Length (miles)	50-year Storage Requirement (cy)	Projected Maintenance Interval (yrs)	Storage Requirement/ Operation (cy)
I	ICWW Mile 334.24, Cut DA-1/sta 0+00 (530 ft south of Broward/Miami-Dade County line)	ICWW Mile 338.23, Cut DA-8/sta 0+00 (Haulover Beach County Park)	3.99	33,972	20	13,589
II	ICWW Mile 338.23, Cut DA-8/sta 0+00 (Haulover Beach County Park)	ICWW Mile 342.76, Cut DA-9/sta 178+50 1.2mi N of J.F. Kennedy (N.E. 79th St.) Causeway	4.53	1,009,795	5	100,980
III	ICWW Mile 342.76, Cut DA-9/sta 178+50 1.2 mi N of J.F. Kennedy (N.E. 79th St.) Causeway	ICWW Mile 351.12, Cut D-3/Sta. 57+80 Rickenbacher Causeway	8.36	37,677	20	15,071
IV	ICWW Mile 351.12, Cut D-3/Sta. 57+80 Rickenbacher Causeway	ICWW Mile 366.87, Cut D-5/sta 0+00 (east of Black Point at northern edge of Featherbed Bank)	15.75	0	n/a	0
V	ICWW Mile 366.87, Cut D-5/sta 0+00 (east of Black Point at northern edge of Featherbed Bank)	ICWW Mile 382.16, Cut D-9/sta 201+74.60 Miami-Dade/Monroe County line	15.29	153,284	20	61,314
		Total	**47.92**	**1,234,728**		**190,954**



TAYLOR ENGINEERING INC. 9000 Cypress Green Drive, Suite 200 Jacksonville, Florida 32256	Figure 3.2 Areas of Historic Maintenance Dredging/ Recent Shoaling By Reach Long Range Dredged Material Management Plan Intracoastal Waterway, Miami-Dade County, Florida	Project C2002-036D Revision Sheet Date March, 2003

Table 3.2 Summary of Historic Maintenance Dredging/Recent Shoaling, Intracoastal Waterway, Miami-Dade County, 1938 - 1999

	Previous Maintenance/Recent Shoaling								Reach Summary						
	ICWW Mileage		Cut/Station		Length (ft)	Year	Design Volume (cy)	Pay Volume (cy)**	Total Maintenance Volume (cy)	Total Shoaling Volume (cy)	Total Volume (cy)	Vol/yr (cy)	Vol/yr/mi (cy)	Projected 50-yr Dredging Vol (cy)	Projected 50-yr Storage Volume (cy)
Reach	From	To	From	To											
I	337.31	337.31	DA-5 / 13+72	DA-5 / 13+72	-	1999*	51	*61*							
	338.01	338.23	DA-7 / 9+67	DA-8 / 0+00	1,119	1999*	9,243	*10,999*		11,061	11,061	316	79	15,801	33,972
II	339.26	339.75	DA-9 / 22+00	DA-9 / 48+00	2,600	1994	52000*	24,560							
	339.28	339.75	DA-9 / 23+50	DA-9 / 48+00	2,450	1998	36,000	34,882							
	339.29	339.44	DA-9 / 23+99	DA-9 / 31+79	780	1999*	3,278	*3,900*							
	339.29	339.69	DA-9 / 24+00	DA-9 / 45+00	2,100	1980	52,000	43,163							
	339.29	339.75	DA-9 / 24+00	DA-9 / 48+00	2,400	1988	59,234	59,324							
	339.33	339.75	DA-9 / 26+00	DA-9 / 48+00	2,200	1975	69,404	69,404							
	339.37	339.75	DA-9 / 28+00	DA-9 / 48+00	1999*	1991	32000*	31,279							
	339.41	339.58	DA-9 / 30+00	DA-9 / 39+00	900	1985	34,400	34,407							
	339.41	339.73	DA-9 / 30+00	DA-9 / 47+00	1,700	1969	30,000	25,990							
	339.53	339.54	DA-9 / 36+60	DA-9 / 36+79	19	1999*	89	*106*							
	339.72	339.81	DA-9 / 46+39	DA-9 / 51+00	461	1999*	865	*1,030*							
	340.65	340.77	DA-9 / 95+69	DA-9 / 101+69	600	1999*	277	*330*							
	341.84	342.01	DA-9 / 158+58	DA-9 / 167+19	861	1999*	332	*395*	323,009	5,761	328,770	9,393	2,074	469,672	1,009,795
III	342.89	342.94	DA-9 / 213+79	DA-9 / 216+58	279	1999*	109	*129*							
	343.03	343.22	DA-9 / 221+48	DA-9 / 231+07	959	1999*	1,518	*1,806*							
	343.26	343.47	DA-9 / 233+48	DA-10 / 2+51	1,092	1999*	1,963	*2,337*							
	343.57	343.79	DA-10 / 8+12	DA-11 / 3+61	1,116	1999*	4,409	*5,247*							
	343.89	343.95	DA-11 / 8+98	DA-11 / 12+04	306	1999*	1,627	*1,937*							
	344.25	344.29	DA-11 / 27+92	DA-11 / 29+86	194	1999*	254	*302*							
	346.56	346.56	DA-12 / 62+06	DA-12 / 62+06	-	1999*	30	*36*							
	347.24	347.29	DA-12 / 98+43	DA-12 / 100+92	249	1999*	36	*43*							
	347.88	347.91	DA-14 / 4+41	DA-14 / 5+60	119	1999*	314	*374*							
	348.01	348.01	DA-14 / 10+87	DA-14 / 10+87	-	1999*	49	*58*	0	12,267	12,267	350	42	17,524	37,677
IV	no previous maintenance/recent shoaling reported								0	0	0	0	0	0	0
V	369.91	369.91	D-6 / 138+78	D-6 / 138+78	-	1999*	15	*18*							
	370.19	370.19	D-6 / 153+51	D-6 / 153+51	-	1999*	17	*20*							
	371.01	371.01	D-6 / 196+73	D-6 / 196+73	-	1999*	22	*26*							
	371.14	371.14	D-6 / 203+83	D-6 / 203+83	-	1999*	21	*25*							
	371.48	371.59	D-6 / 221+66	D-6 / 227+58	592	1999*	82	*98*							
	371.92	372.01	D-6 / 244+97	D-6 / 249+80	483	1999*	60	*71*							
	372.51	373.96	D-6 / 275+90	D-6 / 352+65	7,675	1999*	15,937	*18,965*							
	374.94	375.30	D-6 / 404+69	D-6 / 423+43	1,874	1999*	451	*537*							
	375.37	376.58	D-7 / 1+15	D-8 / 4+93	6,428	1999*	23,990	*28,548*							
	377.13	377.16	D-8 / 34+06	D-8 / 35+23	117	1999*	137	*163*							
	377.35	377.35	D-8 / 45+20	D-8 / 45+20	-	1999*	51	*61*							
	377.51	379.27	D-8 / 53+76	D-9 / 49+10	9,284	1999*	32,309	*38,448*	0	86,980	86,980	1,426	93	71,295	153,284
Total							**378,575**	**439,078**	**323,009**	**116,069**	**439,078**			**574,292**	**1,234,728**

*data from 1999 channel survey performed by Sea Systems, Inc. for the Jacksonville District, U.S. Army Corps of Engineers
**numbers in italics are based on the relationship: Pay volume = (1.19)Design Volume

miles of the 7-ft Project. The projected 50-year storage requirement for this reach, less than 38,000 cy, suggests the likely requirement of only a minimal dredged material management site sufficient to support a barge off-loading operation. Available data indicate that, outside the Miami Harbor Project segment, channel sediments within this reach consist of a mix of fine sand and silt and thus appear unsuitable for beach placement. Given the small volume of shoaling since the channel was deepened to its present –10 ft MLW, future maintenance is projected to be required no more than once every 10 – 20 years. Based on a 20-year maintenance interval, each operation should require an average storage volume of 15,071 cy.

Reach IV extends southward 15.75 miles from the end of Reach III to east of Black Point at the northern edge of Featherbed Bank (ICWW mile 366.87; Cut D-5, station 0+00). This reach encompasses the area in which the authorized channel alignment passes through an area where natural depths fall at or below the project's 7-ft depth. As a result, no dredging was required to construct the channel to its authorized dimensions and no shoaling above the required depth has yet occurred. However, unforeseen circumstances (e.g., extreme storms) could result in future shoals that would require dredging to reestablish project depth. Consistent with the FIND's long-term planning goals, prudence dictates a dredged material management capability for this reach despite its present lack of shoaling. Available data indicates that channel sediments within this reach contain a mix of fine sand, silt, marine clays, and shell.

The southernmost reach, Reach V, continues from Black Point southward 15.29 miles to the Monroe County line. This channel segment corresponds to the area where construction of the 7-ft Project channel required only minimal dredging through several discrete sand banks. Recent survey has documented a total shoal volume of 86,980 cy distributed throughout the reach's southern 9.6 miles. This shoal volume corresponds to a projected 50-year storage requirement of 153,284 cy, or about 12% of the total projected storage requirement for the entire Dade County project area. Similar to the southern portion of Reach IV, the channel typically lies several miles off the western shore of Biscayne Bay, and reaches its maximum offshore distance of over 6 miles opposite the Black Point Marina. Available data indicates that channel sediments within this reach consist predominantly of fine gray sand with a relatively minor component of silts and clays (less than 6.1%). Given the relatively small volume of shoaling in the 64 years since this channel segment was constructed to its present –7 ft MLW, future maintenance is projected to be required no more than once every 10 – 20 years. Based on a 20-year maintenance interval, each operation should require an average storage volume of 61,314 cy.

3.3 Identification of Candidate Sites

Defining the management concept and delineating logical channel reaches provided the means to evaluate existing easements with respect to the long-term needs of the Waterway in Miami-Dade County.

As discussed in Section 2.3, the maximum storage capacity within the existing easements (72,013 cy; Table 2.9) represents less than 6% of the projected 50-year storage requirement of the Miami-Dade County project area (1,234,728 cy; Table 2.2). Given the need to eventually transfer the dredged material for long-term storage, the development of these island sites may not represent the most operationally efficient and cost effective strategy to meet the needs of future Waterway maintenance. Clearly, the use of small island sites remains inconsistent with the Management Concept established in Section 3.1. Therefore, meeting these established criteria dictated the identification and evaluation of additional alternative sites.

The search for additional candidate sites first focused on the identification of suitable temporary storage/material transfer sites directly fronting the Waterway as necessary for mechanical offloading, or with reasonable pipeline access as appropriate for hydraulic offloading. Sites within the latter category had to contain sufficient area to allow construction of a dewatering/containment basin. The process next sought to identify a number of relatively larger tracts west of the coastal corridor. As described in the Management Concept, this last group would provide the one, or at most two, secondary sites needed to provide for the storage of material transferred from the smaller sites located nearer the Waterway, should storage at the latter sites prove impractical.

In the northern portion of the project area, the scarcity of undeveloped or otherwise vacant sites near the Waterway prevented the site identification process from initially discriminating among sites based on their designated land-use or that of adjacent properties. In this region, existing or adjacent land-use was considered only later in the evaluation process to establish a site's suitability relative to other sites in the same category. However, existing and adjacent land-use did constitute an important screening tool in the identification of long-term storage sites west of the coastal corridor. Here, tracts designated for industrial, commercial, or agricultural uses were initially judged more suitable than those with residential, conservation, or other public use designations. Also considered was the degree to which land clearing, logging, agriculture, or mining had previously disturbed or degraded a site's environmental quality. However, initial site identification deferred consideration of other environmental factors such as the quality of existing habitat or the diversity of vegetation to the final site evaluation process as discussed in Section 4.1.

An office review of all available resource materials began the site identification process. Reference materials included 1994 and 1995 NHAP/NAPP color-IR aerial photography (1:24,000), USGS 7.5-minute topographic quadrangle maps (1:24,000), 1994 FIND blueline aerials (1:2,400), county and municipal Comprehensive Plan Future Land Use maps (various scales), U.S. Department of the Interior, U.S. Fish and Wildlife Service Wetland Inventory maps (1:24,000) and U.S. Soil Conservation Service maps (1:20,000). This process identified 63 additional candidate sites. Given the pace of

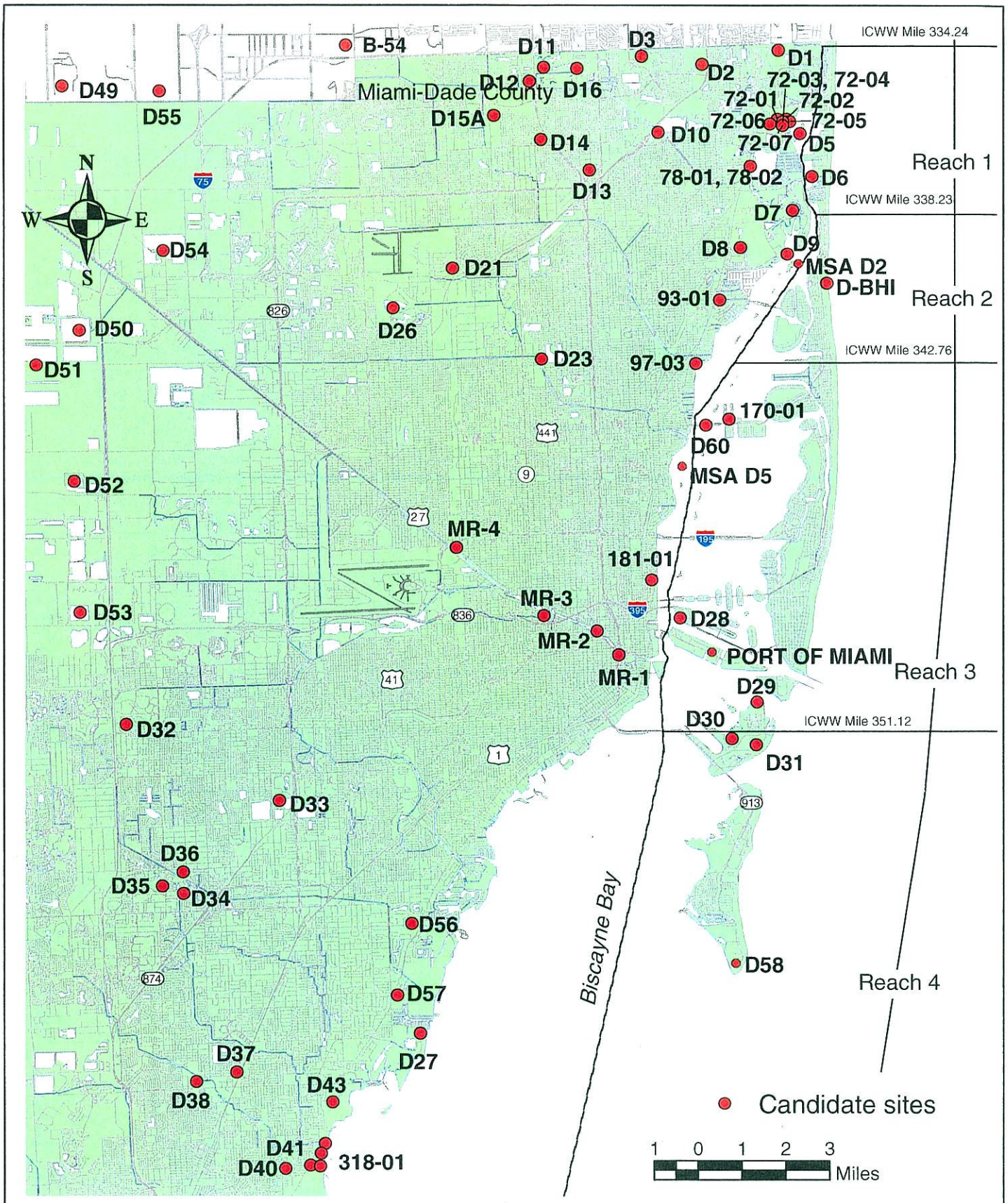
development within Miami-Dade County, current (1999) Miami-Dade County tax aerials were then obtained for each candidate site used to update each site's present land use. Review of these aerials eliminated 11 candidate sites with obvious land use conflicts (i.e., recent development) not shown in the 1994 aerials. This process yielded 52 alternative candidate sites, or between 5 and 22 for each reach. The varying demographics and development among the five reaches dictated this disparity.

To address this disparity, the FIND contracted a real estate analyst to identify developed, abandoned, or underused commercial properties that could not have been identified through the procedures described, but that could represent reasonable acquisition opportunities consistent with the FIND's objectives. Of the 96 parcel identified by the analyst, consideration of the most basic site evaluation criteria (e.g., acreage, access, etc.) eliminated all but 26. Ongoing discussions with representatives of the Metro-Dade DERM and other local contacts also identified six additional candidate sites, including four along the Miami River.

Figures 3.3a & 3.3b locates all 84 alternative candidate sites —52 identified through aerial photography and other resource materials, 26 derived from the real estate analyst's report, and six identified through discussions with local contacts — as well as the two sites within existing easements with potential for continued use as discussed in Section 2.2. The following section describes the next step in the identification and evaluation of alternative candidate sites — site inspection.

3.4 Site Inspections

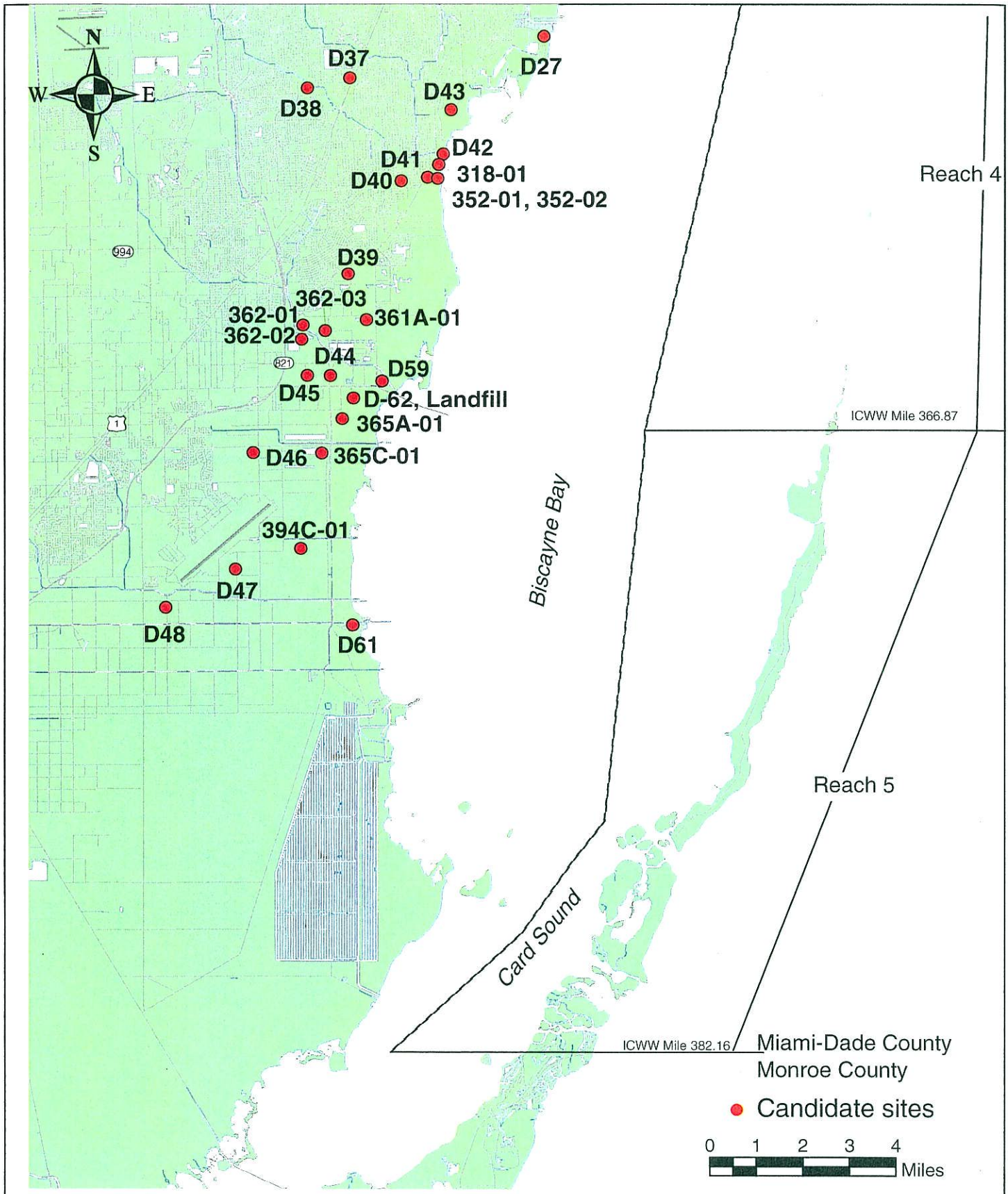
Field inspection of the 52 candidate sites identified from aerial photography, including the two sites within existing easements, was conducted April 10 – 27, 2000. Inspection of the 26 additional candidate sites derived from the real estate analyst's report, as well as the six suggested by local FIND contacts, took place April 3 – 7, 2001. A team consisting of one engineer and one biologist inspected each site to determine existing and adjacent land use, to characterize and preliminarily delineate and quantify on-site vegetation communities, most notably wetland habitat and associated environmental liabilities, and to assess the general suitability of each site for development as permanent dredged material management facilities. Also noted during the site inspections were site topography, general soil conditions, existing or potential road access, possible pipeline routes, and obvious archeological features, if present. In addition, a video and/or still photography recorded significant features of each site and documented the on-site and adjacent land-use at the time of the inspection.



TAYLOR ENGINEERING INC.
9000 Cypress Green Drive, Suite 200
Jacksonville, Florida 32256

Figure 3.3a
Candidate Sites
Long Range Dredged Material Management Plan
Intracoastal Waterway,
Miami-Dade County, Florida

Project	C2002-036D
Revision	
Sheet	
Date	March, 2003



TAYLOR ENGINEERING INC. 9000 Cypress Green Drive, Suite 200 Jacksonville, Florida 32256	Figure 3.3b Candidate Sites Long Range Dredged Material Management Plan Intracoastal Waterway, Miami-Dade County, Florida	Project C2002-036D Revision Sheet Date March, 2003

Within each site, the inspection team assessed ecological conditions by combined photogrammetry and ground-truthing as necessary to identify and map vegetation communities. The 1999 Miami-Dade County tax aerials (1"=200 ft) and the 1994 FIND aerials (1"=200 ft) served as the primary field mapping resource. Vegetation associations and other salient site features were mapped in the field by drawing on the blueline aerials. However, all other resource materials discussed previously were available for reference and often checked to aid in the interpretation of site conditions. The inspections also noted observations of significant wildlife species when encountered on-site, including the presence or sign of wildlife species protected by the state or federal government. The aerial photography, on-site photography, and field notes then guided mapping the land use and vegetation communities on each site to Level 3 of the Florida Land-Use and Cover and Forms Classification System (FLUCS) (FDOT, 1985). The individual site maps, in turn, guided each candidate site's capacity analysis and evaluation under the full standard set of engineering, operational, environmental, socioeconomic, and land-use criteria. Table 3.3 summarizes the results of each candidate site's capacity analysis as well as other pertinent site parameters. Chapter 4.0 presents the full set of evaluation criteria as well as the recommended dredged material management sites derived from the evaluation process.

Table 3.3 Candidate Sites, Intracoastal Waterway, Miami-Dade County

Reach	Site	Designated Use	ICWW Mileage	Mapped Area (ac)	Containment Area (ac)	Impacted Area (ac)	Buffer Area (ac)	Total Site Area (ac)	Storage Capacity (cy)	Wetlands W/I Mapped Area (ac)	Comprehensive Plan Designation	Comment
DA-1	B-54	Multi-Reach Inland Storage	334.11	573.21	N/A	89.41	19.04	108.45	1,153,895	19.33	Regional Activity Center	Transmission line corridor running through site
	D-1	Multi-Reach Inland Storage	334.32	93.88	N/A	Insufficient Area	N/A	N/A	N/A	18.26	Residential (MHD)	High density residential under construction
	D-3	Multi-Reach Inland Storage	334.44	112.37	N/A	11.57	12.31	23.88	149,330	0	EPP, Industrial & Office, Residential (LMD)	Commercial Use -- Land surrounding Bell South and AT&T corporate facilities
	D-2	Multi-Reach Inland Storage	334.63	81.88	N/A	5.52	16.27	21.79	71,245	0	Industrial & Office	Old landfill currently under development for a planned community park
	D-11	Multi-Reach Inland Storage	334.68	175.68	N/A	Insufficient Area	N/A	N/A	N/A	115.13	Residential (MD)	Wetland areas (115.13-acres) and open water (33.73-acres) predominant throughout the site
	D-16	Multi-Reach Inland Storage	334.74	113.69	N/A	Insufficient Area	N/A	N/A	N/A	61.55	Residential (LD & LMD)	Site contains four large transmission towers
	D-12	Multi-Reach Inland Storage	335.02	56.32	N/A	10.98	8.22	19.2	141,715	30.21	Residential (MD)	Site is bounded on the south by Snake Creek Canal
	D-49	Multi-Reach Inland Storage	335.09	567.65	N/A	Insufficient Area	N/A	N/A	N/A	0	Parks & Recreation	Former limerock mine, Being developed as lakefront residential community
	D-55	Multi-Reach Inland Storage	335.19	319.42	N/A	Insufficient Area	N/A	N/A	N/A	0	Parks & Recreation	Former limerock mine, Being developed as lakefront residential
	D-15A	Multi-Reach Inland Storage	335.82	103.59	N/A	10.96	11.78	22.74	141,457	0	Business & Office	Southeast of Ives Dairy Rd and SR 817 intersection

Table 3.3 Candidate Sites, Intracoastal Waterway, Miami-Dade County

Reach	Site	Designated Use	ICWW Mileage	Mapped Area (ac)	Containment Area (ac)	Impacted Area (ac)	Buffer Area (ac)	Total Site Area (ac)	Storage Capacity (cy)	Wetlands W/I Mapped Area (ac)	Comprehensive Plan Designation	Comment
DA-1 Cont.	72-02	Material Rehandling (Barge Offloading)	335.84	2.45	N/A	0.77	1.68	2.45	N/A	0	Industrial & Office	Thunder Alley (2), Black Fin
	72-01	Material Rehandling (Barge Offloading)	335.84	2.95	N/A	1.08	1.87	2.95	N/A	0	Industrial & Office	Thunder Alley (1), Fort Apache Marina
	72-03, 72-04	Material Rehandling (Barge Offloading)	335.95	2.86	N/A	1.01	1.85	2.86	N/A	0	Industrial & Office	Thunder Alley (3 & 4), Const. Equipment Storage
	72-05	Material Rehandling (Barge Offloading)	335.95	6.65	N/A	1.72	4.93	6.65	N/A	0	Industrial & Office	Thunder Alley (5), Adjacent to Dumbfoundling Bay
	72-06	Material Rehandling (Barge Offloading)	336.02	2.3	N/A	Insufficient Area	N/A	N/A	N/A	0	Industrial & Office	Thunder Alley (6), Hi-Lift Marina
	72-07	Material Rehandling (Barge Offloading)	336.04	3.7	N/A	1.52	2.18	3.7	N/A	0	Residential (MHD)	Thunder Alley (7)
	D-10	Multi-Reach Inland Storage	336.19	43.2	N/A	Insufficient Area	N/A	N/A	N/A	0	Residential (LD)	Small man-made lake (1.69-acre) surrounded by residential development
	D-5	Dewatering & Short-Term Storage (Single Operation)	336.24	43.36	Insufficient Area	N/A	N/A	N/A	N/A	0	Residential (MHD)	Williams Island gated community
	D-14	Multi-Reach Inland Storage	336.41	49.59	N/A	6.89	25.48	32.37	88,927	0	Parks & Recreation	Rolling Oaks Park
	78-01, 78-02	Material Rehandling (Barge Offloading)	336.92	40.66	N/A	8.73	5.02	13.75	N/A	20.29	Business & Office	Maule Lake Marina & East Greynolds Park
	D-13	Multi-Reach Inland Storage	337.11	41.18	N/A	14.84	16.64	31.48	191,535	0	Business & Office	Site is located north of the U.S. 441 and Florida Turnpike intersection

Table 3.3 Candidate Sites, Intracoastal Waterway, Miami-Dade County

Reach	Site	Designated Use	ICWW Mileage	Mapped Area (ac)	Containment Area (ac)	Impacted Area (ac)	Buffer Area (ac)	Total Site Area (ac)	Storage Capacity (cy)	Wetlands W/I Mapped Area (ac)	Comprehensive Plan Designation	Comment
DA-1 Cont.	D-7	Dewatering & Long-Term Storage (Multiple Operation)	338.09	359.56	Insufficient Area	N/A	N/A	N/A	N/A	109.02	Parks & Recreation	Oleta River State Recreation Area
DA-2	D-8	Dewatering & Long-Term Storage (Multiple Operation)	338.99	428.19	9.28	12.5	11.93	24.43	95,247	192.22	Parks & Recreation	FIU campus, 171-acres of mangrove, old solid waste landfill
	D-54	Multi-Reach Inland Storage	339.09	458.91	N/A	60.17	10.36	70.53	776,552	3.47	Open Land	Holding ponds created by the extraction of limerock resources
	D-9	Dewatering & Short-Term Storage (Single Operation)	339.2	57.04	1.91	3.45	7.6	11.05	7,341	7.79	Institutional & Public Facility	Southern portion of FIU North Miami campus
	MSA D-2	Dewatering & Short-Term Storage (Single Operation)	339.34	16.81	Insufficient Area	N/A	N/A	N/A	N/A	2.77	Parks & Recreation	Sandspur Island -- Haulover Inlet Spoil Island Enhancement Project
	D-BHI	Beach Placement	339.45	0	N/A	N/A	N/A	N/A	N/A	0	N/A	Unspecified beach placement area south of Baker's Haulover Inlet
	D-21	Multi-Reach Inland Storage	339.6	144.35	N/A	50.52	14.23	64.75	652,030	0	Industrial & Office	Undeveloped land adjacent to Opa-Locka Airport
	93-01	Material Rehandling (Barge Offloading)	340.39	5.7	Insufficient Area	N/A	N/A	N/A	N/A	0	Residential (LMD)	US 1 and Broad Causeway Intersection
	D-26	Multi-Reach Inland Storage	340.71	490.71	N/A	48.44	33.19	81.63	625,201	0	Parks & Recreation	Amelia Earhart Park

Table 3.3 Candidate Sites, Intracoastal Waterway, Miami-Dade County

Reach	Site	Designated Use	ICWW Mileage	Mapped Area (ac)	Containment Area (ac)	Impacted Area (ac)	Buffer Area (ac)	Total Site Area (ac)	Storage Capacity (cy)	Wetlands W/I Mapped Area (ac)	Comprehensive Plan Designation	Comment
DA-2 Cont.	D-50	Multi-Reach Inland Storage	341.29	780.74	N/A	180.05	29.64	209.69	2,323,845	0	Open Land	Holding ponds created by the extraction of limerock resources
	D-23	Multi-Reach Inland Storage	342.12	32.27	N/A	Insufficient Area	N/A	N/A	N/A	0	Residential (LMD)	Miami Shores Public Works Complex
	97-03	Dewatering & Short-Term Storage (Single Operation)	342.21	7.41	Insufficient Area	N/A	N/A	N/A	N/A	0	Residential (MD)	Lear School
	D-51	Multi-Reach Inland Storage	342.24	624.78	N/A	Insufficient Area	N/A	N/A	N/A	178.13	Open Land	Holding ponds created by the extraction of limerock resources
DA-3	168-01	Dewatering & Short-Term Storage (Single Operation)	343.7	4.41	Insufficient Area	N/A	N/A	N/A	N/A	0	Residential (MHD)	Undeveloped urban land adjacent to a railroad and Little River Canal
	168-02	Dewatering & Short-Term Storage (Single Operation)	343.7	2.5	Insufficient Area	N/A	N/A	N/A	N/A	0	Residential (MHD)	Site contains Little River Canal lock structure
	170-01	Material Rehandling (Barge Offloading)	343.75	5.71	N/A	1.7	3.38	5.08	N/A	0	Residential (MHD)	North Bay Village site
	168-03	Dewatering & Short-Term Storage (Single Operation)	343.81	1.9	Insufficient Area	N/A	N/A	N/A	N/A	0	Business & Office	Commercial Use -- Appears to be a gated parking lot for an adjacent business
	D-60	Material Rehandling (Barge Offloading)	343.94	18.56	N/A	1.32	1.55	2.87	N/A	4.36	Parks & Recreation	Pelican Harbor Marina & Park

Table 3.3 Candidate Sites, Intracoastal Waterway, Miami-Dade County

Reach	Site	Designated Use	ICWW Mileage	Mapped Area (ac)	Containment Area (ac)	Impacted Area (ac)	Buffer Area (ac)	Total Site Area (ac)	Storage Capacity (cy)	Wetlands W/I Mapped Area (ac)	Comprehensive Plan Designation	Comment
DA-3 Cont.	MSA D-5	Dewatering & Short-Term Storage (Single Operation)	344.76	8.22	Insufficient Area	N/A	N/A	N/A	N/A	3.16	Parks & Recreation	Biscayne Bay Spoil Island Enhancement #6
	D-52	Multi-Reach Inland Storage	345.24	576.91	N/A	Insufficient Area	N/A	N/A	N/A	124.13	Open Land	Holding ponds created by the extraction of limerock resources
	MR-4	Material Rehandling (Barge Offloading)	347.01	6.6	N/A	2.94	3.66	6.6	N/A	0	Industrial & Office	FPT & T Florida LLC
	181-01	Material Rehandling (Barge Offloading)	347.64	4.99	N/A	1.09	3.63	4.72	N/A	0	Residential (HD)	Finger Multifamily site @ Pace Park
	D-53	Multi-Reach Inland Storage	348.31	245.63	N/A	19.23	4.73	23.96	248,192	0	Open Land	Holding ponds created by the extraction of limerock resources
	D-28	Dewatering & Short-Term Storage (Single Operation)	348.43	79.23	7.38	11.16	9.58	20.74	46,044	0	Parks & Recreation	Watson Island Park
	MR-3	Material Rehandling (Barge Offloading)	348.5	7.46	N/A	Insufficient Area	N/A	N/A	N/A	0	Industrial & Office	Revenge Marine/Consolidated Yacht Corp.
	Port of Miami	Material Rehandling (Barge Offloading)	348.62	0	N/A	N/A	N/A	N/A	N/A	0	Commercial	Commercial Area -- Port Facilities
	MR-2	Material Rehandling (Barge Offloading)	348.72	1.17	N/A	Insufficient Area	N/A	N/A	N/A	0	Residential (MD)	Spring Garden Point Park
	MR-1	Material Rehandling (Barge Offloading)	349.33	0.61	N/A	0.61	0	0.61	N/A	0	Business & Office	200 S.W. North River Drive
	D-32	Multi-Reach Inland Storage	350.98	168.09	N/A	11.71	8.05	19.76	151,137	0	Parks & Recreation	Tamiami Park adjacent to FIU North Miami campus

Table 3.3 Candidate Sites, Intracoastal Waterway, Miami-Dade County

Reach	Site	Designated Use	ICWW Mileage	Mapped Area (ac)	Containment Area (ac)	Impacted Area (ac)	Buffer Area (ac)	Total Site Area (ac)	Storage Capacity (cy)	Wetlands W/I Mapped Area (ac)	Comprehensive Plan Designation	Comment
DA-4	D-29	Dewatering & Long-Term Storage (Multiple Operation)	350.42	80.87	14.14	18.07	32.94	51.01	163,073	17.84	Parks & Recreation	Northern Virginia Key
	D-30	Dewatering & Long-Term Storage (Multiple Operation)	351.25	80.23	Insufficient Area	N/A	N/A	N/A	N/A	72.93	Environmentally Protected Parks	Western Virginia Key -- Site consists primarily of mangrove swamp
	D-31	Dewatering & Long-Term Storage (Multiple Operation)	351.38	116.18	12.04	15.59	30.97	46.56	156,242	0	Parks & Recreation	Eastern Virginia Key
	D-33	Multi-Reach Inland Storage	352.71	277.93	N/A	Insufficient Area	N/A	N/A	N/A	0	Parks & Recreation	Tropical Park
	D-34	Multi-Reach Inland Storage	354.38	12.3	N/A	Insufficient Area	N/A	N/A	N/A	0	Institutional & Public Facility	Small parcel located adjacent to Snapper Creek
	D-35	Multi-Reach Inland Storage	354.71	203.65	N/A	16.44	11.34	27.78	212,186	0	Parks & Recreation	Kendall Indian Hammocks Park
	D-36	Multi-Reach Inland Storage	354.91	22.98	N/A	Insufficient Area	N/A	N/A	N/A	0	Residential (LD)	Sunset Park Elementary w/ powerline easement
	D-58	Dewatering & Long-Term Storage (Multiple Operation)	356.24	424.1	7.69	11.45	9.1	50.22	47,556	73.77	Parks & Recreation	Bill Baggs Cape Florida Recreation Area
	D-57	Dewatering & Short-Term Storage (Single Operation)	357.25	96.82	Insufficient Area	N/A	N/A	N/A	N/A	1.29	Institutional & Public Facility, Env. Prot. Parks	Montgomery Botanical Center
	D-27	Dewatering & Short-Term Storage (Single Operation)	358.16	25.75	3.55	5.68	5.61	11.29	17,159	6.68	Parks & Recreation	Chapman Field Park

Table 3.3 Candidate Sites, Intracoastal Waterway, Miami-Dade County

Reach	Site	Designated Use	ICWW Mileage	Mapped Area (ac)	Containment Area (ac)	Impacted Area (ac)	Buffer Area (ac)	Total Site Area (ac)	Storage Capacity (cy)	Wetlands W/I Mapped Area (ac)	Comprehensive Plan Designation	Comment
DA-4 Cont.	D-37	Multi-Reach Inland Storage	359.08	38.63	N/A	9.71	28.92	38.63	125,324	0	Environmentally Protected Parks	Miami Dade Protected Natural Area
	D-38	Multi-Reach Inland Storage	359.29	86.78	N/A	5.29	7.96	13.25	68,276	0	Residential (LD)	Educational & Medical Facility Use
	D-43	Dewatering & Long-Term Storage (Multiple Operation)	359.8	344	119.54	131.53	68.56	200.09	5,207,424	98.72	Environmentally Protected Parks	Charles Deering Estate Park
	D-42	Dewatering & Short-Term Storage (Single Operation)	360.76	37.92	4.87	7.46	11.33	18.79	27,021	8.71	Parks & Recreation	Incompatible Existing Land Use --- Coral Bay park, Env. education facility, Mangrove swamp
	318-01	Dewatering & Short-Term Storage (Single Operation)	361.03	26.21	6.24	8.94	7.23	16.17	46,676	1.43	Residential (ED)	Cutler Canal site
	D-41	Multi-Reach Inland Storage	361.25	112.39	N/A	Insufficient Area	N/A	N/A	N/A	31.87	Industrial & Office, Env. Protected Parks	Burger King Corporate Headquarters
	352-01, 352-02	Multi-Reach Inland Storage	361.28	253.3	N/A	12.66	8.23	20.89	163,465	212.78	Residential (ED)	Hugo Morales property, Old Cutler Estates
	D-40	Multi-Reach Inland Storage	361.33	31.91	N/A	Insufficient Area	N/A	N/A	N/A	0	Residential (ED)	Agricultural Use -- Mango grove with a single-family home site
	D-39	Multi-Reach Inland Storage	363.39	199.93	N/A	120.06	79.87	199.93	1,549,580	0	Residential (LD)	200-acre fallow agricultural field
	361A-01	Multi-Reach Inland Storage	364.39	383.59	N/A	11.9	8.87	20.77	153,600	200.59	Residential (LD)	Lakes by the Bay PUD (1)

Table 3.3 Candidate Sites, Intracoastal Waterway, Miami-Dade County

Reach	Site	Designated Use	ICWW Mileage	Mapped Area (ac)	Containment Area (ac)	Impacted Area (ac)	Buffer Area (ac)	Total Site Area (ac)	Storage Capacity (cy)	Wetlands W/I Mapped Area (ac)	Comprehensive Plan Designation	Comment
DA-4 Cont.	362-01	Multi-Reach Inland Storage	364.6	66.18	N/A	Insufficient Area	N/A	N/A	N/A	22.52	Residential (LD)	Triad Housing Partners property
	362-03	Multi-Reach Inland Storage	364.62	48.82	N/A	17.58	9.98	27.56	227,009	19.55	Residential (LD)	Lakes by the Bay PUD (2)
	362-02	Multi-Reach Inland Storage	364.65	63.94	N/A	Insufficient Area	N/A	N/A	N/A	12.78	Residential (LD)	Jordash Investment Realty
	D-45	Dewatering & Long-Term Storage (Multiple Operation)	365.65	433.21	13.19	16.89	8.8	25.69	153,000	0.53	Agriculture	Agricultural land adjacent to Black Creek and Goulds Canals
	D-45A	Multi-Reach Inland Storage	365.65	433.21	N/A	11.86	7.52	19.38	153,000	0.53	Agriculture	Agricultural land adjacent to Black Creek and Goulds Canals
	D-44	Dewatering & Long-Term Storage (Multiple Operation)	365.66	315.27	5.5	8.44	7.19	15.63	30,669	19.72	Institutional & Public Facilities	South Dade Solid Waste Disposal Facility
	D-59	Material Rehandling (Barge Offloading)	365.75	43.77	N/A	0.74	1.87	2.61	N/A	0	Parks & Recreation	Black Point Marina
	D-62	Dewatering & Long-Term Storage (Multiple Operation)	366.14	206.93	16.49	21.61	40.25	61.86	166,700	26.46	Open Land	Southeast Landfill
	365A-01	Multi-Reach Inland Storage	366.71	201.75	N/A	Insufficient Area	N/A	N/A	N/A	195.76	Open Land	Goulds Canal site

Table 3.3 Candidate Sites, Intracoastal Waterway, Miami-Dade County

Reach	Site	Designated Use	ICWW Mileage	Mapped Area (ac)	Containment Area (ac)	Impacted Area (ac)	Buffer Area (ac)	Total Site Area (ac)	Storage Capacity (cy)	Wetlands W/I Mapped Area (ac)	Comprehensive Plan Designation	Comment
DA-5	D-62A	Multi-Reach Inland Storage	366.14	206.93	N/A	11.9	40.8	52.7	153,600	26.46	Open Land	Southeast Landfill
	365C-01	Multi-Reach Inland Storage	367.33	689.22	N/A	11.87	36.05	47.92	161,906	103.27	Open Land	FL Rock & Sand mine site
	D-46	Multi-Reach Inland Storage	367.36	664.77	N/A	11.86	7.52	19.38	153,000	0	Agriculture	Agricultural land adjacent to Princeton Canal
	D-46A	Dewatering & Long-Term Storage (Multiple Operation)	367.36	664.77	13.19	16.89	8.8	25.69	153,000	0	Agriculture	Agricultural land adjacent to Princeton Canal
	394C-01	Multi-Reach Inland Storage	369.43	126.03	Insufficient Area	N/A	N/A	N/A	N/A	119.04	Open Land	Military Canal site
	D-47	Multi-Reach Inland Storage	369.89	502.2	N/A	11.9	35.11	47.01	153,600	49.14	Agriculture	Agricultural land adjacent to the former Homestead Air Force Base
	D-48	Multi-Reach Inland Storage	370.71	403.53	N/A	11.9	34.95	46.85	153,600	0	Agriculture, Institutional and Public Facility	Agricultural land adjacent to Mowry Canal
	D-61	Material Rehandling (Barge Offloading)	371.07	210.07	N/A	2.72	0	2.72	N/A	96.82	Parks & Recreation	BBNP HDQRTS, Homestead Bayfront Park, Herbert Hoover Marina

4.0 ESTABLISHMENT OF SITE BANK

This chapter documents the final evaluation of the full set of 86 candidate sites, including the two sites within existing easements. The evaluation of each site assessed its ability to satisfy a standard set of evaluation criteria. This process led to the selection of eight sites to form a site bank serving the five reaches of the Intracoastal Waterway channel within the Miami-Dade County project area. The site bank consists of four primary (first-choice) sites and four secondary (second-choice) alternatives for the long-term management of dredged material removed from ICWW channels consistent with the project's established Management Concept.

4.1 Evaluation Criteria

The final site evaluation process employed a standard set of criteria. Developed as part of the pilot project that addressed the needs of the Waterway in the Nassau and Duval Counties, and refined through the course of the next nine program elements completed to date, these criteria predominantly reflect a dredged material management strategy that relies on the use of conventional containment basins and where appropriate, beach placement. That is, with the exception of those reaches for which beach placement remains the most appropriate management strategy, the specific requirements and conditions within those counties led to the selection and evaluation of sites that could support the construction of containment basins to receive and dewater a dredged material slurry produced by hydraulic dredging as well as to provide the required long-term storage of the dewatered material.

However, as discussed in the preceding chapter, this approach appears inappropriate for the conditions encountered in the Miami-Dade County project area, most notably in the county's northern portion. Within Reach I, the scarcity of suitable sites near the Waterway and the relatively low projected dredging requirement suggest an alternative strategy. Rather than provide for the long-term storage of the full projected 50-year requirement, this strategy relies on a small waterfront site to provide temporary storage for material produced by a single mechanical dredging operation and transported to the site by barge. The same type of site also appears appropriate to provide a backup storage capability for material dredged from Reach II should, for whatever reason, the primary strategy of direct beach placement prove unfeasible. Either approach will require the material to be removed off-site for beneficial reuse or disposal prior to the next scheduled channel maintenance operation. Should even temporary storage at the small waterfront sites prove unworkable, one or more inland storage sites will also be required. Sized to provide storage only for the material produced by a single operation, these sites will provide temporary storage for material first offloaded at a small waterfront material transfer site, then transported in a relatively dry state to the inland storage site.

Continuing southward, the greater potential availability of larger sites within a reasonable distance of the Waterway suggests the possibility of more conventional dewatering and long-term storage sites. However, given the relatively small dredging requirement and the greater transport distances, these sites will likely be used to receive material hydraulically offloaded from barges, rather than pumped directly from the dredging site.

Despite these fundamental differences, many of the same evaluation criteria developed for sites intended for the development of conventional containment facilities remain appropriate to the less conventional strategy developed for Miami-Dade County. The discussion of the specific evaluation criteria that follows notes those criteria within the standard set that are inappropriate to these different roles. Following this discussion, the remainder of this chapter describes the site evaluation and the final bank of primary and secondary sites compiled via this procedure.

Each site was evaluated by its ability to satisfy criteria in three broad areas:

- Engineering/Operational Considerations
- Environmental Considerations
- Socioeconomic or Cultural Considerations

Individual criteria considered in each of these areas are described below.

4.1.1 Engineering/Operational Considerations

- Capacity — The potential material storage capacity of a site remains a fundamental site evaluation criterion despite the unconventional dredged material management strategy dictated by the unique requirements of the Miami-Dade County project area. As discussed above, Phase I typically identifies suitable dredged material management sites capable of providing the projected 50-year material storage requirements of the Waterway reach each site is intended to serve. With some modification, this approach remains appropriate for the primary management strategy for Reaches III, IV, and V. However, within the northern portion of the project area the limited available acreage near the Waterway and the likelihood of high site acquisition costs dictate that a realistic plan for this segment of the Miami-Dade County project area must reduce the desired storage from the full 50-year requirement to the volume produced by a single maintenance operation based on historic averages and/or recent surveys.

- Adequate Dike Material — Closely related to site capacity is the on-site availability of adequate dike material to construct the containment basin as employed in the preliminary capacity analysis

(Appendix C). This criterion remains appropriate to the sites adjacent to the Waterway that lack deep-water access necessary for offloading a barge mechanically, but that possess sufficient area (>10 acres) to allow the construction of a temporary containment basin needed to offload a barge hydraulically. It does not apply to the small waterfront sites that are intended only to receive material offloaded directly from barges, or to the inland sites that will receive the relatively dry material transferred from a small waterfront site. As discussed in Section 2.3, small upland acreage or low mean grade elevation may limit the excavation depth and thus the dike's height and the basin's capacity. Trucking in additional material from off-site sources can overcome an insufficient on-site supply of dike material, although adding significantly to the operation's cost.

- Pumping Distance — Pumping distance from the area to be dredged to the area of placement affects a site's suitability only in those instances where a site is required to support a hydraulic dredging or barge offloading operation. Although material within Miami-Dade County Reach II destined for beach placement may be dredged hydraulically, the location of the beach placement site (to be determined in Phase II) will reflect the analysis of the sediment budget within the vicinity of Bakers Haulover Inlet and the documented need for beach fill, and only indirectly the desire to limit pumping distance. Although booster pumps can significantly extend pumping distance, the increase is achieved only through a significant reduction in dredging efficiency and a corresponding increase in operating costs. In discussions with representatives of the Jacksonville District, USACE, a pumping distance of three to six miles was determined to be a preferred limit for efficient operation. However, should extraordinary circumstances require increased distances, 10 miles was established as the absolute maximum pumping distance acceptable to the USACE.

- Pipeline Access — Of those sites suited to support a hydraulic dredging or barge offloading operation, the sites affording the greatest ease of pipeline access from the Waterway, as well as the return of effluent to the Waterway, are preferred. Apart from the potential for environmental impacts to sensitive mangrove or other wetlands (discussed in Section 4.1.2), difficult pipeline access adds to mobilization-demobilization costs and reduces operating efficiency. Examples of pipeline access difficulties include extensive crossings through mangroves or shallow sea grass stands, significant elevation changes, or the crossing of road or railroad rights-of-way. Moreover, pipeline access through upland property may require the costly acquisition of additional pipeline easements.

- Upland Access — The management strategy developed for the northern portion of the Miami-Dade County project area relies on the transfer, either immediately after dredging or prior to the next maintenance operation, of dredged material first offloaded to small sites adjacent to the Waterway. As a result, existing or potential upland road access was an essential criterion for the

evaluation of existing easements or FIND-owned properties and a prerequisite in the identification of new candidate sites. Within the remainder of the project area, upland access is also essential to allow each site to be managed as a permanent dredged material management facility, as well as to allow the material to be offloaded at or before the point at which the site reaches its design capacity.

- Soil Properties — On-site soil properties (e.g., load bearing capacity, resistance to piping, etc.) and the depth of the water table below grade are additional factors included as criteria for site evaluation. However, these determinations require field testing not included in the initial phase of the project. Therefore, data supporting on-site soil properties and geohydrology will be obtained during Phase II. Observations made during Phase I field inspections revealed no obvious areas of concern in those sites forming the final site bank.

4.1.2 Environmental Considerations

The environmental criteria used for site evaluation are intended to minimize the environmental permitting constraints of site development by minimizing adverse impacts to sensitive habitats, while providing suitable sites to serve the needs of the Waterway. The resulting criteria may be organized under two categories reflecting FIND's management principle of restricting the placement and storage of dredged material to upland areas: (1) criteria for the avoidance of wetland areas to the greatest extent possible and (2) criteria for minimizing unavoidable impacts to upland habitats.

- Wetland Impacts — Avoidance of wetlands, a primary consideration throughout the site selection process, has largely been achieved by use of USFWS Wetlands Inventory maps and color-infrared photography, augmented by field verification and preliminary delineation of on-site wetlands. However, where a question remained or where avoidance of isolated or transitional wetland areas would have precluded the use of a site, several specific criteria were used to weigh the relative success in minimizing wetland impacts.

  Mangroves and other wetland areas exhibiting salt water characteristics, clearly indicative of tidal wetlands contiguous with state waters, are recognized by all state and federal agencies to be an extremely valuable and biologically productive habitat. Therefore, the degree to which a site's development could be accomplished while avoiding impacts to mangrove areas is obviously a crucial criterion in site selection. Closely related to this is the sometimes unavoidable impact related to accessing the site via pipeline. If no other avenue is available (e.g., floating the pipeline in a tidal creek or canal), crossing mangroves or submerged aquatic vegetation may be required. This practice, a necessary consideration in site selection, was minimized wherever possible.

Isolated freshwater wetlands, also a valuable biological community, can afford a system of filtering runoff and recharging groundwater supplies. Nevertheless, such wetlands receive less protection under FDEP permitting criteria. However, such wetlands are under the jurisdiction of the USACE and the South Florida Water Management District (SFWMD). The presence of these isolated wetlands was considered in the evaluation of a particular site, and their disruption was avoided wherever possible. Experience gained in previous plan development efforts suggests that the sacrifice of small, isolated areas possessing wetland vegetation may be acceptable if required to provide an adequate containment area. However, mitigation may be required to offset such impacts, if incurred. Somewhat independent of the extent of an interior wetland is the habitat quality it may afford or the unusual vegetation it may support. Thus, the quality of impacted wetlands was also a criterion of site selection and will affect any mitigation which may be required.

- Upland Impacts — The use of uplands for the development of dredged material management areas minimizes impacts to wetlands. However, upland site development requires the removal of existing upland vegetation and habitat within the footprint of the material transfer and/or storage area. Again, the quality of the impacted uplands can vary widely, and therefore assessments of the relative ecological value of the existing upland communities are useful site evaluation criteria. Specific assessments include the quality of habitat; the presence or potential presence of threatened or endangered species; the uniqueness, maturity, and aesthetic quality of the existing vegetation (e.g., mature hardwood canopy vs. second-growth saplings); and the extent to which a site was disturbed by previous human activities (e.g., clearing, logging, drainage, etc.).

- Buffer Area — The evaluation of those sites required to provide either temporary or long-term storage also considered the ability of a site to provide a buffer to separate the site's active dredged material management areas from adjacent properties while still maintaining adequate storage capacity. Primarily, the buffer acts as a visual barrier. However, other potential benefits include the preservation of areas of particular environmental value such as maritime hammock, coastal scrub, or transitional wetlands that could otherwise fall to development. Moreover, the preservation of a buffer region within a dedicated conservation easement may facilitate the permitting required for site construction by mitigating the impacts of site development.

- Archeological Value — While not strictly an environmental consideration, the relative archeological value of each site was an evaluation criterion. Phase I of the project does not include a formal archeological survey of each candidate site. However, during the preliminary inspection of each candidate site, obvious evidence of early habitation or other cultural resources (e.g., shell middens) was noted. The presence of a documented archeological site will be investigated only for

the final site bank of primary and secondary alternatives. A request for a records search of the Florida Master File of historical and archeological sites and the National Register of Historical Places will soon be forwarded to the Division of Historical Resources, Florida Department of State, to identify potential conflicts. The presence of a verified archeological or historical site may necessitate a formal site survey or documentation effort prior to containment area construction. However, the discovery of such a site may not preclude the use of an otherwise viable management area.

- Groundwater Conditions — The final environmental evaluation criterion, groundwater conditions, addresses the possibility that site development and operation may directly impact local groundwater supplies. Before each future dredging operation, sediment within the shoals to be dredged will undergo further analysis, including elutriate testing. Should analysis identify elevated levels of contaminants, permitting procedures will require appropriate measures to ensure these contaminants remain sequestered with the dredged material. Therefore, contamination of local groundwater by materials contained in channel sediments is not anticipated.

  The primary source of potential impacts to local groundwater is salt — specifically, saltwater mixed with the sediment and pumped from the Waterway to the site. This consideration applies only to those material transfer/temporary storage sites that could support the construction of a containment basin to allow a barge to be off-loaded hydraulically. In such cases, the containment area will hold saltwater only during the relatively short and infrequent periods of active dredging and dewatering. Mechanically off-loading the dredged material from a barge directly to trucks will obviously eliminate any serious threat of saltwater contamination. Nevertheless, specific safeguards against the occurrence of saltwater contamination of the local shallow aquifer are an essential part of the design and operation of each site. In addition, each site will include a comprehensive program of groundwater monitoring before, during, and after each dredging operation. These safeguards, addressed in detail in the site-specific documentation developed during Phase II, minimize the possibility of saltwater contamination.

4.1.3 Socioeconomic or Cultural Considerations

- Land Use — The third major category of site evaluation criteria considers the socioeconomic issues of on-site or adjacent land use, current comprehensive plan and zoning designations, local governmental jurisdictions, and site ownership. Every effort was made during the initial identification of new candidate sites to select areas of suitable existing on-site land use. For obvious reasons, areas of minimal development were preferred. Moreover, areas previously disturbed by clearing, excavation, timber harvesting, or drainage were given priority because of

their reduced environmental value. Managed timberlands or other agricultural areas were not excluded from consideration, however. Similarly, existing adjacent land use was an important consideration. The objective was to select areas isolated from existing residential or, in some cases, commercial or retail development.

Because of the rapid pace of development in some areas, available aerial photography often did not accurately depict current on-site or adjacent land use. In several cases, field inspections revealed on-site residential or commercial development which required site reconfiguration or abandonment. Adjacent land-use conflicts were not so easily resolved, and in areas with limited upland acreage, such conflicts may remain. To the maximum extent possible, these conflicts were reduced by a buffer zone to separate the site's active storage or material transfer areas from residential or commercial development.

- Zoning and Comprehensive Plans — In addition to field inspection of each site, on-site and adjacent land use was also investigated through the determination of existing zoning (county or municipal) and comprehensive plan future land-use designations. The present long-range planning effort, because it is being performed in support of a federal navigation project, is not subject to local zoning regulations. Moreover, the provision for dredged material management areas has not been addressed in local comprehensive plans. In many cases, comprehensive plans have not even recognized pre-existing dredged material disposal easements. Legislation has since attempted to correct this oversight. The FIND intends to recognize and address community concerns embodied in zoning and comprehensive planning laws. Thus, in the identification of new sites and the evaluation of existing easements, those areas designated for industrial or agricultural uses received priority.

- Property ownership — Phase I also included establishing the ownership of all primary and secondary sites as necessary to obtain authorized access for the more detailed Phase II surveys and investigations. Phase II will also consider site ownership and recorded parcel boundaries to establish site boundaries and, when appropriate, to reduce the number of individual property owners involved. Appendix D presents property ownership information for all primary and secondary sites.

4.2 Site Bank

The final evaluation of all candidate sites led to the selection of eight sites to serve the five reaches of the Intracoastal Waterway channel within the Miami-Dade County project area. Of these, four sites represent primary or first-choice options, and four sites provide secondary dredged material management

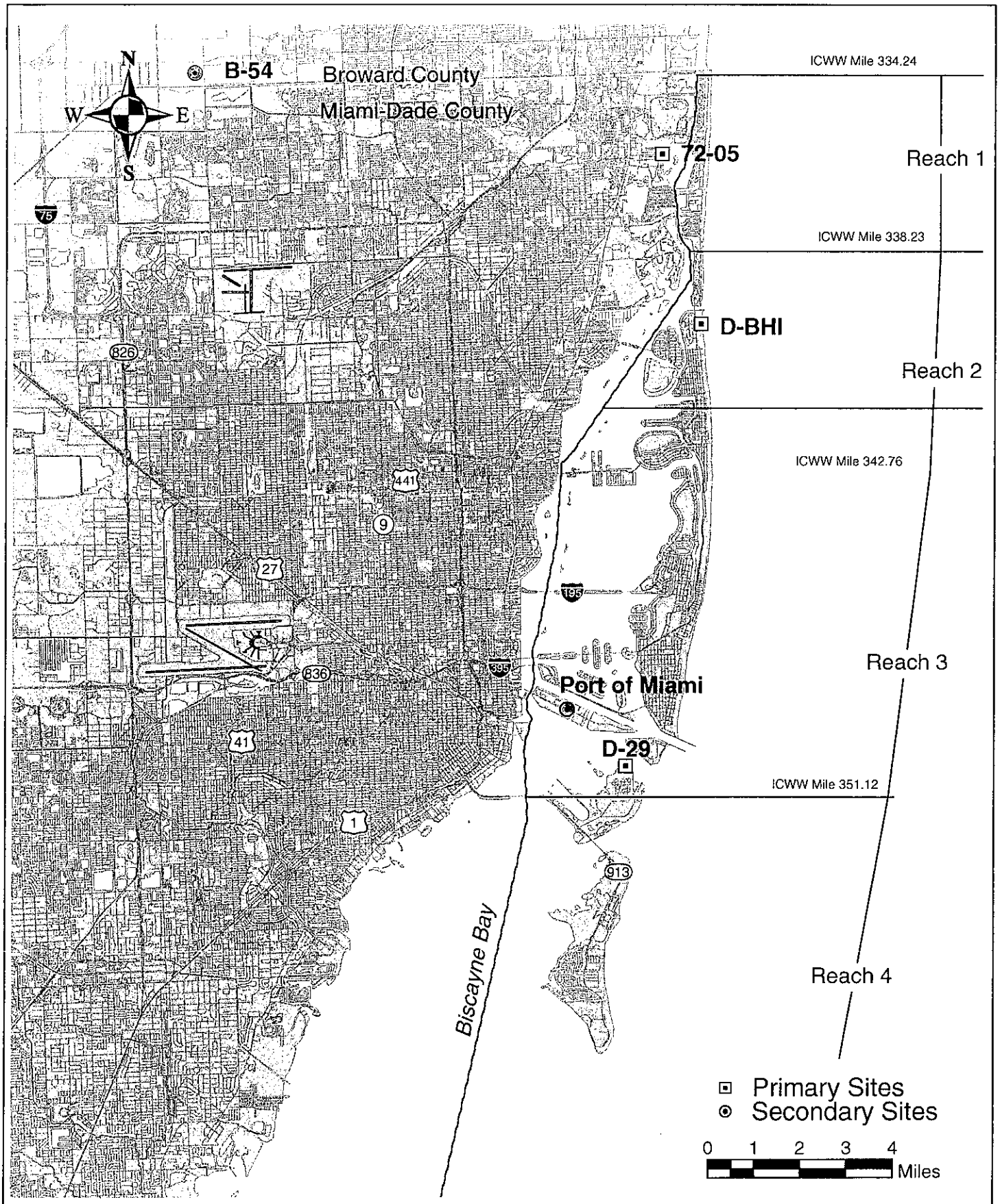
alternatives should use of one or more of the primary sites prove infeasible. Figures 4.1(a and b) shows the resulting site bank. Table 4.1 summarizes key features of each site with respect to its designated use.

Each of the five channel reaches within the Miami-Dade County project area has been assigned at least one primary and at least one secondary site, consistent with the management strategy established for each reach. Two sites serve as primary alternatives within more than one reach. First, Site 72-05 will serve as the primary barge-offloading/temporary storage site for both Reaches I and II in Miami-Dade County. Second, Site D-29 has been designated to serve as the primary site for Miami-Dade Reaches III and IV.

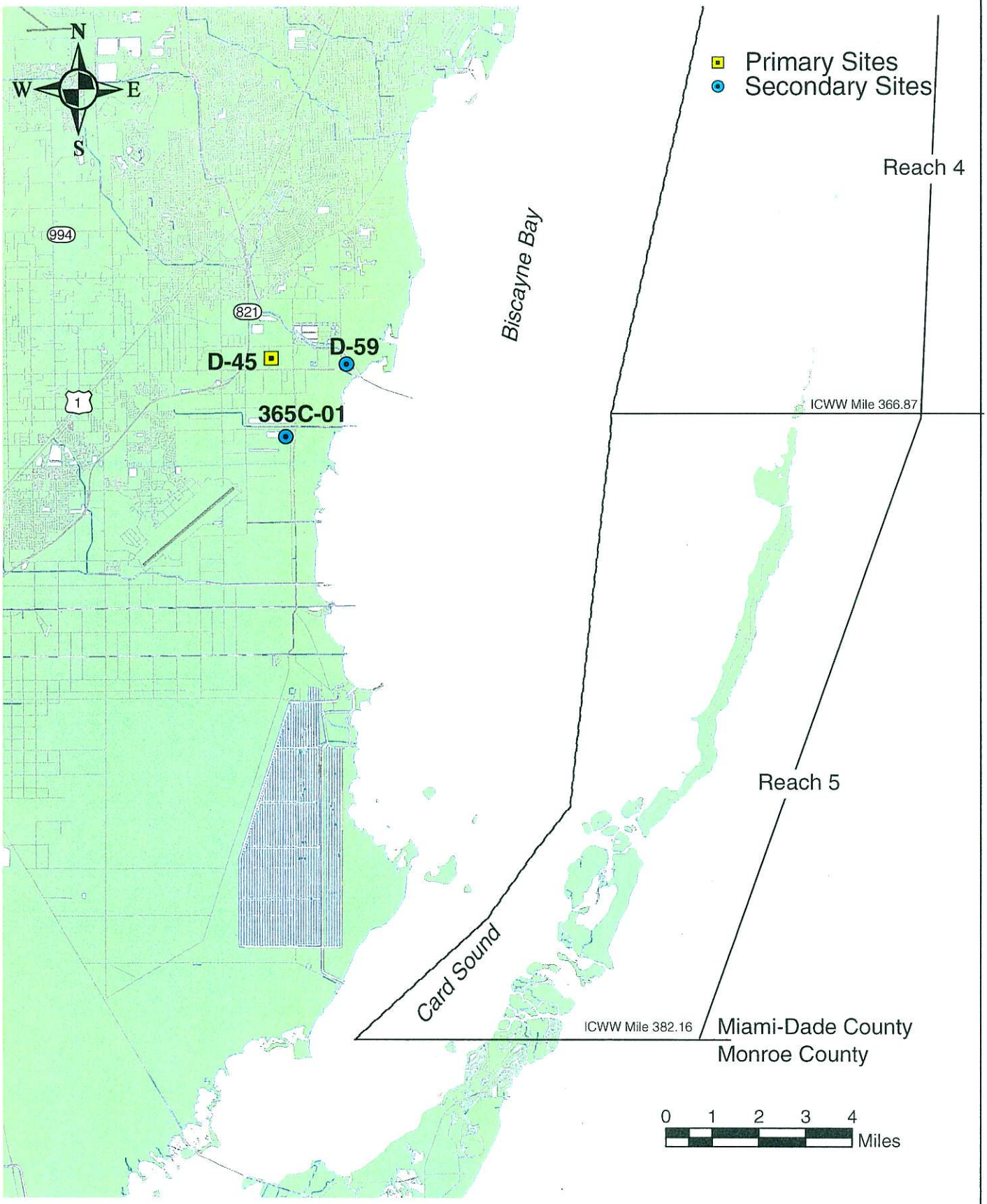
Similarly, two sites also serve as secondary alternatives for more than one reach. First, the Port of Miami's bulk cargo facilities will serve as the alternative barge offloading/material transfer point for Reaches III and IV, should FIND fail to negotiate with the Port joint use of primary Site D-29. Second, Site B-54 in southern Broward County has been designated as the secondary alternative to provide temporary inland storage for material dredged from Miami-Dade Reaches I, II, III, and IV, as well as Broward Reach III. Originally identified and evaluated with respect to the needs of the Waterway in southern Broward County, Site B-54 was also judged the most appropriate site to temporarily store material transfer from barge offloading points in northern Miami-Dade County.

Appendix A presents detailed information for each primary and secondary site in the site bank. For each site, a data summary sheet outlines significant information on site location and reach parameters, as well as other site characteristics including acreage requirements, preliminary site capacity, and additional considerations such as access easement requirements and land use designations. In addition, Appendix A presents a map of each site showing the initial site boundaries (tied to geographic landmarks) and major on-site vegetation communities and land-use categories under the FLUCFCS (Florida Land Use, Cover and Forms Classification System, Florida Department of Transportation, 1985) as verified by field inspection. Tables within each map present approximate acreages of each vegetation and land-use category identified on site. In each case, the site map (and its acreages tabulated by vegetation and land-use category) corresponds to the initial site acreage listed in Table 4.1.

Table 4.1 also lists the total required area for each site. The total required area, only a small portion of the initial site area in the case of the primary dewatering and long-term storage sites D-29 and D-45 and the secondary inland storage Sites B-54 and 365C-01, represents a preliminary estimate of the acreage actually needed for each site to serve its designated role. As described earlier, the one primary site designated for barge-offloading and temporary storage — Site 72-05 — requires an area sufficient for



TAYLOR ENGINEERING INC. 9000 Cypress Green Drive, Suite 200 Jacksonville, Florida 32256	Figure 4.1a Site Bank with Reach Delineations Long Range Dredged Material Management Plan Intracoastal Waterway, Miami-Dade County, Florida	Project C2002-036D Revision Sheet Date March, 2003



TAYLOR ENGINEERING INC. 9000 Cypress Green Drive, Suite 200 Jacksonville, Florida 32256	Figure 4.1b Site Bank with Reach Delineations Long Range Dredged Material Management Plan Intracoastal Waterway, Miami-Dade County, Florida	Project C2002-036D Revision Sheet Date March, 2003

Table 4.1 Preliminary Site Bank, Long-Range Dredged Material Management Plan, Intracoastal Waterway, Miami-Dade County

Reach	Site	Designated Use	ICWW Mileage	Initial Mapped Area (ac)	Containment/ Storage Area (ac)	Total Required Area (ac)	Storage Capacity (cy)	Maximum Pumping/ Barging Distance (mi)	Comp. Plan Designation	Comment
I	B-54 Secondary	Multi-Reach Inland Storage	332.96	573.21	8.68	16.97	139,452	N/A	Regional Activity Center	Portion of site developing business park, powerline transmission corridor through site, wetland mitigation area
	72-05 Primary	Barge Offloading Multi-Reach Storage	335.95	6.65	3.51	6.65	56,390	2.82	Industrial & Office	Vacant industrial property on Thunder Alley Canal off Dumfoundling Bay
II	B-54 Secondary	Multi-Reach Inland Storage	332.96	573.21	8.68	16.97	139,452	N/A	Regional Activity Center	Portion of site developing business park, powerline transmission corridor through site, wetland mitigation area
	72-05 Primary	Barge Offloading Multi-Reach Storage	335.95	6.65	3.51	6.65	56,390	7.35	Industrial & Office	Vacant industrial property on Thunder Alley Canal off Dumfoundling Bay
	D-BHI Primary	Beach Placement	339.45	N/A	N/A	N/A	N/A	4.19	N/A	Unspecified beach placement area south of Baker's Haulover Inlet, location and fill template to be determined in Phase II
III	B-54 Secondary	Multi-Reach Inland Storage	332.96	573.21	8.68	16.97	139,452	N/A	Regional Activity Center	Portion of site developing business park, powerline transmission corridor through site, wetland mitigation area
	Port of Miami Secondary	Material Rehandling Barge Offloading	348.62	N/A	N/A	N/A	N/A	5.90	Commercial	Port of Miami
	D-29 Primary	Dewatering & Long-Term Storage (Multiple Operations)	350.42	80.87	10.00	16.98	41,545	9.85	Open Land	Existing dredged material/construction debris storage site (Port of Miami) located on the northern end of Virginia Key

Table 4.1 Preliminary Site Bank, Long-Range Dredged Material Management Plan, Intracoastal Waterway, Miami-Dade County

Reach	Site	Designated Use	ICWW Mileage	Initial Mapped Area (ac)	Containment/ Storage Area (ac)	Total Required Area (ac)	Storage Capacity (cy)	Maximum Pumping/ Barging Distance (mi)	Comp. Plan Designation	Comment
IV	B-54 Secondary	Multi-Reach Inland Storage	332.96	573.21	8.68	16.97	139,452	N/A	Regional Activity Center	Portion of site developing business park, powerline transmission corridor through site, wetland mitigation area
	Port of Miami Secondary	Material Rehandling Barge Offloading	348.62	N/A	N/A	N/A	N/A	18.29	Commercial	Port of Miami
	D-29 Primary	Dewatering & Long-Term Storage (Multiple Operations)	350.42	80.87	10.00	16.98	41,454	18.64	Open Land	Existing dredged material/construction debris storage site (Port of Miami) located on the northern end of Virginia Key
V	D-45 Primary	Dewatering & Short-Term Storage (Single Operation)	365.65	433.21	12.91	48.27	158,368	24.43	Agricultural	Agricultural land (tree & ornamental nursery) on Black Creek and Goulds Canals west of South Dade Solids Waste Disposal Facility
	D-59 Secondary	Material Rehandling Barge Offloading	365.75	43.77	N/A	2.61	N/A	23.62	Parks & Recreation	Black Point Marina
	365C-01 Secondary	Multi-Reach Inland Storage	367.33	689.22	9.57	18.21	153,826	N/A	Open Land	Florida Rock & Sand Mine Site off the C-102 Canal and SW 107th Avenue

the dry storage of the site's design capacity, separated from adjacent industrial or commercial property by a minimum 50-ft buffer. One of two primary sites designated for dewatering and long-term storage — Site D-45 — requires sufficient area for construction of a conventional containment basin surrounded by a 350-ft buffer to separate the containment basin from adjacent agricultural properties. Given that the second site designated for dewatering and long-term storage — Site D-29 — lies within a larger dredged material and construction debris storage area adjacent to the Virginia Key Wastewater Treatment Plant, the required area includes a reduced 100-ft buffer surrounding the containment basin. The two secondary sites designated for inland storage — Site B-54 and Site 365C-01 — require an area sufficient for the dry storage of the site's required capacity, separated from adjacent industrial, commercial, or agricultural property by a 100-ft buffer. The one secondary site designated for material transfer only (i.e., no on-site storage) — Site D-59 (Black Point Marina) — requires only sufficient area for a truck pass-through and a minimal material stockpile surrounded by a 100-ft buffer on its three landward sides, but with no buffer on its water side. The Port of Miami specifies no required area since the FIND would use existing port facilities to offload the dredged material from barges like any other bulk cargo. Finally, narratives accompanying each site summarize pertinent site characteristics including general physiographic and environmental conditions, vegetative communities, and observed plant species typical of these communities.

Appendix B presents similar information for the candidate sites not selected for the site bank. However, for this latter group of sites the listed site capacities and acreage requirements represent each site's maximum use without attempting to bring these values into line with specific reach requirements.

The remainder of this section discusses the key factors that led to the selection of the individual sites comprising the site bank, as well as the considerations that influenced the designation of the selected sites as either primary or secondary alternatives.

Within Reach I, Site 72-05 (Figure 4.2) will serve as the primary site to provide the barge off-loading/temporary storage capability required to support a mechanical dredging operation. Site 72-05 will also provide the required complementary material management capability should some material within Reach II prove unsuitable for beach placement. Originally identified by a real estate analyst under contract to the FIND, Site 72-05 is a small fully-bulkheaded vacant parcel located among boat building facilities on the Thunder Bay Canal in Aventura. Notably, Site 72-05, limited to roughly 6.65 ac, can provide a storage capacity of only 56,390 cy, or less than 50% of the bulked volume of material produced by a typical dredging operation within the two reaches it is intended to serve (115,360 cy). This estimated site capacity represents the dry storage of material mechanically offloaded from a barge with a 50-ft

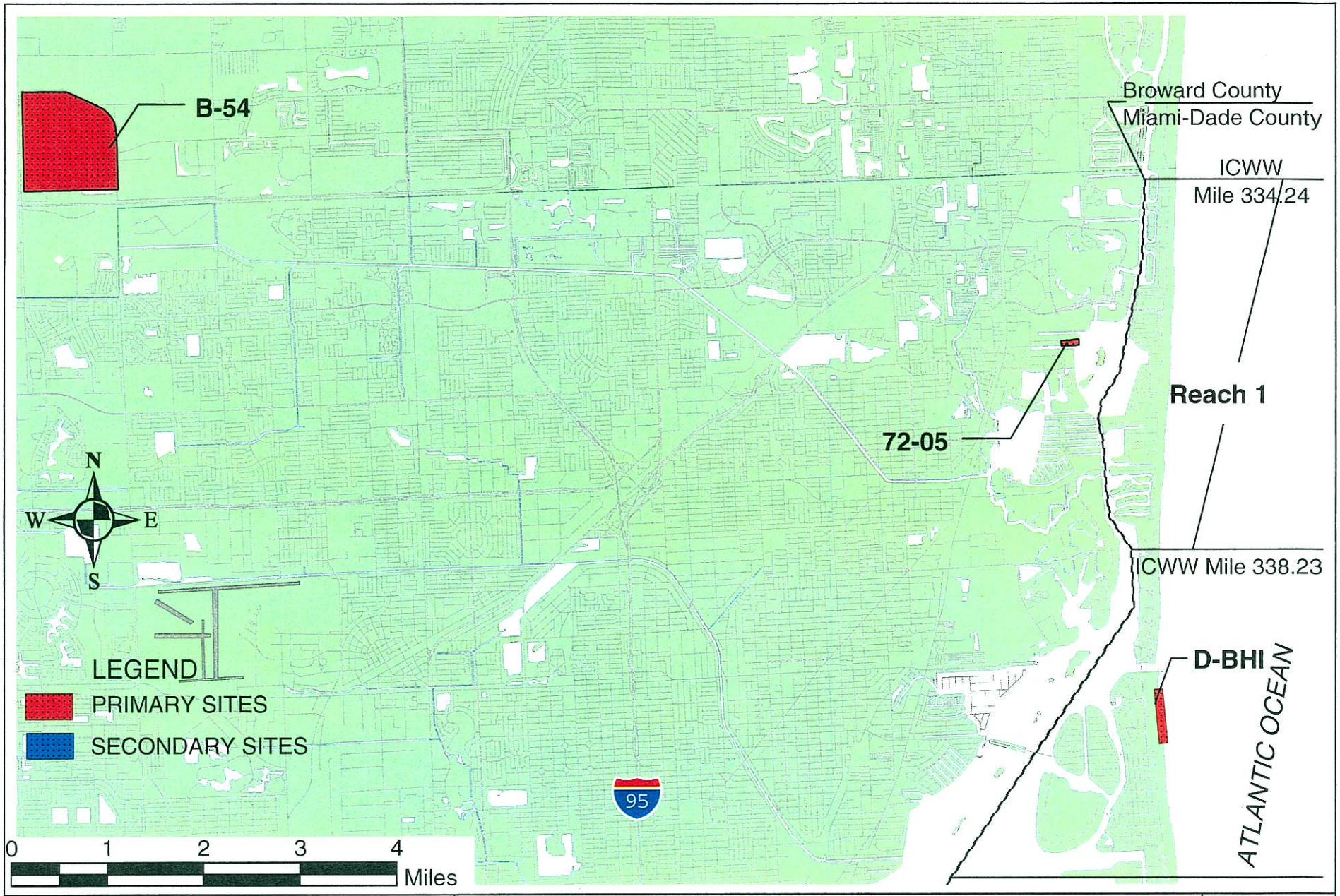


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Figure 4.2
Channel Reach 1
Long Range Dredged Material Management Plan
Intracoastal Waterway
Miami-Dade County, Florida

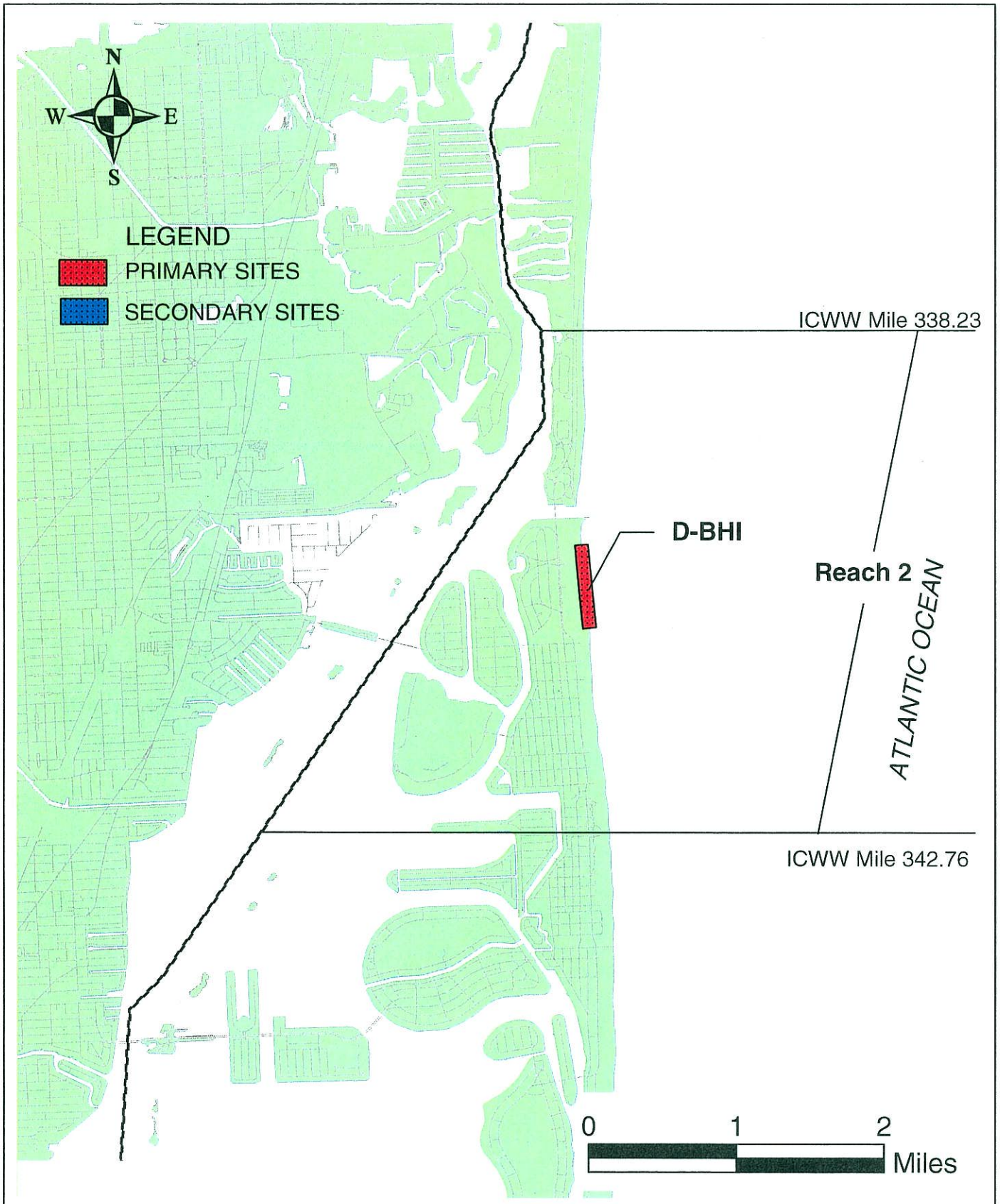
Project	C2002-036D
Revision	
Sheet	
Date	March, 2003

setback from adjacent properties on three sides and a 150-ft setback from adjacent properties on the remaining side to provide the required work area. However, given the conservative assumptions that the projected storage requirement reflects, Site 72-05's estimated storage capacity appears adequate to justify its primary designation as follows.

First, the 115,360-cy projected storage requirement represents the application of a 2.0 bulking factor to account for the increase in volume of the material after dredging compared to its in situ volume. Appropriate for fine-grained silts and clays, this bulking factor appears overly conservative for the predominantly sandy sediments within this segment of the Waterway. Second, over 95% of the projected requirement represents previous dredging and recent shoaling within Reach II adjacent to Bakers Haulover Inlet. Historically, this material has been of beach quality and beach placement will remain the primary dredged material management strategy within this reach. Thus, Site 72-05 need only provide sufficient storage capacity for Reach I, and the relatively small portion of shoal material within Reach II that proves unsuitable for beach placement. Given these considerations, the estimated 56,390 cy storage capacity provided by Site 72-05 appears adequate.

Within Reach II, beach placement at a yet unspecified beach placement site (designated D-BHI) located south of Bakers Haulover Inlet (Figure 4.3) will provide the primary dredged material management strategy. As discussed above, Site 72-05 will also serve as a primary site to provide a complementary storage capability should some of the Reach II material prove unsuitable for beach placement.

Should even temporary storage of material on Site 72-05 prove unworkable, the site would serve only as a barge-offloading point, with the material loaded directly to trucks and transported to secondary inland storage Site B-54 (Figure 4.2). As a partially-developed business/industrial park with large remaining areas of improved pasture, Site B-54 can provide sufficient storage capacity for a single operation in all of northern Miami-Dade County (Reaches I, II, III, and IV) as well as southern Broward County (Broward Reach III; Taylor et al., 2002)). Located over 11 miles west of the ICWW and immediately north of the Broward/Miami-Dade County line, the site lies just east of Flamingo Road (S.R. 823) and both north and south of the Miramar Parkway. A major electrical transmission corridor that extends northeast southwest through both the site's northern and southern portions further bisects the site. The site's southern portion includes a partially developed business/industrial park, and a large wetland mitigation area, while the northern portion comprises a mix of improved pasture, areas of cultivated row crops (field corn and sugar cane) and fallow cropland, and otherwise disturbed areas. As such, the northern portion of the site appears more appropriate for material storage. The site's capacity listed in

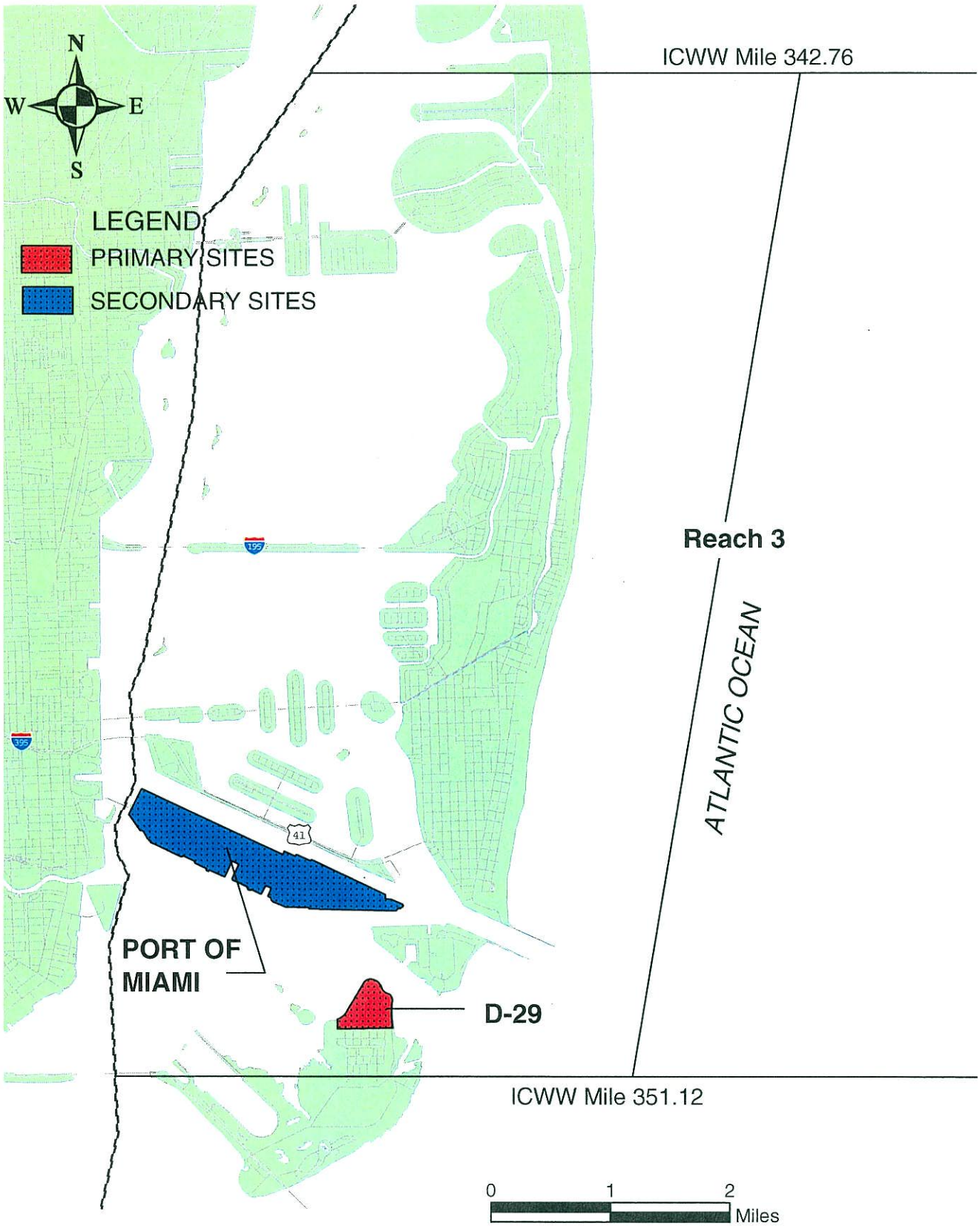


TAYLOR ENGINEERING INC. 9000 Cypress Green Drive, Suite 200 Jacksonville, Florida 32256	Figure 4.3 Channel Reach 2 Long Range Dredged Material Management Plan Intracoastal Waterway Miami-Dade County, Florida	Project C2002-036D Revision Sheet Date March, 2003

Table 4.1 (139,452 cy) reflects the combined storage requirement for a single maintenance operation in all five reaches it is intended to serve. The corresponding acreage requirement (16.97 ac) for Site B-54 reflects the dry storage area (maximum height – 15 ft above grade) surrounded by a 100 ft buffer. The storage area will include an integral interior stormwater retention basin as necessary to meet likely permitting requirements.

The very low dredging requirement for Reaches III and IV, combined with the paucity of appropriate candidate sites in this segment of the project area, suggests a single dredged material management strategy, using a single suite of primary and secondary sites, should serve both reaches. An existing Port of Miami dredged material and construction debris storage area located on the northern end of Virginia Key was selected as the primary site to serve both Reaches III and IV (Figures 4.4 and 4.5). Designated Site D-29, this site would be used to support a barged-based operation as follows. First, the barge would first be loaded, either hydraulically or mechanically, at the dredging site and then hauled to an offshore mooring point near Virginia Key's northeastern shoreline as close as possible to the placement site. The dredged material would then be transferred via pipeline from the barge to a minimal containment basin constructed within the site. The secondary strategy for Reaches III and IV also uses Port property, but in a more conventional manner. Given the reaches' minimal projected dredging requirement, dredged material could be off-loaded at the Port facilities from a barge directly to trucks. In this approach, dredged material would be treated just as any other bulk cargo handled by the Port (Figure 4.4). As part of this secondary strategy, material off-loaded at the Port would then be trucked to Site B-54 for storage.

Site D-45, an agricultural area (ornamental and tree nursery) located west of the South Dade County Solid Waste Disposal Facility, has been selected as the primary dredged material management option for Reach V. Although lying over 7.6 miles from the ICWW channel at the reach's extreme northern end (Figure 4.6), the site fronts Gould's Canal and thus could receive material hydraulically transported about 1.6 miles from a barge anchored near the Black Point Marina access channel. The secondary alternative for this reach requires both a barge off-loading site and a long-term storage site. In the former role, the Black Point Marina (designated Site D-59), located at the outfall of the Goulds and Black Creek Canals (Figure 4.6), provides a possible site for mechanical barge off-loading. Site 365C-01, presently a Florida Sand & Rock mine site located about 1.0 mile southwest of the marina, would provide long-term storage for material off-loaded at the marina. Although Site 365C-01 lies on the Princeton (C-102) Canal, the absence of a dredged approach channel through the Biscayne Bay shallows that lie between the canal's mouth and the ICWW channel would appear to prevent use of this site for direct barge pump-out in the manner proposed for Site D-45.



TAYLOR ENGINEERING INC. 9000 Cypress Green Drive, Suite 200 Jacksonville, Florida 32256	Figure 4.4 Channel Reach 3 Long Range Dredged Material Management Plan Intracoastal Waterway Miami-Dade County, Florida	Project C2002-036D Revision Sheet Date March, 2003

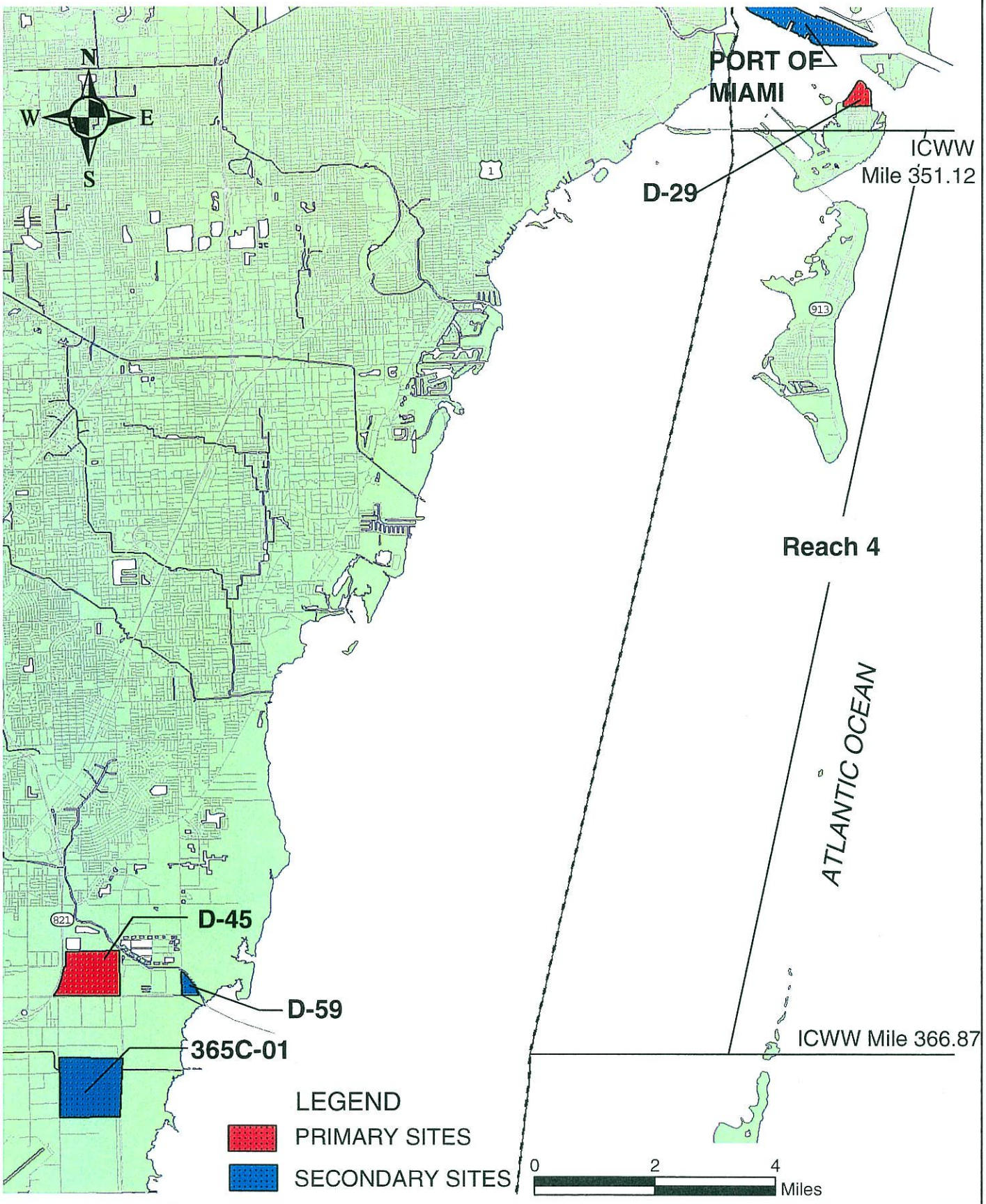


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Figure 4.5
Channel Reach 4
Long Range Dredged Material Management Plan
Intracoastal Waterway
Miami-Dade County, Florida

Project	C2002-036D
Revision	
Sheet	
Date	March, 2003

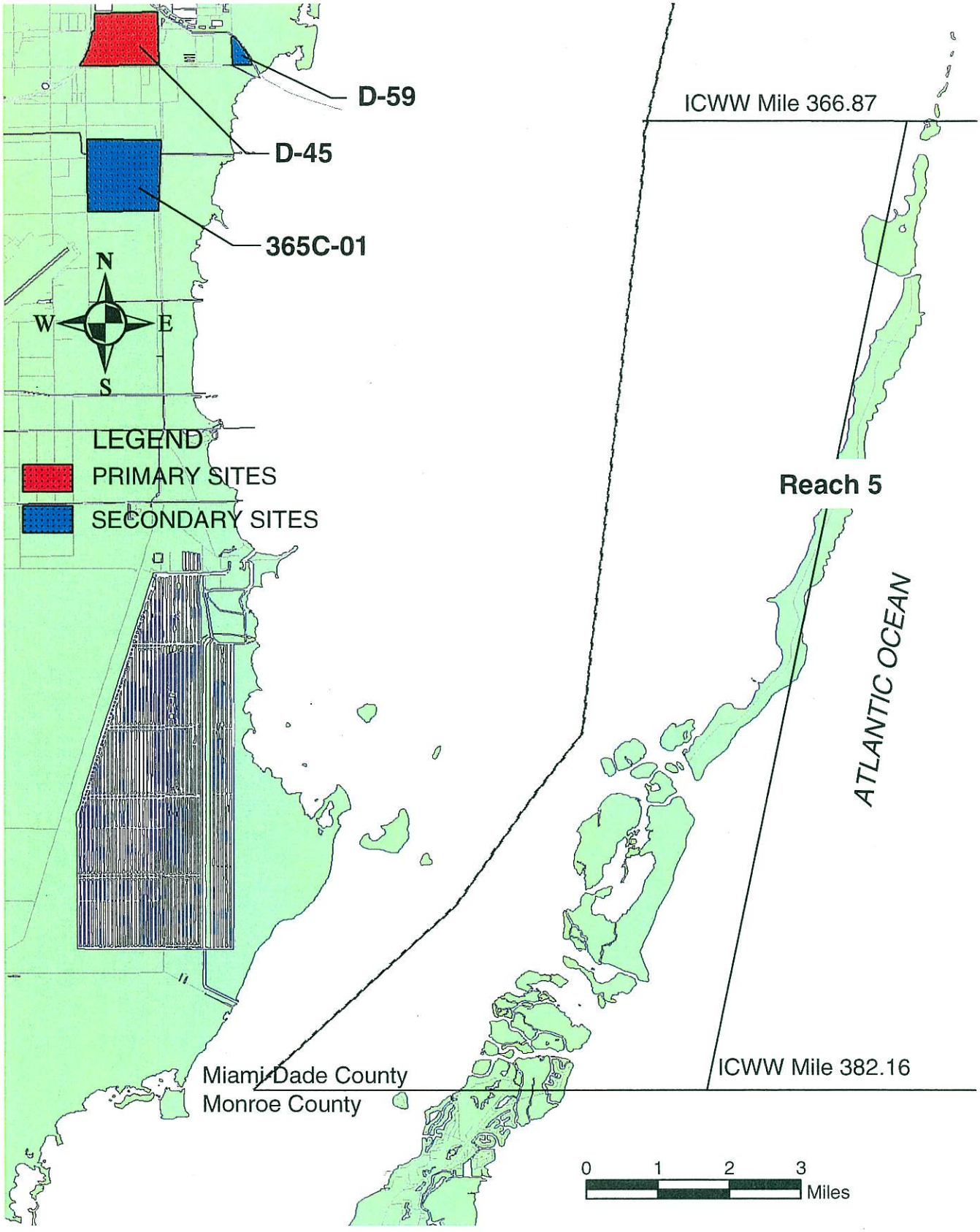

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Figure 4.6
Channel Reach 5
Long Range Dredged Material Management Plan
Intracoastal Waterway
Miami-Dade County, Florida

Project	C2002-036D
Revision	
Sheet	
Date	March, 2003

Table 4.1 summarizes preliminary acreage requirements, storage capacities, and operational factors for each site in the site bank. The more detailed site evaluation and documentation that comprises the project's second phase will determine the final values of these parameters. However, the preliminary estimates presented here appear both realistic and conservative. In each case, material management capabilities of both the primary sites and secondary options are sufficient to meet the project requirements consistent with the established Management Concept for Miami-Dade County.

The primary site acreage required to serve the 47.92 miles of Waterway channel within the Miami-Dade County project area totals approximately 66.1 acres, not including the yet undefined beach placement site. By eliminating the two dewatering and long-term storage sites — Sites D-29 and D-45 — but including two smaller inland storage sites — Site B-54 and Site 365C-01 — as well as one waterfront transfer point — Site D-59 — the corresponding secondary site requirement totals approximately 36 acres. Neither total represents property presently owned or held under easement by the FIND. Notably, Site 72-05 serves an essential role in both primary and secondary dredged material management strategies.

5.0 RECOMMENDED SCOPE OF WORK: PHASE II — Broward and Miami-Dade Counties

Task I: Revise, Finalize Phase I Documents

Revise the original Phase I site banks for both Broward and Miami-Dade County project areas to include primary (first-choice) and secondary (second-choice) site recommendations, based on revised multi-reach inland storage site selection and evaluation criteria. These revisions reflect the significantly reduced required acreage and storage capacity of the multi-reach inland storage sites based on a single maintenance operation requirement. Following the completion of the site bank reevaluation, Taylor Engineering will:

A. Present the revised site banks for Broward and Miami-Dade Counties to the projects' Advisory Committees and the interested public.
B. Prepare revised Final Draft Reports for Broward and Miami-Dade Counties to incorporate the revised site banks, as well as the methods and results from all the previous tasks.
C. Prepare and distribute revised Final Reports following the receipt and incorporation of comments from FIND.
D. Make all corresponding revisions to the project Plan Book.

Task II: Preparatory Documentation

The purpose of this task is to obtain all of the information and authorizations necessary to facilitate the detailed documentation of site conditions and facilities design in Task III and to document public record information concerning land use and zoning restrictions, taxes and assessed values, easements, and property ownership. This will be done for all primary and secondary sites subject to property acquisition proceedings. Specific subtasks are outlined below.

A. Public Information — From county tax rolls and related public records verify and update, as necessary, site ownership and tax information including parcel size, boundaries, and assessed value. This information will be provided to the FIND at the earliest possible date to facilitate the FIND obtaining from all relevant property owners appropriate written permission as required for site access, survey work, field testing, and data collection.
B. Zoning — Verify and update, as necessary, existing zoning classification and permitted uses under that classification.

C. Other Site Encumbrances — Identify other restrictions, which may limit the use of the site such as local or regional planning constraints, rights-of-way, easements, adjacent property constraints, or potential damages to adjacent properties.

D. Site Reconfiguration — Modify site boundaries, as necessary. Eliminate unusable or unnecessary acreage and finalize site configuration for performance of boundary survey.

Task III: Site Conditions

Obtain necessary engineering and environmental site information required for preliminary engineering design and permitting of *primary sites only* as modified by results of Task II. Task A, B, C, and D below are not applicable to the beach placement area designated to serve Reach I and II of Broward County and Reach II of Miami-Dade County.

A. Boundary Survey — Provide boundary survey of each primary site. Provide boundary surveys for additional pipeline and road access easements as required. Document results of each survey in sufficient detail to support legal and engineering actions required for acquisition of the site, as well as acquisition of additional easements under consideration by the FIND, and for site development for the purposes of dredged material management. Provide final boundary survey drawings, written legal descriptions, and other supporting documents to the FIND for each site. Reference boundary information for each site and any additional easements to the Florida State Plane Coordinate System.

B. Engineering Topographic Survey — Provide site topographic information necessary for site planning, permitting, and design purposes. Reference horizontal and vertical control of data to established bench marks and reference all elevations to NGVD.

C. Subsurface and Soils Survey — This task will be performed by the Jacksonville District, U.S. Army Corps of Engineers.

1. Soils Survey — By means of core borings and analysis, document site soil characteristics including boring logs, grain size distributions, specific gravity, organic content, Atterberg limits (where appropriate), shear strength, compaction, and consolidation.
2. Groundwater — Obtain groundwater table elevations at a sufficient number of locations to provide estimates of on-site water table potential surface elevations referenced to NGVD.

D. Environmental Survey — Perform field survey and data collection efforts to provide the following:

1. Detailed documentation of site vegetation communities, including species frequencies of occurrence, and the delineation of wetlands and transitional areas using state approved methods.
2. Detailed documentation of on-site animal species, including endangered or threatened species, and pertinent habitat information.
3. Documentation of existing vegetation communities and species habitats along proposed pipeline access and return drainage routes.
4. Documentation for a Phase I Site Environmental Assessment for concerns related to hazardous waste.

E. Beach Placement Area (Reach I & II Broward County and Reach II Miami-Dade County) — Obtain necessary engineering and environmental site information required for preliminary engineering design and permitting. No boundary survey will be provided for the project area. Work elements within this task will include the following:

1. Analyze existing beach profile data obtained Jacksonville District, U.S. Army Corps of Engineers and Florida DNR, Division of Beaches and Shores to evaluate historic beach profile geometry and background erosion rates.
2. Define beach placement project area.
3. Perform preliminary material compatibility analysis using newly acquired samples of native beach material and existing data on historic shoal material in Reach I & II Broward County and Reach II Miami-Dade County Waterway channels.
4. Locate and characterize all existing public access points, bulkheads, revetments, and stormwater outfalls within the project area.
5. Perform field survey and data collection to provide documentation of environmental condition (species present, frequency of occurrence, pertinent habitat information, endangered or threatened species) within the project area, adjacent nearshore regions, and along proposed pipeline routes.
6. Review existing information to determine possible impact of project on sea turtle nesting.

Task IV: Preliminary Design and Analysis

With data obtained from Task III, develop site documentation and complete preliminary design necessary to prepare permit drawings. Task IV-A and IV-B below are not applicable to the beach placement area

designated to serve Reach I & II Broward County and Reach II Miami-Dade County. Specific requirements of this site are addressed in sub-task IV-C.

A. Environmental — With information obtained from Task III-D, prepare the following:

1. Detailed site maps showing vegetation communities, species locations and habitats, revised usable boundaries, and wetland areas.
2. Detailed written text supporting (1) above.
3. Specific mitigation measures as required.
4. Archeological site locations as recorded in published records available from the Division of Historical Resources, Florida Department of State.
5. Recommended pipeline access and return water routes, as required.
6. Phase I Site Environmental Assessment Report.

B. Engineering — With information obtained in Task III and subject to the specific requirements of each site's intended use, prepare the following:

1. Site Capacity Analysis — Recalculate estimated site capacity and earthwork requirements, as necessary.
2. Site Topographic Map.
3. Engineering Report on Subsurface and Soils Conditions — Prepared by Jacksonville District, U. S. Army Corps of Engineers.
4. Preliminary design calculations and permit drawings of:

    a. Location/Reach Map Site Plan
    b. Pipeline Access and Return Routes, as required
    c. Outlet Works, as required
    d. Dike Section, as required
    e. Internal Structures
    f. Equipment Ingress and Egress Features
    g. Vegetation and Buffer Area Plan
    h. Site Drainage Plans
    i. Detailed written text supporting (1) — (4) above.

C. Beach Placement Area (Reach I & II Broward County and Reach II Miami-Dade County)

1. Environmental — With information obtained in sub-task III-D, prepare the following:

   a. Evaluation of environmental conditions within beach placement project area, adjacent nearshore areas, and along proposed pipeline routes.
   b. Evaluation of project impacts on beach and nearshore habitats, with special emphasis on sea turtle nesting.
   c. Detailed maps of project area, adjacent nearshore regions, and proposed pipeline routes showing species and habitat location, vegetation communities, rock outcroppings, documented turtle nesting sties and other pertinent habitat information.
   d. Detailed written text in support of (a) — (c) above.

2. Engineering — With information obtained in sub-task III-E, prepare the following:

   a. Preliminary design calculations and permit drawings of:
      - Location Map
      - Site Plan
      - Typical Sections
      - Pipeline Access Routes
      - Locations of Public Access, Bulkheads, Revetments, and Outfalls
   b. Compatibility analysis of fill with native beach material.
   c. Projected performance of beach fill.
   d. Detailed written support of (a) — (c) above.

D. Agency Coordination — Obtain from pertinent state and federal agencies a preliminary statement on the acceptability of the proposed site plans based on the site engineering narrative, permit drawings, environmental report, and preliminary delineation of agency jurisdiction.

Task V: Site Management Plans

Prepare a site management plan for each primary site in the Site Bank as modified by Task II. Tasks A, B, and C below are not applicable to the beach placement area designed to serve Reach I & II Broward County and Reach II Miami-Dade County. Each plan will address the following:

A. Design Features — Brief description of all site design features as they relate to the long-term operation of the site and the management of dredged material.

1. During-Dredging Procedures
2. Outlet Operations, if required
3. Inlet Operations, if required
4. Ponding Depth, if appropriate
5. Barge Operations, as required
6. Material Distribution
7. Monitoring

B. Post-Dredging Procedures

1. Material Dewatering and/or Stockpiling
2. Surface Water Management
3. Material Handling/Transfer/Reuse
4. Monitoring

C. Beach Placement Area (Reach I & II Broward County and Reach II Miami-Dade County) — The site management plan for the beach placement area will address the long-range implication of the site — and the continuing modifications in project design and operational criteria in response to project performance.

Task VI: Cost Considerations

For all primary sites, evaluate the following cost considerations:

A. Site Improvement Costs
B. Site Operation Costs
C. Site Maintenance Costs

Task VII: Documents and Deliverables

Prepare and submit the following project documents for each primary site:

A. Site boundary survey with legal description, with additional boundary surveys of pipeline and road access easements as required.

B. Site topographic survey, with additional topographic surveys of pipeline and road access easements as required.

C. Permit drawings and accompanying engineering narrative.

D. Subsurface and soils report prepared by Jacksonville District, U. S. Army Corps of Engineers (not applicable to beach placement area, Reach I & II Broward County and Reach II Miami-Dade County).

E. Environmental Report.

F. Phase I Site Environmental Assessment Report.

G. Site Management Plan.

H. Cost Report.

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APPENDIX A

Site Bank (Primary and Secondary Sites)

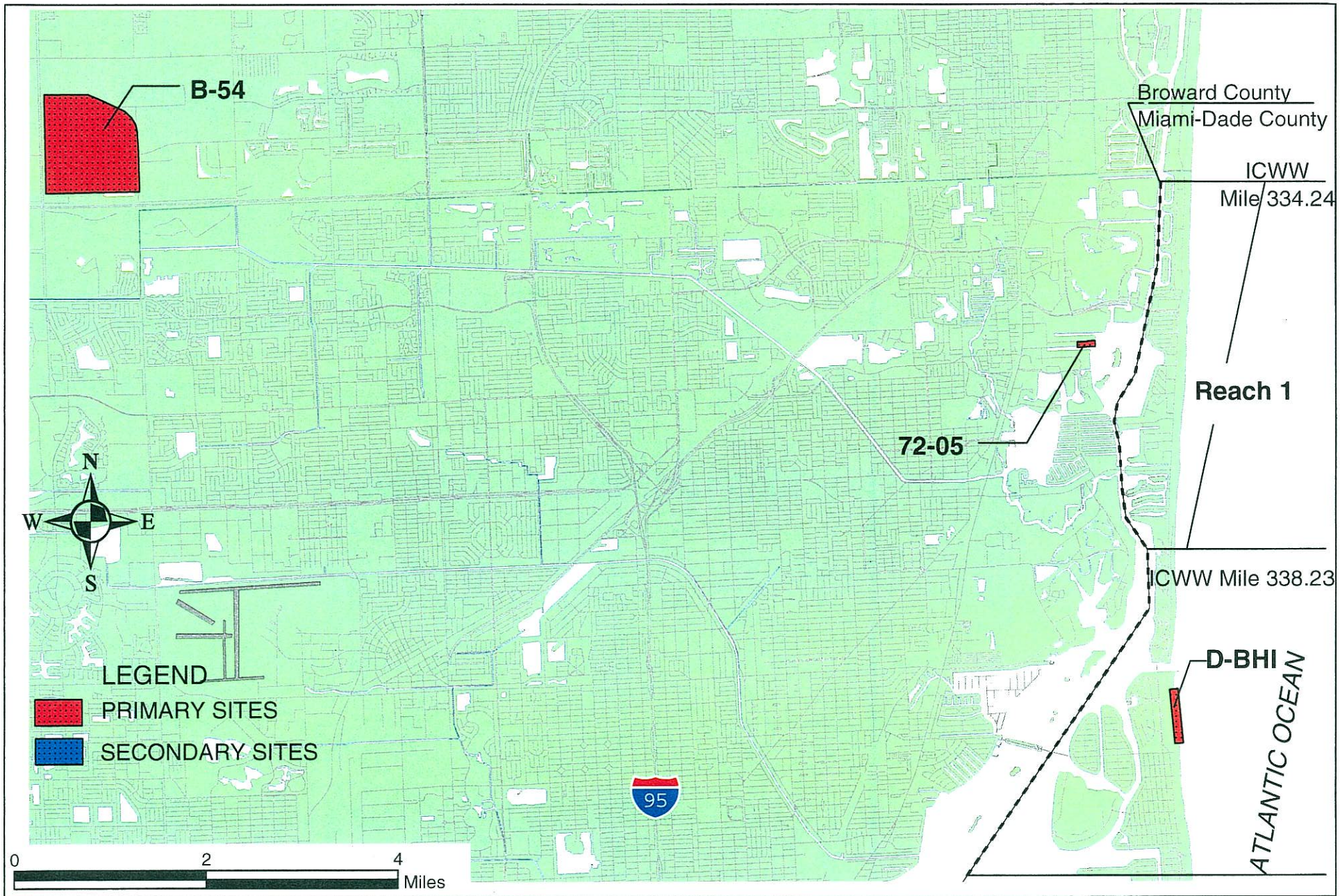

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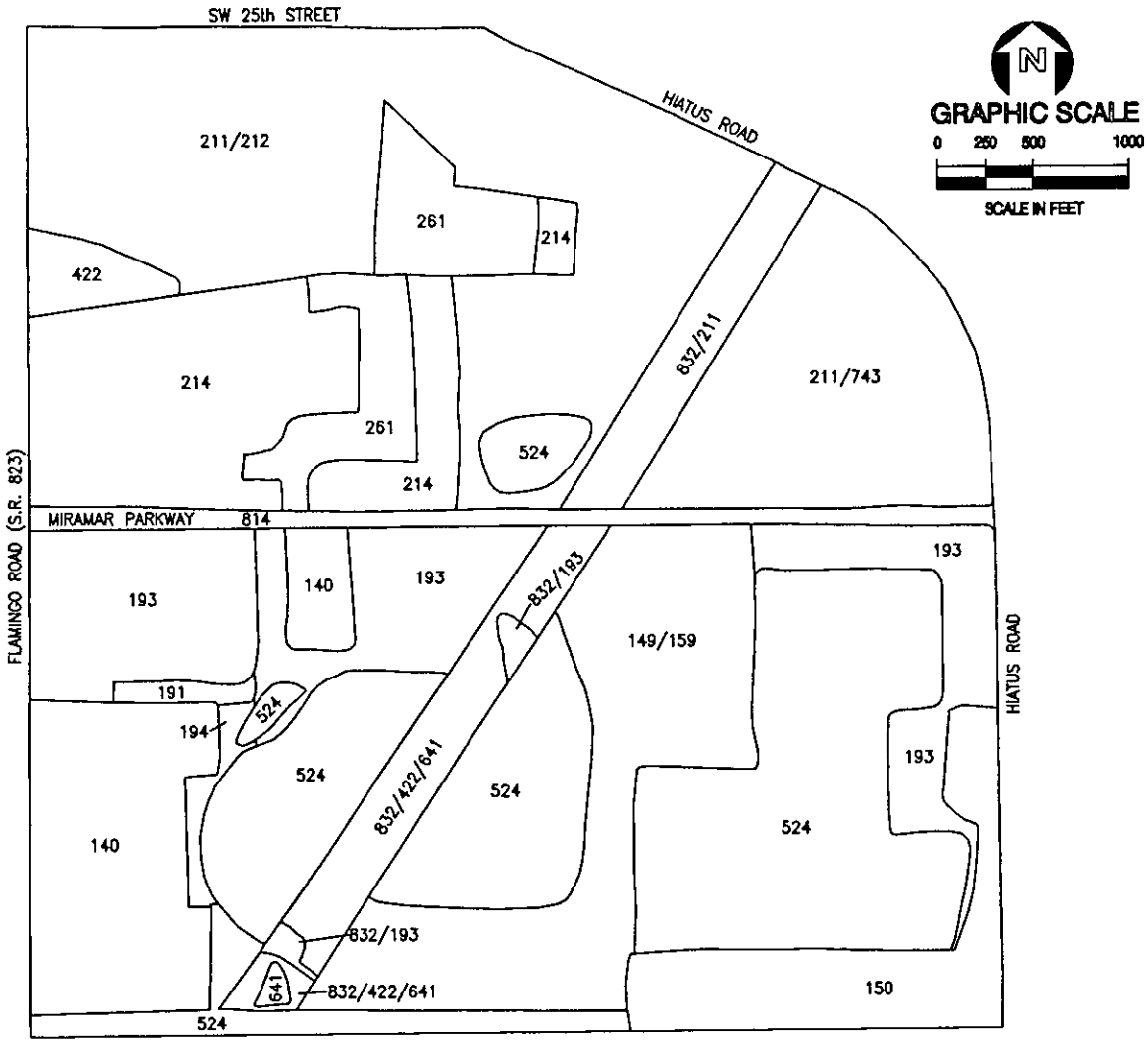
Figure A-1
Channel Reach 1
Long Range Dredged Material Management Plan
Intracoastal Waterway
Miami-Dade County, Florida

Project	C2002-036D
Revision	
Sheet	
Date	March, 2003



LEGEND B-54

		ACRES
140	COMMERCIAL AND SERVICES	38.82
149/159	COMMERCIAL AND SERVICES UNDER CONSTRUCTION/INDUSTRIAL UNDER CONSTRUCTION	51.12
150	INDUSTRIAL	24.87
191	UNDEVELOPED LAND IN TRANSITION	1.93
193	URBAN LAND IN TRANSITION	58.72
194	OTHER OPEN LAND	2.64
211/212	IMPROVED PASTURES/UNIMPROVED PASTURES	109.57
211/743	IMPROVED PASTURES/SPOIL AREAS	46.62
214	ROW CROPS	50.13
261	FALLOW CROP LAND	22.73
422	BRAZILIAN PEPPER	5.46
524	LAKES LESS THAN 10 ACRES WHICH ARE DOMINANT FEATURES	115.68
641	FRESHWATER MARSHES	.64
814	ROADS AND HIGHWAYS	10.82
832/193	ELECTRICAL POWER TRANSMISSION LINES/ URBAN LAND IN TRANSITION	1.73
832/211	ELECTRICAL POWER TRANSMISSION LINES/ IMPROVED PASTURES	13.04
832/422/641	ELECTRICAL POWER TRANSMISSION LINES/ BRAZILIAN PEPPER/FRESHWATER MARSHES	18.69
	TOTAL ACRES	573.21

LAND USE AND VEGETATION FOR CANDIDATE SITE B-54, BROWARD COUNTY, FLORIDA

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JACKSONVILLE, FLORIDA 32256

Figure A-2
Land Use and Vegetation
for Candidate Site B-54
Miami-Dade County, Florida

PROJECT C1999-021
REVISION
SHEET
DATE Aug., 2000

SITE DATA SUMMARY SHEET

Name: B-54

AKA:

Site Use: Multi-Reach Inland Storage

Comment: Large transmission line corridor running through site

LOCATION

County:	Broward	**ICWW REACH MILEAGE:**	332.96
Municipality:	Unincorporated	**East/West of**	West
Section/Township/Range:	24/51/40 & 25/51/40	**Receiving Waterbody:**	N/A
		FDEP	N/A

REACH

Reach Designation:	DA-1	**Projected Dredging Frequency (yr):**	20
Reach Length (mi):	3.99	**50-yr Dredging Requirement (cy):**	15,801
ICWW Mileage:	334.24 to 338.23	**50-yr Storage Requirement (cy):**	33,973
Cut/Station:	DA-1/0+00 to DA-8/0+00		
Geographic: (FDEP Classification)	530 ft South of Broward/Dade County Line (III) to Haulover Beach County Park (III)		

SITE PARAMETERS

Mapped Area (ac):	573.21	**Storage Capacity (cy):**	139,500
Containment Area (ac):	N/A	**Dike Height (ft):**	N/A
Impacted Area (ac):	9.83	**Excavation Depth (ft):**	N/A
Buffer Area (ac):	7.14	**Existing Mean Site Elevation (ft):**	5.0
N Buffer Width (ft):	100	**Dike Volume (cy):**	N/A
S Buffer Width (ft):	100	**Max. Pumping Distance (mi):**	N/A
E Buffer Width (ft):	100	**Max. Barging Distance (mi):**	N/A
W Buffer Width (ft):	100	**Min. Distance from Waterway (mi):**	11.48
Total Site Area (ac):	16.97		

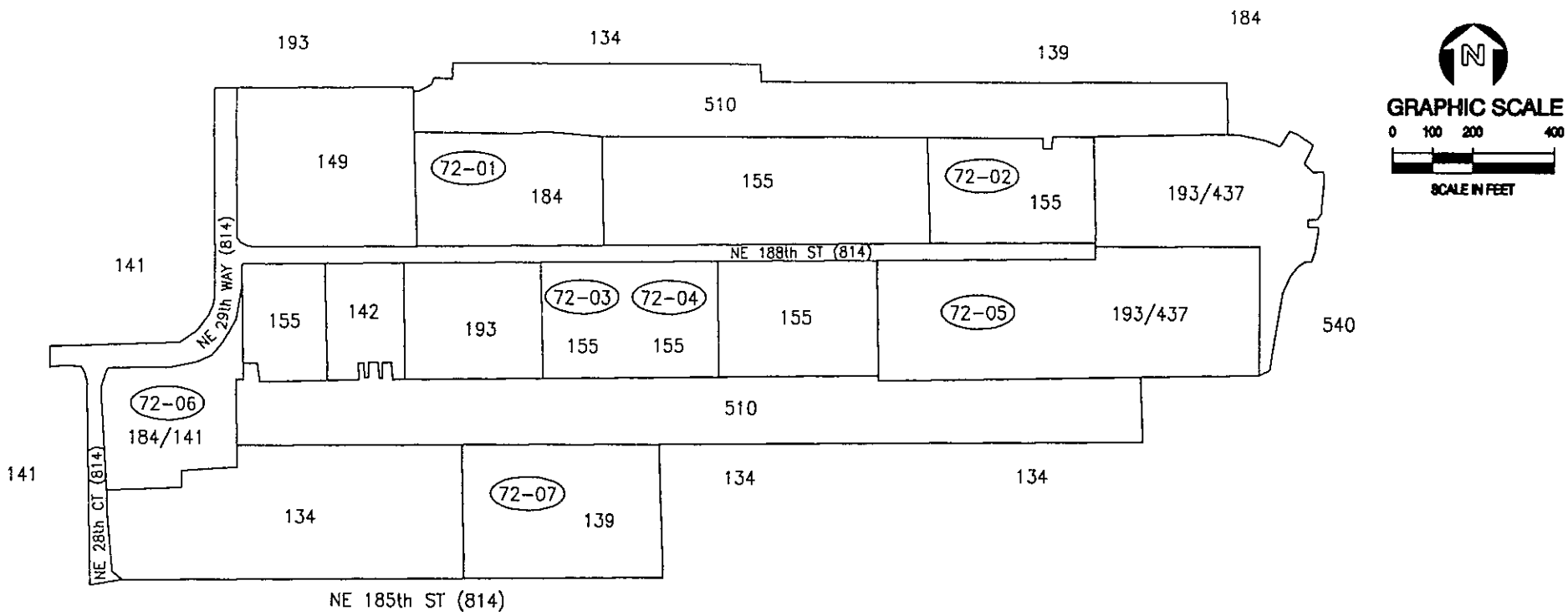
SITE

Public Access:	Flamingo Rd, SW 25th St, Hiatus Rd, SW 41st St	**Comprehensive Plan Designation:**	Residential and Commercial
		Adjacent Land Use:	
Road Easement (ft):	100	SW 25th St & Hiatus Rd (N); Hiatus Rd (E); SW 41st St (S); Flamingo Rd (State Road 823) (W)	
Pipeline Easement (ft):	N/A	**Land Use of Impacted Area:**	
Deep Draft Access:	N/A	Improved pastures, Fallow crop land, Row crops, Brazilian pepper	
		Wetlands W/I Mapped Area (ac):	19.33
		Wetlands Impacted (ac):	0.00

Site Narrative:

This 573-acre site, B-54, is bisected by Miramar Parkway (814). The primarily undeveloped northern portion contains improved and unimproved pastureland (211/212), row crops such as corn and sugarcane (214), fallow cropland (261), a borrow pit pond (524), and a transmission line corridor that is also maintained as improved pastureland (832/211). The southern portion of the site is primarily composed of commercial (140), industrial (150), and commercial/industrial under construction (149/159). This portion also contains several large borrow pit ponds (524), a large transmission line/Brazilian pepper/freshwater marsh (832/422/641) corridor, and a large area of urban land in transition without positive indicators of intended activity (193).

The entire site is bounded on the north by SW 25th Street and Hiatus Road (814), on the east by Hiatus Road (814), on the south partially by SW 41st Street (814) and an abandoned portion of the same street, and on the west by Flamingo Road (State Road 823).



LEGEND

	72-01			72-05	
184	MARINAS AND FISH CAMPS	2.95 ACRES	193/437	URBAN LAND IN TRANSITION/AUSTRALIAN PINE	6.65 ACRES
	72-02			72-06	
155	OTHER LIGHT INDUSTRIAL	2.45 ACRES	184/141	MARINAS AND FISH CAMPS/RETAIL SALES AND SERVICE	2.30 ACRES
	72-03 AND 72-04			72-07	
155	OTHER LIGHT INDUSTRIAL	2.86 ACRES	139	HIGH DENSITY UNDER CONSTRUCTION	3.70 ACRES

OTHER COVER TYPES SHOWN

134	MULTIPLE DWELLING UNITS
141	RETAIL SALES AND SERVICE
142	WHOLESALE SALES AND SERVI
149	COMMERCIAL AND SERVICES UNDER CONSTRUCTION
193	URBAN LAND IN TRANSITION
510	STREAMS AND WATERWAYS
540	BAYS AND ESTUARIES
814	ROADS AND HIGHWAYS

LAND USE AND VEGETATION FOR CANDIDATE SITE 72-01 THROUGH 72-07, MIAMI-DADE COUNTY, FLORIDA

TAYLOR ENGINEERING INC.
9000 CYPRESS GREEN DRIVE, SUITE 200
JACKSONVILLE, FLORIDA 32256

Figure A-3
Land Use and Vegetation
of Candidate Sites 72-01 Through 72-07,
Miami-Dade County, Florida

PROJECT C1999-021
REVISION
SHEET
DATE Aug, 2001

SUMMARY SHEET

72-05

Thunder Alley Canal (5)

Material Rehandling (Barge Offloading) and Short-Term Storage (Single Operation)

Completely fenced and partially vegetated abandoned ship construction site

	Dade Aventura	**ICWW REACH MILEAGE:** **East/West of**	335.95 West
ship/Range:	3/52/42	**Receiving Waterbody:**	N/A
		FDEP	N/A
ation:	DA-1	**Projected Dredging Frequency (yr):**	20
ı (mi):	3.99	**50-yr Dredging Requirement (cy):**	15,801
ge:	334.24 to 338.23	**50-yr Storage Requirement (cy):**	33,973
	DA-1/0+00 to DA-8/0+00		
sification)	530 ft South of Broward/Dade County Line (III) to Haulover Beach County Park (III)		

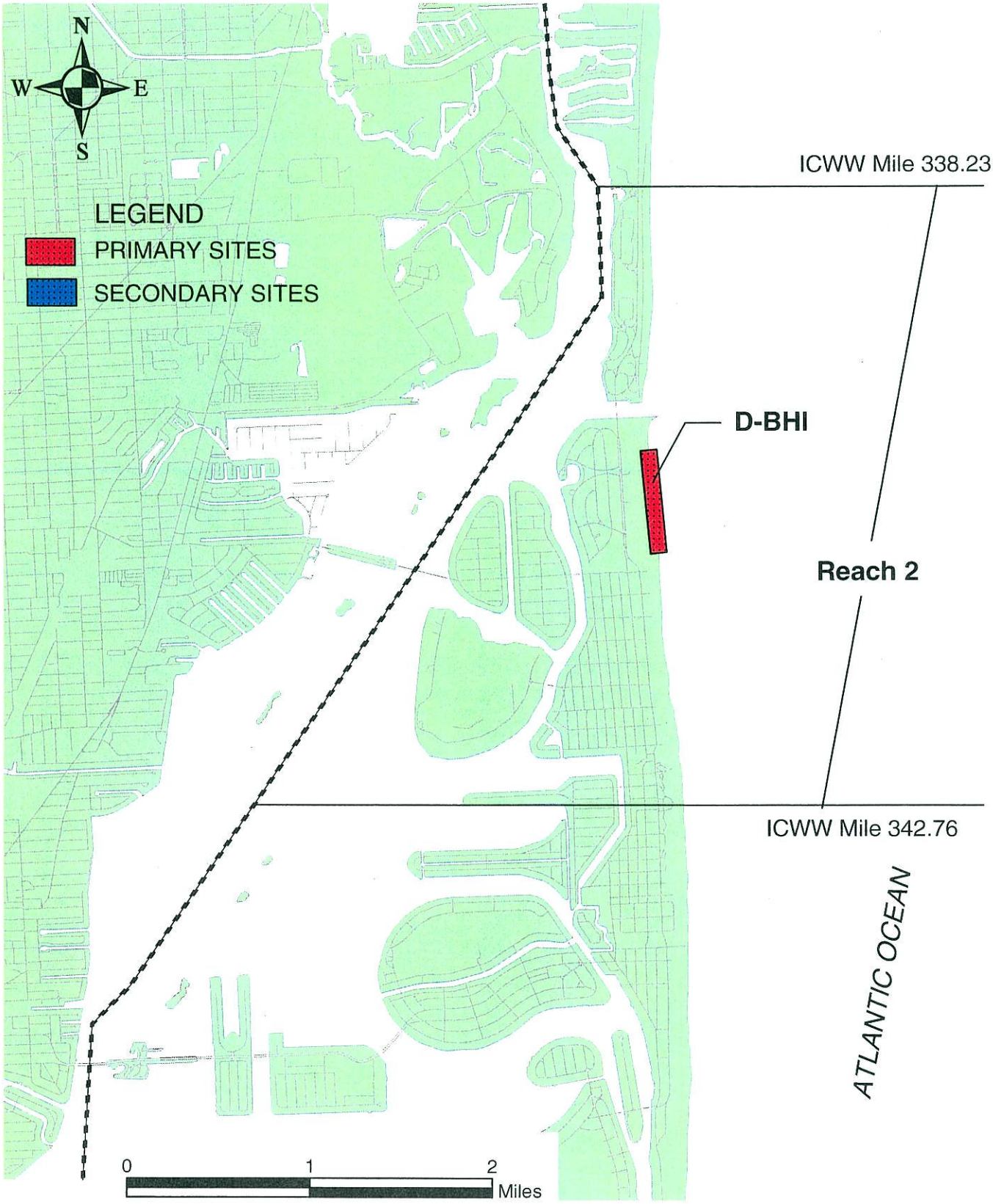
IETERS

. (ac):	6.65	**Storage Capacity (cy):**	56,390
Area (ac):	N/A	**Dike Height (ft):**	N/A
:a (ac):	3.96	**Excavation Depth (ft):**	N/A
ac):	2.69	**Existing Mean Site Elevation (ft):**	5.0
/idth (ft):	50	**Dike Volume (cy):**	N/A
'idth (ft):	50	**Max. Pumping Distance (mi):**	N/A
/idth (ft):	50	**Max. Barging Distance (mi):**	7.35
Vidth (ft):	50	**Min. Distance from Waterway (mi):**	0.54
:a (ac):	6.65		
:	NE 188th St	**Comprehensive Plan Designation:**	Industrial & Office
		Adjacent Land Use:	
nt (ft):	Not Required	Aventura Park (N), Dumfoundling Bay (E); Canal & Multi-family residential (S); Light Industrial (N, W)	
ment (ft):	N/A		
		Land Use of Impacted Area:	
ccess:	Yes	Urban land in transition/Australian Pine	
		Wetlands W/I Mapped Area (ac):	0.00
		Wetlands Impacted (ac):	0.00

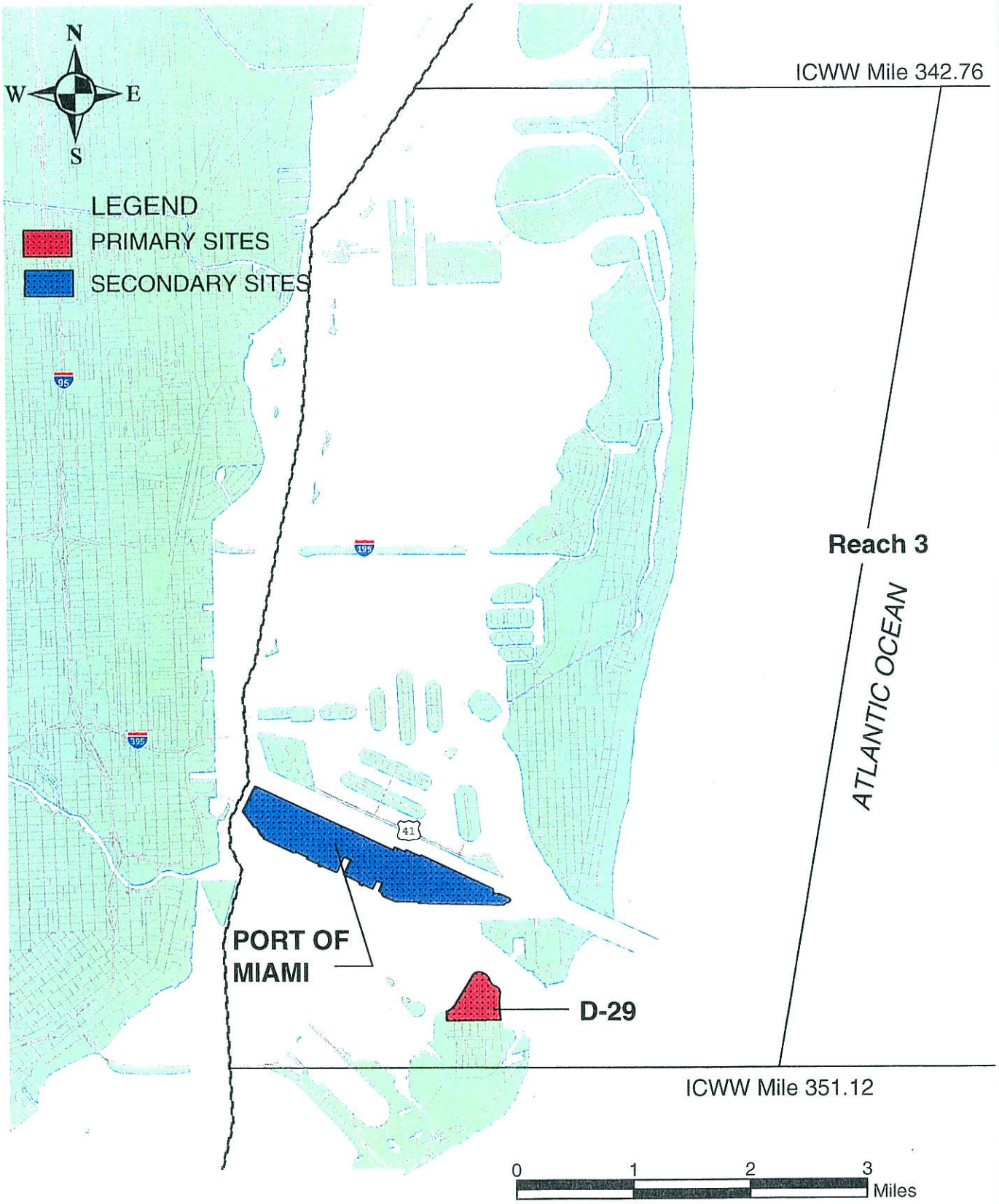
:

e 72-05 is a 6.65-acre upland site that consists of urban land in transition and Australian pine (193/437). The site is een NW 188th Street (814) and the southernmost Thunder Alley Canal. Site conditions, including a dilapidated building, t forms, and boat construction related debris scattered on-site, indicated that Site 72-05 is abandoned ship construction he site is predominantly vegetated with Australian pine (*Casuarina equisetifolia*), Brazilian pepper (*Schinus 'us*), common reed (*Phragmites australis*), and creeping oxeye (*Wedelia trilobata*). Site 72-05 is surrounded by a large, ped, chain-link fence and had to be inspected from adjacent public roads. No wetlands were seen from the fence or inspection of aerial photographs.

e site is bounded on the north, across NE 188th Street, by Site 72-02 and undeveloped land, a proposed city park (193), e City of Aventura. Site 72-05 is bounded on the east by Dumfoundling Bay (540). The southern boundary, across the t Thunder Alley canal, consists of residential high-density multi-family residential (134) and the western boundary is a ınstruction and repair facility (155).



TAYLOR ENGINEERING INC. 9000 Cypress Green Drive, Suite 200 Jacksonville, Florida 32256	Figure A-4 Channel Reach 2 Long Range Dredged Material Management Plan Intracoastal Waterway Miami-Dade County, Florida	Project C2003-036D Revision Sheet Date March, 2003



TAYLOR ENGINEERING INC. 9000 Cypress Green Drive, Suite 200 Jacksonville, Florida 32256	Figure A-5 Channel Reach 3 Long Range Dredged Material Management Plan Intracoastal Waterway Miami-Dade County, Florida	Project C2002-036D Revision Sheet Date March, 2003

SITE DATA SUMMARY SHEET

Name: D-BHI

AKA:

Site Use: Beach Placement

Comment: Specific location not yet determined

LOCATION

County:	Dade	**ICWW REACH MILEAGE:**	339.45
Municipality:	Bal Harbour	**East/West of**	East
Section/Township/Range:	26/52/42, 35/52/42, 2/53/42, & 11/53/42	**Receiving Waterbody:**	N/A
		FDEP	N/A

REACH

Reach Designation:	DA-2	**Projected Dredging Frequency (yr):**	5
Reach Length (mi):	4.53	**50-yr Dredging Requirement (cy):**	469,672
ICWW Mileage:	338.23 to 342.76	**50-yr Storage Requirement (cy):**	1,009,795
Cut/Station:	DA-8/0+00 to DA-9/178+50		
Geographic:	Haulover Beach County Park	(III) to	
(FDEP Classification)	Kennedy Causeway (NE 79th Street)	(III)	

SITE PARAMETERS

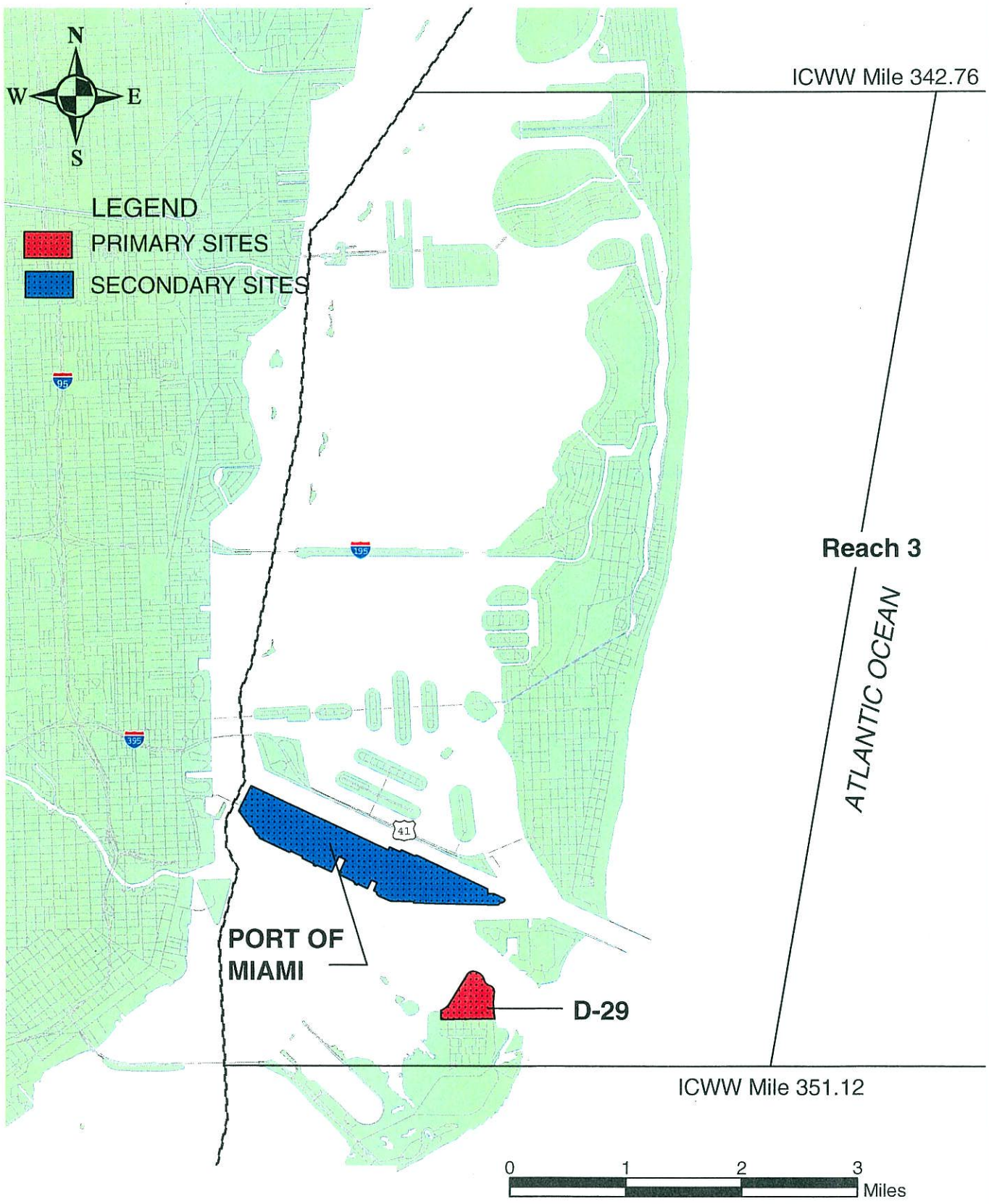
Mapped Area (ac):	0	**Storage Capacity (cy):**	N/A
Containment Area (ac):	N/A	**Dike Height (ft):**	N/A
Impacted Area (ac):	N/A	**Excavation Depth (ft):**	N/A
Buffer Area (ac):	N/A	**Existing Mean Site Elevation (ft):**	N/A
N Buffer Width (ft):	N/A	**Dike Volume (cy):**	N/A
S Buffer Width (ft):	N/A	**Max. Pumping Distance (mi):**	4.19
E Buffer Width (ft):	N/A	**Max. Barging Distance (mi):**	N/A
W Buffer Width (ft):	N/A	**Min. Distance from Waterway (mi):**	0.88
Total Site Area (ac):	N/A		

SITE

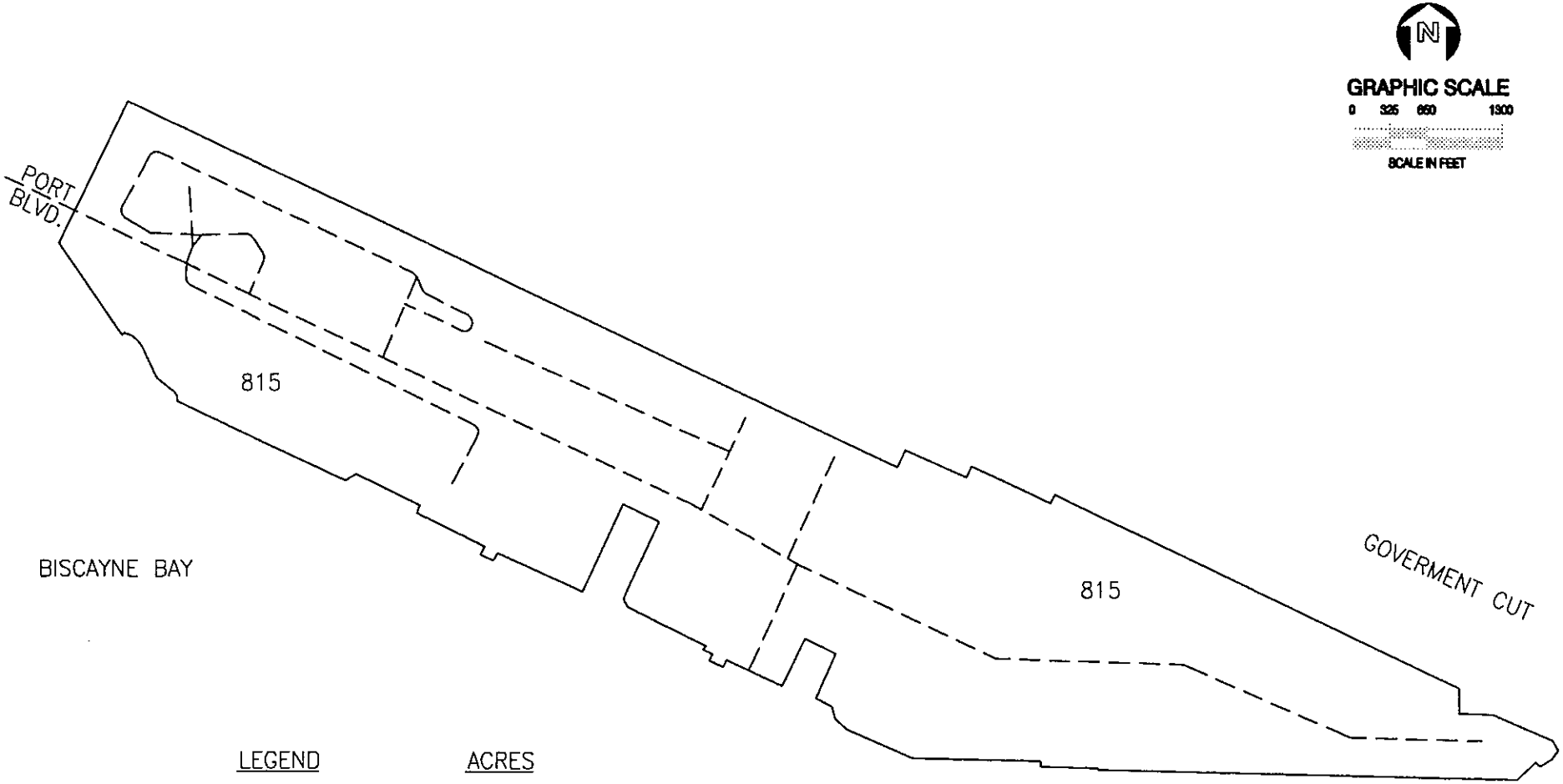
Public Access:	State Road A1A	**Comprehensive Plan Designation:**	N/A
		Adjacent Land Use:	
Road Easement (ft):	Not Required	Multi-family residential (W)	
Pipeline Easement (ft):	Not Required		
		Land Use of Impacted Area:	
Deep Draft Access:	Yes	Recreational beach	
		Wetlands W/I Mapped Area (ac):	0.00
		Wetlands Impacted (ac):	0.00

Site Narrative:

Site D-BHI is an undesignated beach placement site located south of the Bakers Haulover Inlet in the city of Bal Harbour. Final site placement and beach fill template will be determined in Phase II.



TAYLOR ENGINEERING INC. 9000 Cypress Green Drive, Suite 200 Jacksonville, Florida 32256	Figure A-5 Channel Reach 3 Long Range Dredged Material Management Plan Intracoastal Waterway Miami-Dade County, Florida	Project C2002-036D Revision Sheet Date March, 2003



LEGEND		ACRES
815	PORT AND FACILITIES	503.60
— — — —	ROADS AND HIGHWAYS	

LAND USE AND VEGETATION OF CANDIDATE SITE PORT OF MIAMI, MIAMI-DADE COUNTY, FLORIDA

TAYLOR ENGINEERING INC.
9000 CYPRESS GREEN DRIVE, SUITE 200
JACKSONVILLE, FLORIDA 32256

Figure A-6
Land Use and Vegetation
of Candidate Site Port of Miami
MIAMI-DADE COUNTY, FLORIDA

PROJECT C1999-021
REVISION
SHEET
DATE Feb., 2002

SITE DATA SUMMARY SHEET

Name: Port of Miami

AKA:

Site Use: Material Rehandling (Barge Offloading)

Comment: Commercial Area -- Port Facilities

LOCATION

County:	Dade	ICWW REACH MILEAGE:	348.62
Municipality:	Miami	East/West of	East
Section/Township/Range:	4/52/42, 5/52/42, 6/52/42, 8/52/42, & 9/52/42	Receiving Waterbody:	N/A
		FDEP	N/A

REACH

Reach Designation:	DA-3	Projected Dredging Frequency (yr):	20
Reach Length (mi):	8.36	50-yr Dredging Requirement (cy):	17,524
ICWW Mileage:	342.76 to 351.12	50-yr Storage Requirement (cy):	37,677
Cut/Station:	DA-9/178+50 to D-3/57+80		
Geographic: (FDEP Classification)	Kennedy Causeway (NE 79th Street) Rickenbacker Causeway	(III) to (III)	

SITE PARAMETERS

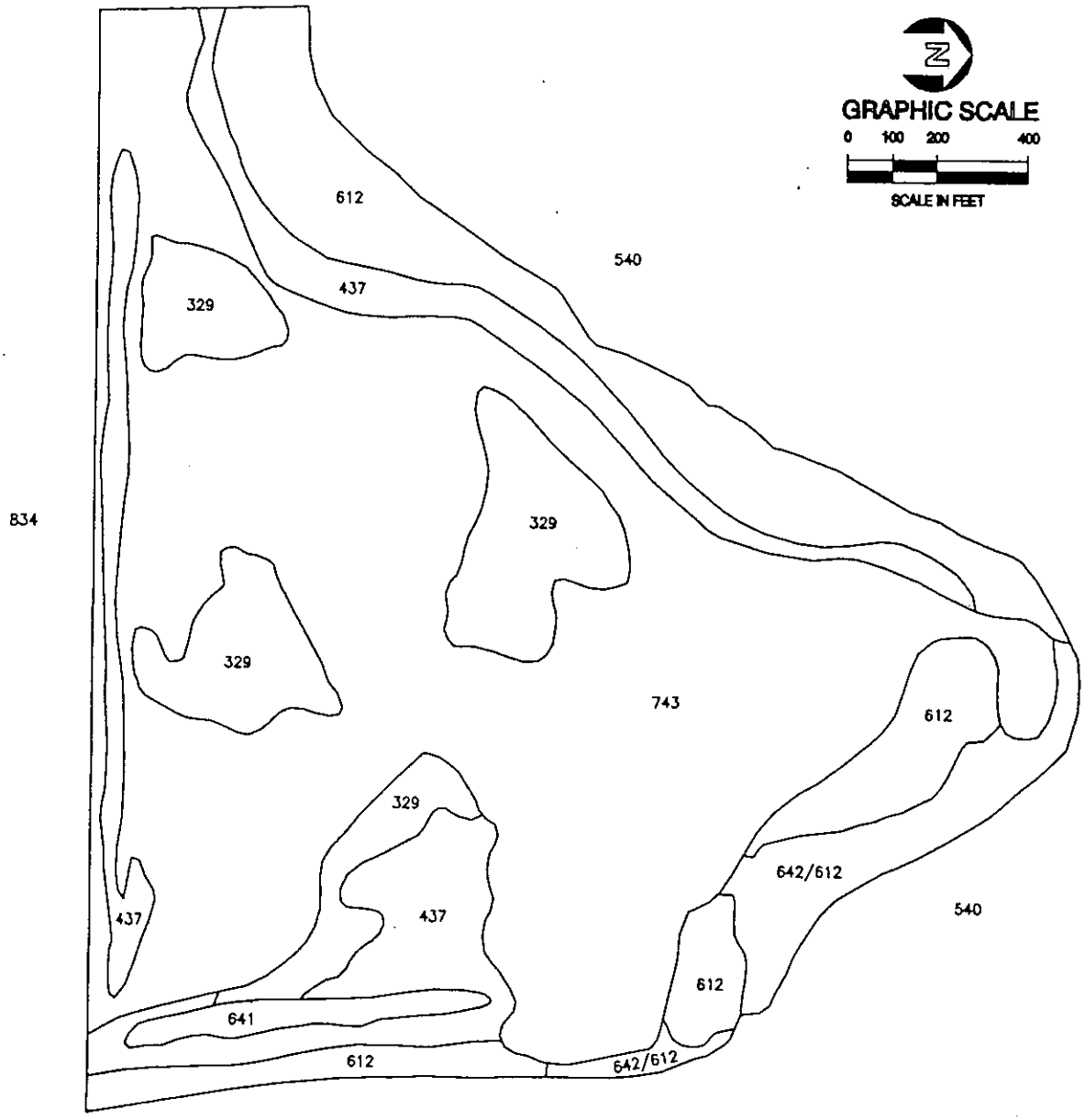
Mapped Area (ac):	0	Storage Capacity (cy):	N/A
Containment Area (ac):	N/A	Dike Height (ft):	N/A
Impacted Area (ac):	N/A	Excavation Depth (ft):	N/A
Buffer Area (ac):	N/A	Existing Mean Site Elevation (ft):	N/A
N Buffer Width (ft):	N/A	Dike Volume (cy):	N/A
S Buffer Width (ft):	N/A	Max. Pumping Distance (mi):	N/A
E Buffer Width (ft):	N/A	Max. Barging Distance (mi):	18.29
W Buffer Width (ft):	N/A	Min. Distance from Waterway (mi):	0.04
Total Site Area (ac):	N/A		

SITE

Public Access:	Port Boulevard	Comprehensive Plan Designation:	Commercial
		Adjacent Land Use:	
Road Easement (ft):	Not Required	Port Facilities	
Pipeline Easement (ft):	N/A		
		Land Use of Impacted Area:	
Deep Draft Access:	Yes	Port Facilities	
		Wetlands W/I Mapped Area (ac):	0.0
		Wetlands Impacted (ac):	0.0

Site Narrative:

The Dante B. Fascell Port of Miami-Dade is a multipurpose deepwater multipurpose port. The site can be accessed from the mainland via Port Boulevard. The Port of Miami is surrounded by Biscayne Bay, the Intracoastal Waterway lies just west of the site, and Government Cut lies to the east.



LEGEND D-29

		ACRES
329	OTHER SHRUBS AND BRUSH	9.12
437	AUSTRALIAN PINE	9.75
612	MANGROVE SWAMP	13.13
641	FRESHWATER MARSHES	1.06
642/612	SALTWATER MARSHES/MANGROVE SWAMP	3.65
743	SPOIL AREAS	44.16
	TOTAL ACRES	80.87

OTHER COVER TYPES SHOWN

540	BAYS AND ESTUARIES
834	SEWAGE TREATMENT

LAND USE AND VEGETATION FOR CANDIDATE SITE D-29, MIAMI-DADE COUNTY, FLORIDA

TAYLOR ENGINEERING INC.
9000 CYPRESS GREEN DRIVE, SUITE 200
JACKSONVILLE, FLORIDA 32256

Figure A-7
Land Use and Vegetation
of Candidate Site D-29
Miami-Dade County, Florida

PROJECT C1999-021
REVISION
SHEET
DATE Aug., 2000

SITE DATA SUMMARY SHEET

Name:	D-29
AKA:	Northern Virginia Key
Site Use:	Dewatering & Short-Term Storage (Single Operation)
Comment:	Site appears to previously have been used for rock, rubble, and dredged material stockpiling for the Port of Miami

LOCATION

County:	Dade	ICWW REACH MILEAGE:	350.42
Municipality:	Miami	East/West of	East
Section/Township/Range:	16/54/42	Receiving Waterbody:	Biscayne Bay
		FDEP	III

REACH

Reach Designation:	DA-4	Projected Dredging Frequency (yr):	20
Reach Length (mi):	15.75	50-yr Dredging Requirement (cy):	0
ICWW Mileage:	351.12 to 366.87	50-yr Storage Requirement (cy):	0
Cut/Station:	D-3/57+80 to D-5/0+00		
Geographic: (FDEP Classification)	Rickenbacker Causeway Black Point	(III) to (III)	

SITE PARAMETERS

Mapped Area (ac):	80.87	Storage Capacity (cy):	41,454
Containment Area (ac):	10.00	Dike Height (ft):	6
Impacted Area (ac):	13.26	Excavation Depth (ft):	1.50
Buffer Area (ac):	3.72	Existing Mean Site Elevation (ft):	20
N Buffer Width (ft):	100	Dike Volume (cy):	16,923
S Buffer Width (ft):	100	Max. Pumping Distance (mi):	18.64
E Buffer Width (ft):	100	Max. Barging Distance (mi):	N/A
W Buffer Width (ft):	100	Min. Distance from Waterway (mi):	2.19
Total Site Area (ac):	16.98		

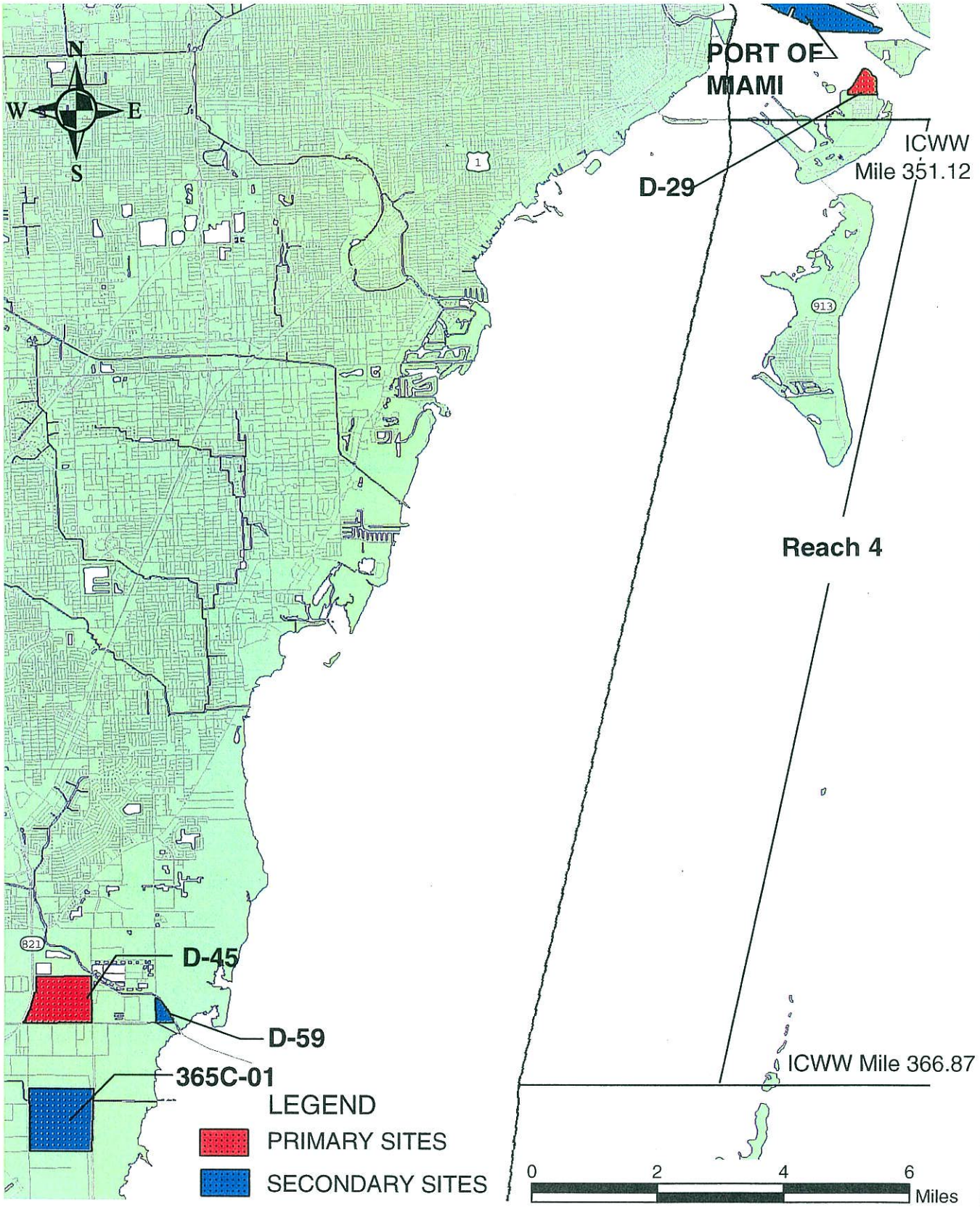
SITE

Public Access:	Rickenbacker Causeway	Comprehensive Plan Designation:	Parks & Recreation
		Adjacent Land Use:	
Road Easement (ft):	2,800	Biscayne Bay (N, E, W); Sewage Treatment Facilities (S)	
Pipeline Easement (ft):	Not Required		
		Land Use of Impacted Area:	
Deep Draft Access:	Yes	Spoil areas, Shrubs & Brush	
		Wetlands W/I Mapped Area (ac):	17.84
		Wetlands Impacted (ac):	0.00

Site Narrative:

Site D-29 is an 81-acre undeveloped parcel of land located on the north end of Virginia Key. The site appears to have been previously used for the stockpiling of rock, rubble, and dredged material. Natural areas on the parcel are largely limited to mangrove swamp, which fringe the site adjacent to Biscayne Bay. Mangrove/marsh restoration areas (642/612) are located along the northeast shorelines. Much of the upland areas are barren with very little vegetation. Other areas (mapped as 329, other shrubs and brush) include a mix of herbaceous and early successional shrub vegetation including Brazilian pepper (*Schinus terebinthifolius*), ragweed (*Ambrosia artemisiifolia*), dog fennel (*Eupatorium capillifolium*), railroad vine (*Ipomea pes-capre*), and sedge (*Cyperus sp.*). The spoil areas throughout Site D-29 are nearly barren and some are elevated 20 to 25 feet above adjacent grades. A wetland pond (641), vegetated with cattail (*Typha sp.*), is located along the eastern side of the site and is surrounded by a stand of Australian pine (437). Other stands of Australian pine also occur on the site. Along the southern side of the site, a narrow stand of Australian pine buffers the property from the sewage treatment spray field to the south. Along the northwest part of the site, Australian pine occurs as a thin forested band between the mangrove swamps and spoil areas.

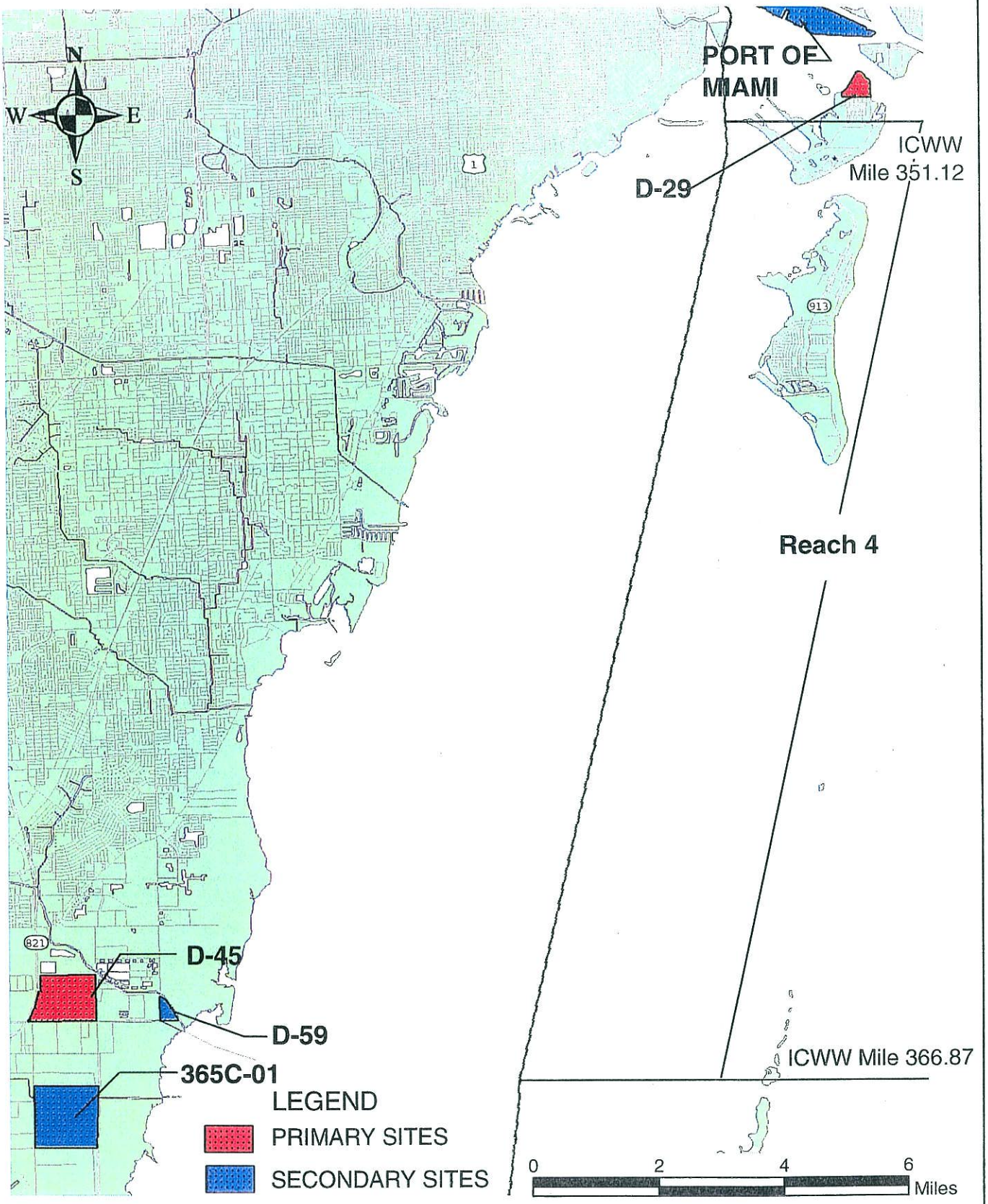
The site is bounded on the north, east, and west by Biscayne Bay (540) and sewage treatment facilities (834) to the south.



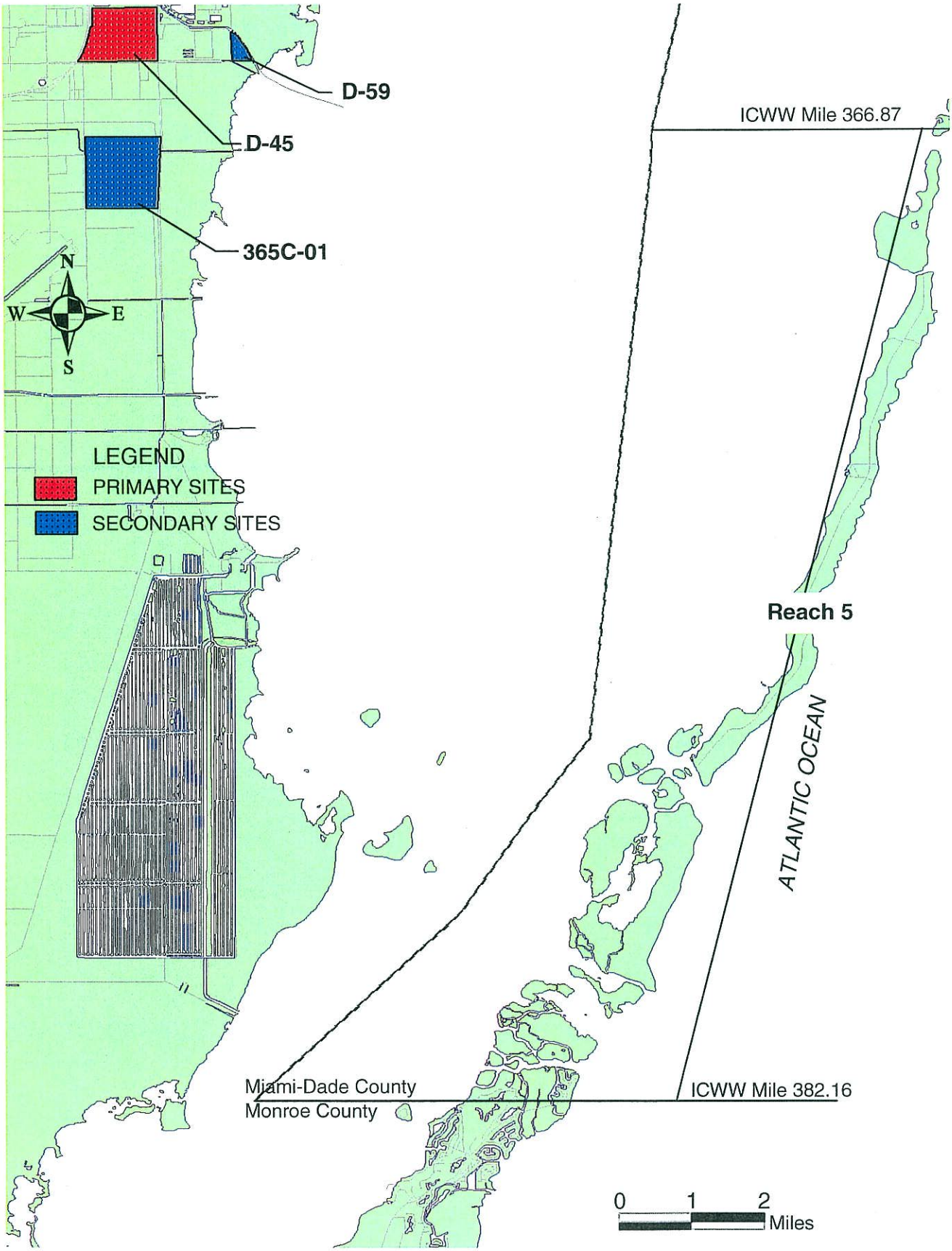
TAYLOR ENGINEERING INC.
9000 Cypress Green Drive, Suite 200
Jacksonville, Florida 32256

Figure A-8
Channel Reach 4
Long Range Dredged Material Management Plan
Intracoastal Waterway
Miami-Dade County, Florida

Project	C2002-036D
Revision	
Sheet	
Date	March, 2003



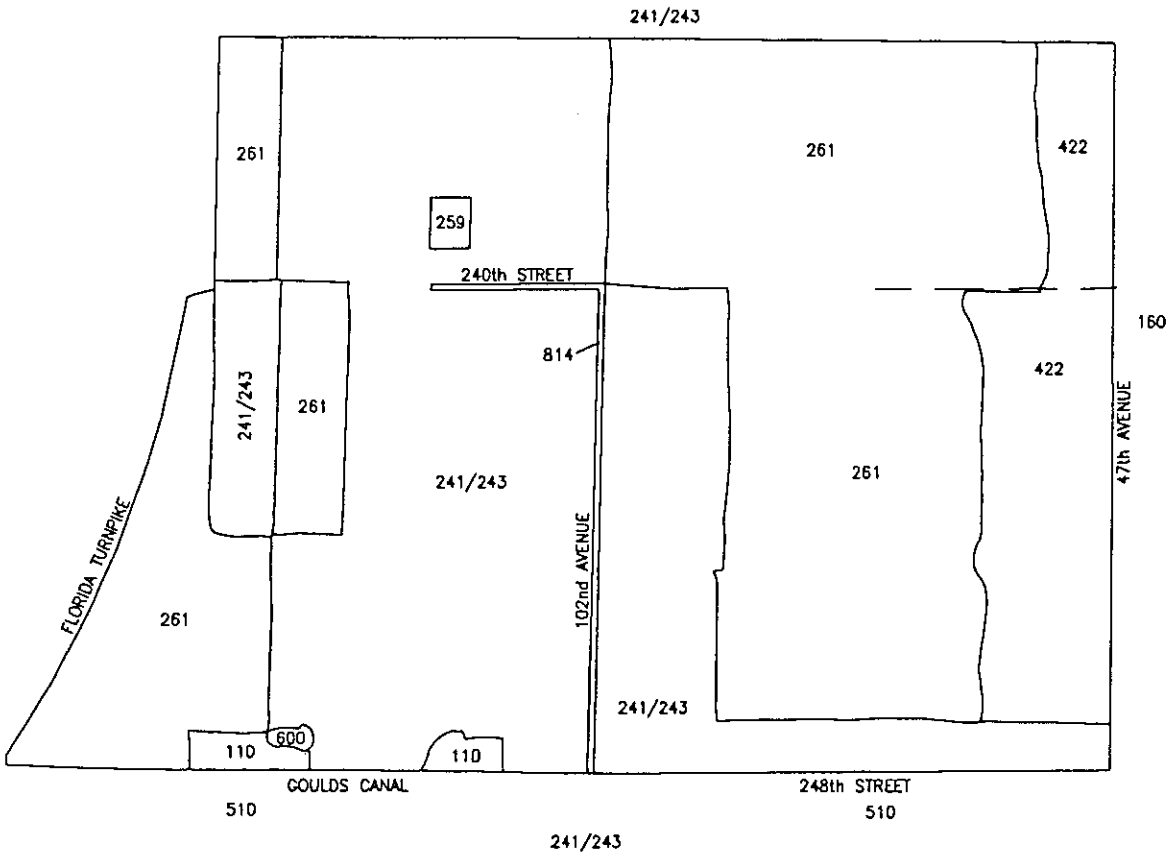
TAYLOR ENGINEERING INC. 9000 Cypress Green Drive, Suite 200 Jacksonville, Florida 32256	Figure A-8 Channel Reach 4 Long Range Dredged Material Management Plan Intracoastal Waterway Miami-Dade County, Florida	Project C2002-036D Revision Sheet Date March, 2003



TAYLOR ENGINEERING INC.
9000 Cypress Green Drive, Suite 200
Jacksonville, Florida 32256

Figure A-9
Channel Reach 5
Long Range Dredged Material Management Plan
Intracoastal Waterway
Miami-Dade County, Florida

Project	C2002-036D
Revision	
Sheet	
Date	March, 2003



	LEGEND D-45	ACRES
110	RESIDENTIAL, LOW DENSITY	3.90
241/243	TREE NURSERIES/ORNAMENTALS	189.61
259	OTHER AGRICULTURE	1.28
261	FALLOW CROP LAND	189.66
422	BRAZILIAN PEPPER	45.79
600	WETLANDS	.53
814	ROADS AND HIGHWAYS	2.44
	TOTAL ACRES	433.21

OTHER COVER TYPES SHOWN

160	EXTRACTIVE
510	STREAMS AND WATERWAYS

— — ROADS

LAND USE AND VEGETATION FOR CANDIDATE SITE D-45, MIAMI-DADE COUNTY, FLORIDA

TAYLOR ENGINEERING INC.
9000 CYPRESS GREEN DRIVE, SUITE 200
JACKSONVILLE, FLORIDA 32256

A-10
Land Use and Vegetation
of Candidate Site D-45
Miami-Dade County, Florida

PROJECT C1999-021
REVISION
SHEET
DATE Sept., 2000

SITE DATA SUMMARY SHEET

Name: D-45

AKA:

Site Use: Dewatering & Long-Term Storage (Multiple Operations)

Comment: Agricultural Use -- Tree nurseries/ornamentals land adjacent to Black Creek and Goulds Canals

LOCATION

County:	Dade	**ICWW REACH MILEAGE:**	365.65
Municipality:	Unincorporated	**East/West of**	West
Section/Township/Range:	20/56/40	**Receiving Waterbody:**	Black Creek Canal
		FDEP	III

REACH

Reach Designation:	DA-5	**Projected Dredging Frequency (yr):**	20
Reach Length (mi):	15.29	**50-yr Dredging Requirement (cy):**	71,295
ICWW Mileage:	366.87 to 382.16	**50-yr Storage Requirement (cy):**	153,284
Cut/Station:	D-5/0+00 to D-9/201+74.60		
Geographic: (FDEP Classification)	Black Point Dade/Monroe County line	(III) to (III)	

SITE PARAMETERS

Mapped Area (ac):	433.21	**Storage Capacity (cy):**	158,368
Containment Area (ac):	12.91	**Dike Height (ft):**	11.5
Impacted Area (ac):	16.59	**Excavation Depth (ft):**	4.50
Buffer Area (ac):	31.68	**Existing Mean Site Elevation (ft):**	5
N Buffer Width (ft):	350	**Dike Volume (cy):**	54,801
S Buffer Width (ft):	350	**Max. Pumping Distance (mi):**	24.43
E Buffer Width (ft):	350	**Max. Barging Distance (mi):**	N/A
W Buffer Width (ft):	350	**Min. Distance from Waterway (mi):**	7.58
Total Site Area (ac):	48.27		

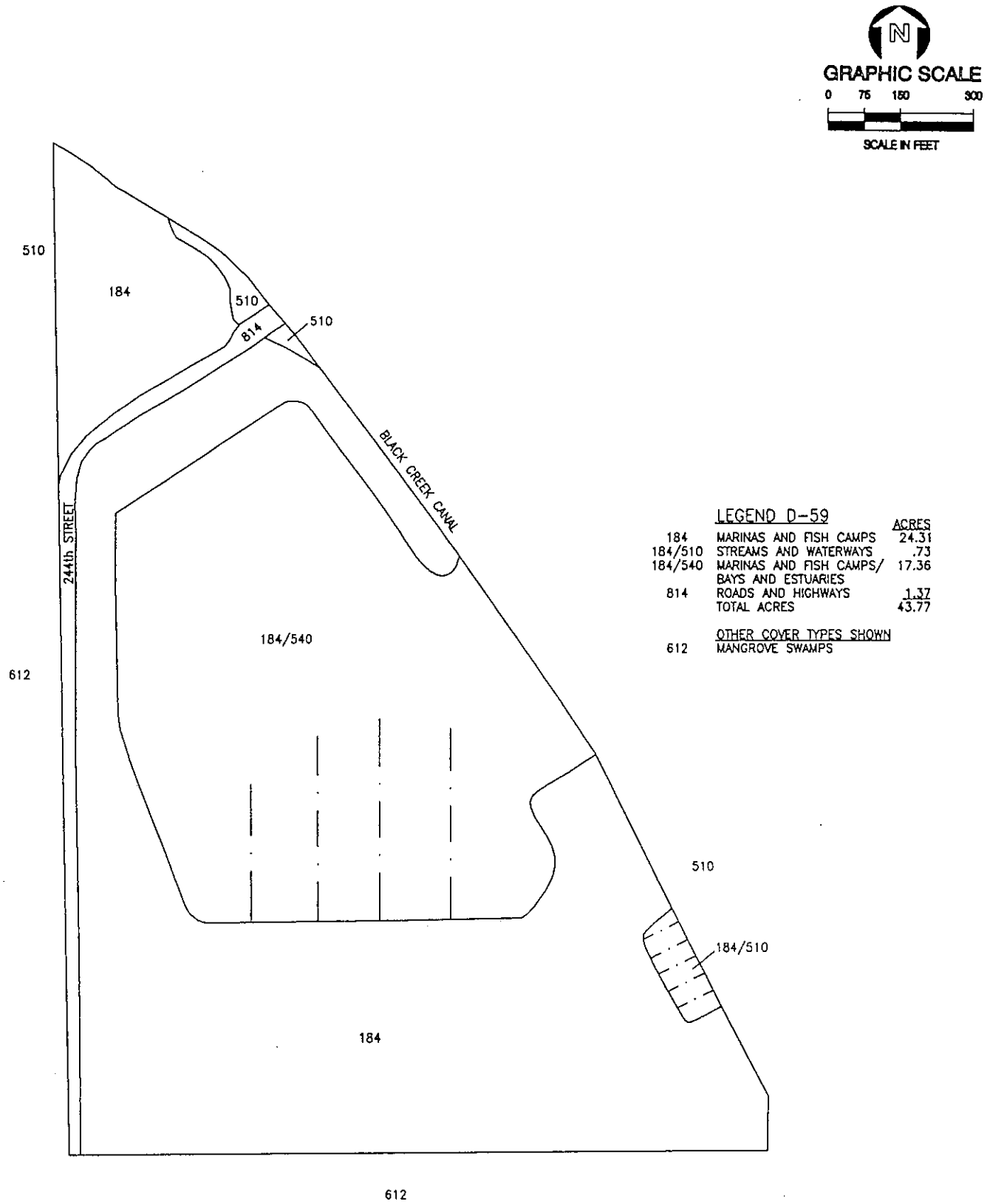
SITE

Public Access:	47th Ave, 248th St, FL Turnpike	**Comprehensive Plan Designation:**	Agriculture
		Adjacent Land Use:	
Road Easement (ft):	Not Required	Tree & Ornamental Nurseries (N, S); Mining (E); FL Turnpike (W); Goulds Canal (S)	
Pipeline Easement (ft):	200	**Land Use of Impacted Area:**	
Deep Draft Access:	No	Fallow cropland & Brazilian Pepper	
		Wetlands W/I Mapped Area (ac):	0.53
		Wetlands Impacted (ac):	0.00

Site Narrative:

Site D-45 is a 433-acre parcel mainly composed of agricultural lands. The site includes several public roads (814) which are used to access the various agricultural tracts within the site. Fallow agricultural fields (261) cover most of the site's eastern half, while most of the western portion of the site contains tree and ornamental nursery fields (241/243). Many of the nursery plants are palm trees but a variety of other small trees and shrubs are grown on-site as well. Lands bordering 47th Avenue are likely former agricultural tracts now covered by Brazilian pepper (422). Two home sites (110) are located along 248th Street near the southern boundary of the site. In addition, there is one building, mapped as 259, that is likely associated with agricultural operations.

Adjacent land uses include tree and ornamental nurseries (241/243) to the north and south, mining land (160) to the east, and the Florida Turnpike (814) to the west. The site is adjacent to Site D-44.



LAND USE AND VEGETATION FOR CANDIDATE SITE D-59, MIAMI-DADE COUNTY, FLORIDA

TAYLOR ENGINEERING INC. 9000 CYPRESS GREEN DRIVE, SUITE 200 JACKSONVILLE, FLORIDA 32256	Figure A-11 Land Use and Vegetation of Candidate Site D-59 Miami-Dade County, Florida	PROJECT C1999-021 REVISION SHEET DATE Aug., 2000

SITE DATA SUMMARY SHEET

Name:	D-59
AKA:	Black Point Marina
Site Use:	Material Rehandling (Barge Offloading)
Comment:	Commercial/Recreational Use -- Boat related uses & storage options

LOCATION

County:	Dade	ICWW REACH MILEAGE:	365.75
Municipality:	Unincorporated	East/West of	West
Section/Township/Range:	22/56/40	Receiving Waterbody:	N/A
		FDEP	N/A

REACH

Reach Designation:	DA-5	Projected Dredging Frequency (yr):	20
Reach Length (mi):	15.29	50-yr Dredging Requirement (cy):	71,295
ICWW Mileage:	366.87 to 382.16	50-yr Storage Requirement (cy):	153,284
Cut/Station:	D-5/0+00 to D-9/201+74.60		
Geographic: (FDEP Classification)	Black Point Dade/Monroe County line	(III) to (III)	

SITE PARAMETERS

Mapped Area (ac):	43.77	Storage Capacity (cy):	N/A
Containment Area (ac):	N/A	Dike Height (ft):	N/A
Impacted Area (ac):	0.74	Excavation Depth (ft):	N/A
Buffer Area (ac):	1.87	Existing Mean Site Elevation (ft):	5
N Buffer Width (ft):	100	Dike Volume (cy):	N/A
S Buffer Width (ft):	100	Max. Pumping Distance (mi):	N/A
E Buffer Width (ft):	0	Max. Barging Distance (mi):	23.62
W Buffer Width (ft):	100	Min. Distance from Waterway (mi):	6.13
Total Site Area (ac):	2.61		

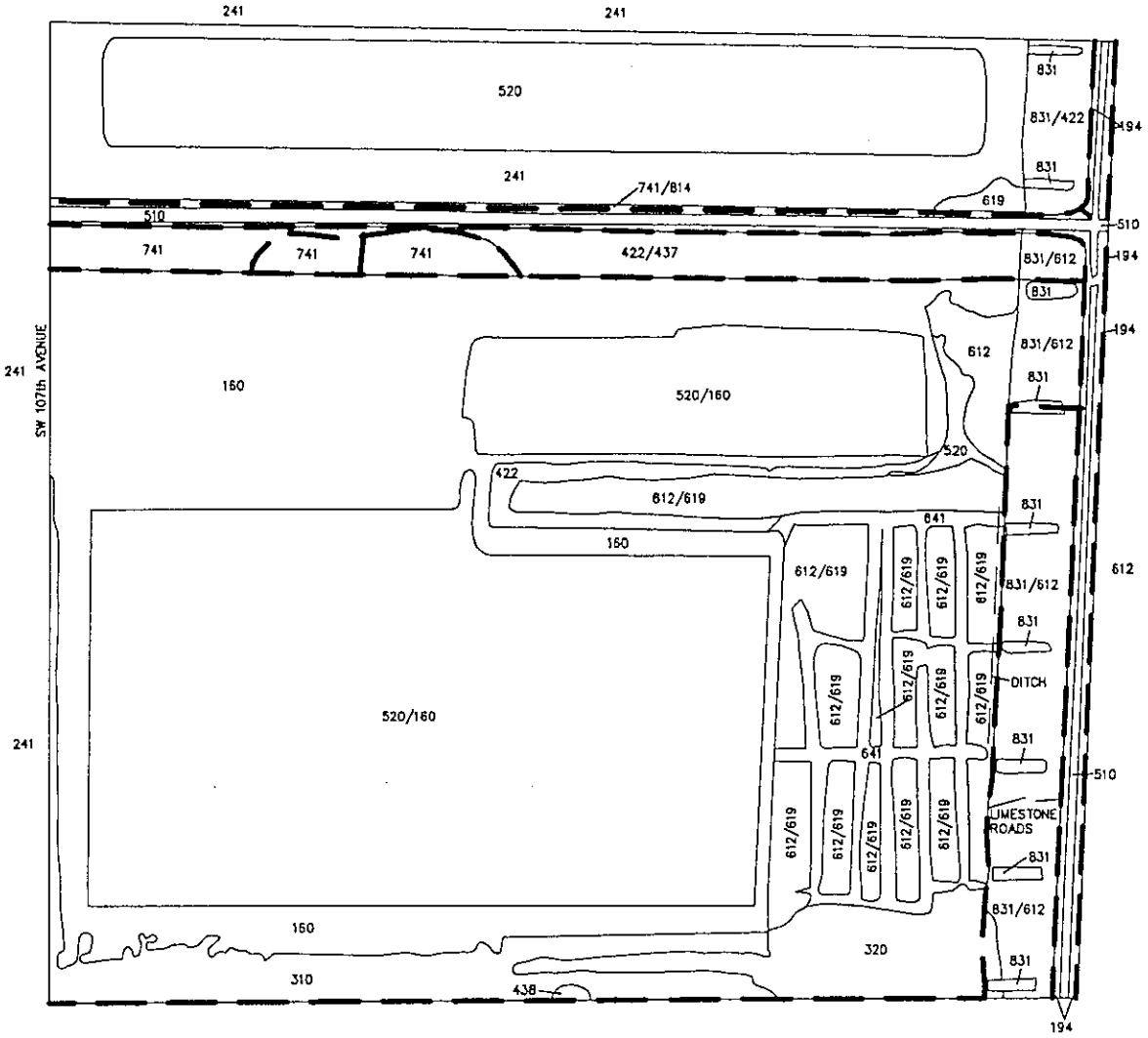
SITE

Public Access:	244th Street	Comprehensive Plan Designation:	Parks & Recreation
		Adjacent Land Use:	
Road Easement (ft):	Not Required	Black Creek Canal (NE); Mangrove swamps (S, W)	
Pipeline Easement (ft):	N/A		
		Land Use of Impacted Area:	
Deep Draft Access:	Yes	Marina	
		Wetlands W/I Mapped Area (ac):	0.00
		Wetlands Impacted (ac):	0.00

Site Narrative:

Site D-59 is a 44-acre Miami-Dade County municipal facility known as Black Point Marina. Site D-59 is located near the eastern terminus of Black Creek Canal (510) where it enters Biscayne Bay (540). The property is completely developed and provides a variety of boat related uses and storage options. Four main piers project into a protected harbor (184/540) that provides wet slips for a variety of boat types and sizes. A large dry stack boat storage facility on the southeast corner of the property provides covered dry storage to smaller boat owners. A fenced boat storage enclosure provides other storage options for boats that can be placed on trailers. The property also contains boat launching ramps, paved parking, a dockmaster's office complex, and a picnic area. The grassy picnic area and parking medians are landscaped with royal palm (*Roystonea elata*) and yellow trumpet tree (*Tabebuia argentea*). The marina provides convenient access to the waters of the adjacent Biscayne Bay National Park (540).

Adjacent land use includes mangrove swamp (612) to the west and south, and Black Creek Canal (510) to the northeast.



	LEGEND	ACRES
160	EXTRACTIVE	162.79
194	OTHER OPEN LAND	10.00
241	TREE NURSERIES	46.73
310	HERBACEOUS	24.92
320	SHRUB AND BRUSHLAND	16.19
422	BRAZILIAN PEPPER	6.77
422/437	BRAZILIAN PEPPER/AUSTRALIAN PINE	15.59
438	MIXED HARDWOODS	.31
510	STREAMS AND WATERWAYS	12.36
520	LAKES	63.09
520/160	LAKES/EXTRACTIVE	198.60
612	MANGROVE SWAMPS	5.07
612/619	MANGROVE SWAMPS/WETLAND EXOTIC HARDWOODS	47.76
619	EXOTIC WETLAND HARDWOODS	1.18
641	FRESHWATER MARSHES	19.06
741	RURAL LAND IN TRANSITION	13.37
741/814	RURAL LAND IN TRANSITION/ROADS AND HIGHWAYS	5.29
831	ELECTRICAL POWER FACILITIES	3.28
831/422	ELECTRICAL POWER FACILITIES/BRAZILIAN PEPPER	6.76
831/612	ELECTRICAL POWER FACILITIES/MANGROVE SWAMPS	30.22
	TOTAL ACRES	689.22

JEEP TRAILS

N

0 500 1000

LAND USE AND VEGETATION OF CANDIDATE SITE 365C-01, MIAMI-DADE COUNTY, FLORIDA

TAYLOR ENGINEERING INC.
9000 CYPRESS GREEN DRIVE, SUITE 200
JACKSONVILLE, FLORIDA 32256

Figure A-12
Land Use and Vegetation
of Candidate Site 365C-01
Miami-Dade County, Florida

PROJECT C9921-021
REVISION
SHEET
DATE July, 2001

SITE DATA SUMMARY SHEET

Name:	365C-01
AKA:	Florida Rock & Sand mine site
Site Use:	Multi-Reach Inland Storage
Comment:	Biscayne Bay is located less than one mile from the site and can be accessed via the C-102 Canal

LOCATION

County:	Dade	ICWW REACH MILEAGE:	367.33
Municipality:	Unincorporated	East/West of	West
Section/Township/Range:	32/56/40	Receiving Waterbody:	Biscayne Bay
		FDEP	III

REACH

Reach Designation:	DA-5	Projected Dredging Frequency (yr):	20
Reach Length (mi):	15.29	50-yr Dredging Requirement (cy):	71,295
ICWW Mileage:	366.87 to 382.16	50-yr Storage Requirement (cy):	153,284
Cut/Station:	D-5/0+00 to D-9/201+74.60		
Geographic: (FDEP Classification)	Black Point Dade/Monroe County line	(III) to (III)	

SITE PARAMETERS

Mapped Area (ac):	689.22	Storage Capacity (cy):	153,826
Containment Area (ac):	N/A	Dike Height (ft):	N/A
Impacted Area (ac):	10.78	Excavation Depth (ft):	N/A
Buffer Area (ac):	7.43	Existing Mean Site Elevation (ft):	5.0
N Buffer Width (ft):	100	Dike Volume (cy):	N/A
S Buffer Width (ft):	100	Max. Pumping Distance (mi):	N/A
E Buffer Width (ft):	100	Max. Barging Distance (mi):	N/A
W Buffer Width (ft):	100	Min. Distance from Waterway (mi):	6.93
Total Site Area (ac):	18.21		

SITE

Public Access:	SW 107th Ave.	Comprehensive Plan Designation:	Open Land
		Adjacent Land Use:	
Road Easement (ft):	Not Required	Tree Nurseries (N, W); Mangrove Swamps (E); Herbaceous, Shrub & Brushland (S)	
Pipeline Easement (ft):	N/A		
Deep Draft Access:	N/A	Land Use of Impacted Area:	
		Extractive	
		Wetlands W/I Mapped Area (ac):	103.27
		Wetlands Impacted (ac):	0.00

Site Narrative:

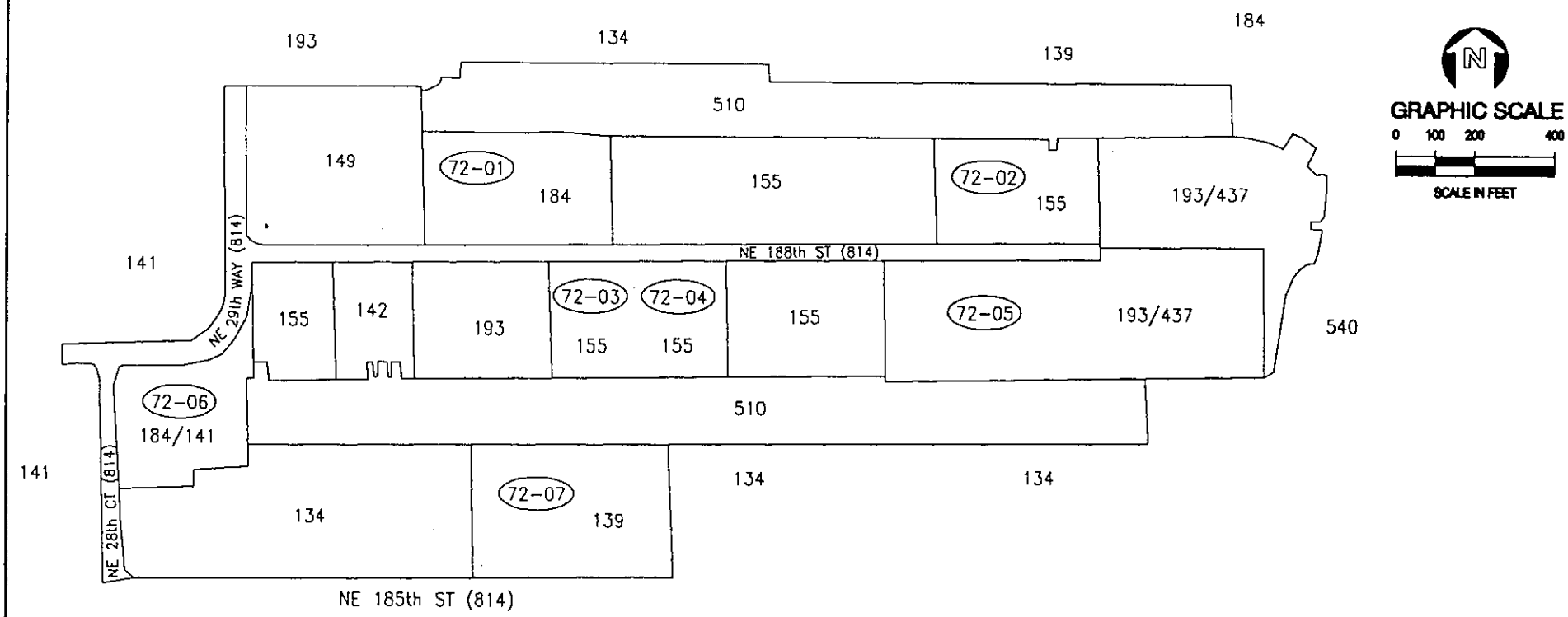
Site 365C-01 is a 689-acre site, 347 acres of water and wetlands and 342 acres of uplands, located northeast of the former Homestead Air Force Base and east of the mangrove reserve along Biscayne Bay. A large portion of the site is active and inactive non-vegetated borrow pits, designated extractive lands (160), lakes (520), canals (510), and vegetated wetlands. The vegetated wetlands are primarily mangrove swamps (612) or mangrove associated with other exotic vegetation such as Brazilian pepper (*Schinus terebinthifolius*) (422), Australian pine (*Casuarina equisetifolia*) (437), and exotic wetland hardwoods (619). Clearing and possibly ditching has disturbed some areas within the wetlands and has resulted in the emergence of the freshwater marsh (641) species such as cattail (*Typha* sp.) and sawgrass (*Cladium jamaicense*).

The entire eastern site boundary is made up of a medium-sized canal (510) just west of a large electrical power line corridor (831). The powerline corridor includes several other community types including other open land (194), mangrove (612), and limestone roads (814). The northern portion of the site and the northern borrow pit lake is separated from the southern portion by a large canal (510). The northern borrow pit is surrounded by a plant nursery (241). A small disturbed area of Brazilian pepper and Australian pine (422/437) is located south and east of the canal. A section of rural land in transition (741) is located north of the active borrow pit (160) and south of the canal. Vegetation found within the mangrove communities includes Brazilian pepper, buttonwood (*Conocarpus erecta*), white mangrove (*Laguncularia racemosa*), scattered sawgrass and cattail, thelypteris fern (*Thelypteris* sp.), and an amaranth (*Amaranthus* sp.). Red mangrove (*Rhizophora mangle*) is located south and east of the central borrow pit. The shrub and brushland (320), just south of the mangrove areas, is disturbed and predominantly castorbean (*Ricinus communis*). Common reed (*Phragmites australis*) and Brazilian pepper grows around the extractive areas, borrow pits, and roads.

The site is bounded on the north by tree nurseries (241), on the east by mangrove swamps (612), on the south by disturbed mangrove communities (612/619), and on the west by SW 107th Avenue (814) and tree nurseries (241).

APPENDIX B

Other Candidate Sites



LEGEND

	72-01			72-05	
184	MARINAS AND FISH CAMPS	2.95 ACRES	193/437	URBAN LAND IN TRANSITION/AUSTRALIAN PINE	6.65 ACRES
	72-02			72-06	
155	OTHER LIGHT INDUSTRIAL	2.45 ACRES	184/141	MARINAS AND FISH CAMPS/RETAIL SALES AND SERVICE	2.30 ACRES
	72-03 AND 72-04			72-07	
155	OTHER LIGHT INDUSTRIAL	2.86 ACRES	139	HIGH DENSITY UNDER CONSTRUCTION	3.70 ACRES

OTHER COVER TYPES SHOWN

134	MULTIPLE DWELLING UNITS
141	RETAIL SALES AND SERVICE
142	WHOLESALE SALES AND SERVI
149	COMMERCIAL AND SERVICES UNDER CONSTRUCTION
193	URBAN LAND IN TRANSITION
510	STREAMS AND WATERWAYS
540	BAYS AND ESTUARIES
814	ROADS AND HIGHWAYS

LAND USE AND VEGETATION FOR CANDIDATE SITES 72-01 THROUGH 72-07, MIAMI-DADE COUNTY, FLORIDA

TAYLOR ENGINEERING INC.
9000 CYPRESS GREEN DRIVE, SUITE 200
JACKSONVILLE, FLORIDA 32256

Figure B-1
Land Use and Vegetation
of Candidate Sites 72-01 Through 72-07,
Miami-Dade County, Florida

PROJECT C1999-021
REVISION
SHEET
DATE Aug. 2001

SITE DATA SUMMARY SHEET

Name:	72-01
AKA:	Thunder Alley Canal (1), Fort Apache Marina
Site Use:	Material Rehandling (Barge Offloading)
Comment:	Commercial Use -- Improved marina development, wet and dry storage

LOCATION

County:	Dade	ICWW REACH MILEAGE:	335.84
Municipality:	Aventura	East/West of	West
Section/Township/Range:	3/52/42	Receiving Waterbody:	N/A
		FDEP	N/A

REACH

Reach Designation:	DA-1	Projected Dredging Frequency (yr):	20
Reach Length (mi):	3.99	50-yr Dredging Requirement (cy):	15,801
ICWW Mileage:	334.24 to 338.23	50-yr Storage Requirement (cy):	33,973
Cut/Station:	DA-1/0+00 to DA-8/0+00		
Geographic: (FDEP Classification)	530 ft South of Broward/Dade County Line (III) to Haulover Beach County Park (III)		

SITE PARAMETERS

Mapped Area (ac):	2.95	Storage Capacity (cy):	N/A
Containment Area (ac):	N/A	Dike Height (ft):	N/A
Impacted Area (ac):	1.08	Excavation Depth (ft):	N/A
Buffer Area (ac):	1.87	Existing Mean Site Elevation (ft):	5.0
N Buffer Width (ft):	0	Dike Volume (cy):	N/A
S Buffer Width (ft):	100	Max. Pumping Distance (mi):	N/A
E Buffer Width (ft):	100	Max. Barging Distance (mi):	3.12
W Buffer Width (ft):	100	Min. Distance from Waterway (mi):	0.83
Total Site Area (ac):	2.95		

SITE

Public Access:	NE 188th St	Comprehensive Plan Designation:	Industrial and Office
		Adjacent Land Use:	
Road Easement (ft):	Not Required	Canal (N); Light Industrial (E, S); Commercial and Services under construction (W)	
Pipeline Easement (ft):	N/A		
Deep Draft Access:	Yes	Land Use of Impacted Area:	
		Commercial Services -- Boat Marina and Storage	
		Wetlands W/I Mapped Area (ac):	0.00
		Wetlands Impacted (ac):	0.00

Site Narrative:

Site 72-01 is a developed upland site operated by Fort Apache Marina (184). The site is located on the north side of NE 188th Street (814) and on the south side of the northernmost Thunder Alley Canal (510) in the City of Aventura. The 2.95-acre site contains three large boat dry dock storage buildings that appear to be relatively new and in good condition. Associated parking and what appears to be wet boat storage is located along Thunder Alley Canal. On-site vegetation is limited to landscaping trees and shrubs.

The site is bounded on the north, across the northern Thunder Alley Canal, by new high-density multi-family residential (134) and on the east by a boat manufacturer (Apache Custom Boats, 155). South of Site 72-01, across NE 188th Street, there is a vacant lot (193) used for storing boat trailers. The site is bounded on the west by a commercial building under construction (149).

SITE DATA SUMMARY SHEET

Name:	72-02
AKA:	Thunder Alley Canal (2), Blackfin
Site Use:	Material Rehandling (Barge Offloading)
Comment:	Commercial Use -- Blackfin boat storage and maintenance

LOCATION

County:	Dade	**ICWW REACH MILEAGE:**	335.84
Municipality:	Aventura	**East/West of**	West
Section/Township/Range:	3/52/42	**Receiving Waterbody:**	N/A
		FDEP	N/A

REACH

Reach Designation:	DA-1			**Projected Dredging Frequency (yr):**	20
Reach Length (mi):	3.99			**50-yr Dredging Requirement (cy):**	15,801
ICWW Mileage:	334.24	**to**	338.23	**50-yr Storage Requirement (cy):**	33,973
Cut/Station:	DA-1/0+00	**to**	DA-8/0+00		
Geographic:	530 ft South of Broward/Dade County Line (III) **to**				
(FDEP Classification)	Haulover Beach County Park (III)				

SITE PARAMETERS

Mapped Area (ac):	2.45	**Storage Capacity (cy):**	N/A
Containment Area (ac):	N/A	**Dike Height (ft):**	N/A
Impacted Area (ac):	0.77	**Excavation Depth (ft):**	N/A
Buffer Area (ac):	1.68	**Existing Mean Site Elevation (ft):**	5.0
N Buffer Width (ft):	0	**Dike Volume (cy):**	N/A
S Buffer Width (ft):	100	**Max. Pumping Distance (mi):**	N/A
E Buffer Width (ft):	100	**Max. Barging Distance (mi):**	2.90
W Buffer Width (ft):	100	**Min. Distance from Waterway (mi):**	0.62
Total Site Area (ac):	2.45		

SITE

Public Access:	NE 188th St	**Comprehensive Plan Designation:**	Industrial and Office
		Adjacent Land Use:	
Road Easement (ft):	Not Required	Canal (N); Aventura Park (E); Urban land in transition/Australian Pine (S), Light Industrial (W)	
Pipeline Easement (ft):	N/A		
		Land Use of Impacted Area:	
Deep Draft Access:	Yes	Commercial Services -- Boat Storage, Maintenance, etc.	
		Wetlands W/I Mapped Area (ac):	0.00
		Wetlands Impacted (ac):	0.00

Site Narrative:

Site 72-02 is a developed upland site that consists of the Blackfin and Tempest Yachts boat building facilities (184). The site is located on the north side of NE 188th Street (814) and on the south side of the northernmost Thunder Alley Canal (510) in the City of Aventura. The 2.45-acre site contains two large metal buildings that house the Blackfin boat building facility (eastern warehouse) and Tempest Yachts boat building facility (western warehouse). Vegetation is limited to landscaping plants and ruderal species.

The site is bounded on the north, across Thunder Alley Canal, by high-density residential under construction (139), and a marina (184). It is bounded on the east by undeveloped land owned by the City of Aventura that is a proposed city park (193). To the south, across NE 188th Street, there is an old boat manufacturing facility, now urban land in transition, which has a few old dilapidated buildings and is overgrown with Australian pine (193/437). The western boundary of the site abuts lands used for light industry (155).

SITE DATA SUMMARY SHEET

Name:	72-03, 72-04
AKA:	Thunder Alley Canal (3 & 4)
Site Use:	Material Rehandling (Barge Offloading)
Comment:	Industrial/Construction Use -- Heavy construction related equipment and material storage

LOCATION

County:	Dade	ICWW REACH MILEAGE:	335.95
Municipality:	Aventura	East/West of	West
Section/Township/Range:	3/52/42	Receiving Waterbody:	N/A
		FDEP	N/A

REACH

Reach Designation:	DA-1			Projected Dredging Frequency (yr):	20
Reach Length (mi):	3.99			50-yr Dredging Requirement (cy):	15,801
ICWW Mileage:	334.24	to	338.23	50-yr Storage Requirement (cy):	33,973
Cut/Station:	DA-1/0+00	to	DA-8/0+00		
Geographic: (FDEP Classification)	530 ft South of Broward/Dade County Line Haulover Beach County Park			(III) to (III)	

SITE PARAMETERS

Mapped Area (ac):	2.86	Storage Capacity (cy):	N/A
Containment Area (ac):	N/A	Dike Height (ft):	N/A
Impacted Area (ac):	1.01	Excavation Depth (ft):	N/A
Buffer Area (ac):	1.85	Existing Mean Site Elevation (ft):	5.0
N Buffer Width (ft):	100	Dike Volume (cy):	N/A
S Buffer Width (ft):	0	Max. Pumping Distance (mi):	N/A
E Buffer Width (ft):	100	Max. Barging Distance (mi):	2.96
W Buffer Width (ft):	100	Min. Distance from Waterway (mi):	0.70
Total Site Area (ac):	2.86		

SITE

Public Access:	NE 188th St	Comprehensive Plan Designation:	Industrial & Office
		Adjacent Land Use:	
Road Easement (ft):	Not Required	Light Industry (N, E), Urban land in transition (W), Canal (S)	
Pipeline Easement (ft):	N/A	Land Use of Impacted Area:	
Deep Draft Access:	Yes	Light Industrial	
		Wetlands W/I Mapped Area (ac):	0.00
		Wetlands Impacted (ac):	0.00

Site Narrative:

Site 72-03/04 is a 2.86-acre vacant upland parcel located between NE 188th Street and the southernmost Thunder Alley Canal (510) in the City of Aventura. The site consists of two adjacent parcels owned by one party. Site 72-03/04 is mapped as other light industrial (155) due to its use as an outdoor storage area for industrial and construction related equipment. The site does not have any permanent buildings and vegetation is limited to a few ruderal weedy species.

The site is bounded on the north, across NE 188th Street, by the Apache Custom Boat Manufacturer (155) and on the east by the Cigarette Boat Manufacturers Plant No. Four (155). The site is bounded on the south, across the southernmost Thunder Alley Canal, by high-density multi-family residential (134) and a high density residential under construction area (139, Site 72-07). The parcel to the west is a vacant lot, mapped as urban land in transition (193).

SITE DATA SUMMARY SHEET

Name: 72-06

AKA: Thunder Alley Canal (6), Magnum Marine and High Lift Marina

Site Use: Material Rehandling (Barge Offloading)

Comment: Commercial Use -- Marina, boat sales, and maintenance

LOCATION

County:	Dade	**ICWW REACH MILEAGE:**	336.02
Municipality:	Aventura	**East/West of**	West
Section/Township/Range:	3/52/42	**Receiving Waterbody:**	N/A
		FDEP	N/A

REACH

Reach Designation:	DA-1			**Projected Dredging Frequency (yr):**	20
Reach Length (mi):	3.99			**50-yr Dredging Requirement (cy):**	15,801
ICWW Mileage:	334.24	to	338.23	**50-yr Storage Requirement (cy):**	33,973
Cut/Station:	DA-1/0+00	to	DA-8/0+00		
Geographic: (FDEP Classification)	530 ft South of Broward/Dade County Line (III) to Haulover Beach County Park (III)				

SITE PARAMETERS

Mapped Area (ac):	2.3	**Storage Capacity (cy):**	N/A
Containment Area (ac):	N/A	**Dike Height (ft):**	N/A
Impacted Area (ac):	Insufficient Area	**Excavation Depth (ft):**	N/A
Buffer Area (ac):	N/A	**Existing Mean Site Elevation (ft):**	5.0
N Buffer Width (ft):	N/A	**Dike Volume (cy):**	N/A
S Buffer Width (ft):	N/A	**Max. Pumping Distance (mi):**	N/A
E Buffer Width (ft):	N/A	**Max. Barging Distance (mi):**	3.19
W Buffer Width (ft):	N/A	**Min. Distance from Waterway (mi):**	0.98
Total Site Area (ac):	N/A		

SITE

Public Access:	NE 29th Way, NE 28th Ct	**Comprehensive Plan Designation:**	Industrial and Office
		Adjacent Land Use:	Retail Sales and Service (N, W, S); Canal (E); Multiple-family residential (SE)
Road Easement (ft):	Not Required		
Pipeline Easement (ft):	N/A	**Land Use of Impacted Area:**	N/A
Deep Draft Access:	Yes		
		Wetlands W/I Mapped Area (ac):	0.00
		Wetlands Impacted (ac):	0.00

Site Narrative:

This 2.3-acre developed upland site, 72-06, consists of the Magnum Marine and High Lift Marina (184/141). The site is located in the City of Aventura on the southeastern corner of the intersection of NE 28th Court and NE 29th Way (814) and the western terminus of the southernmost Thunder Alley Canal (510). The site contains a large, multi-story dry boat storage facility and a retail area with several smaller, connected buildings, and small parking areas. All of the buildings appear relatively new and in good condition. Vegetation is limited to a few landscape plantings.

The site is bounded on the north, across NE 29th Way, by a large retail center (141), on the northeast by a light industrial boat building operation (155), and on the east by the southernmost Thunder Alley Canal (510). The southern boundary is high-density multi-family residential (134) and the western boundary, across NE 28th Court, is a retail establishment (141).

SITE DATA SUMMARY SHEET

Name: 72-07

AKA: Thunder Alley Canal (7)

Site Use: Material Rehandling (Barge Offloading)

Comment: Future Residential Use -- Multi-family residential development imminent

LOCATION			
County:	Dade	**ICWW REACH MILEAGE:**	336.04
Municipality:	Aventura	**East/West of**	West
Section/Township/Range:	3/52/42	**Receiving Waterbody:**	N/A
		FDEP	N/A

REACH					
Reach Designation:	DA-1			**Projected Dredging Frequency (yr):**	20
Reach Length (mi):	3.99			**50-yr Dredging Requirement (cy):**	15,801
ICWW Mileage:	334.24	to	338.23	**50-yr Storage Requirement (cy):**	33,973
Cut/Station:	DA-1/0+00	to	DA-8/0+00		
Geographic: (FDEP Classification)	530 ft South of Broward/Dade County Line (III) to Haulover Beach County Park (III)				

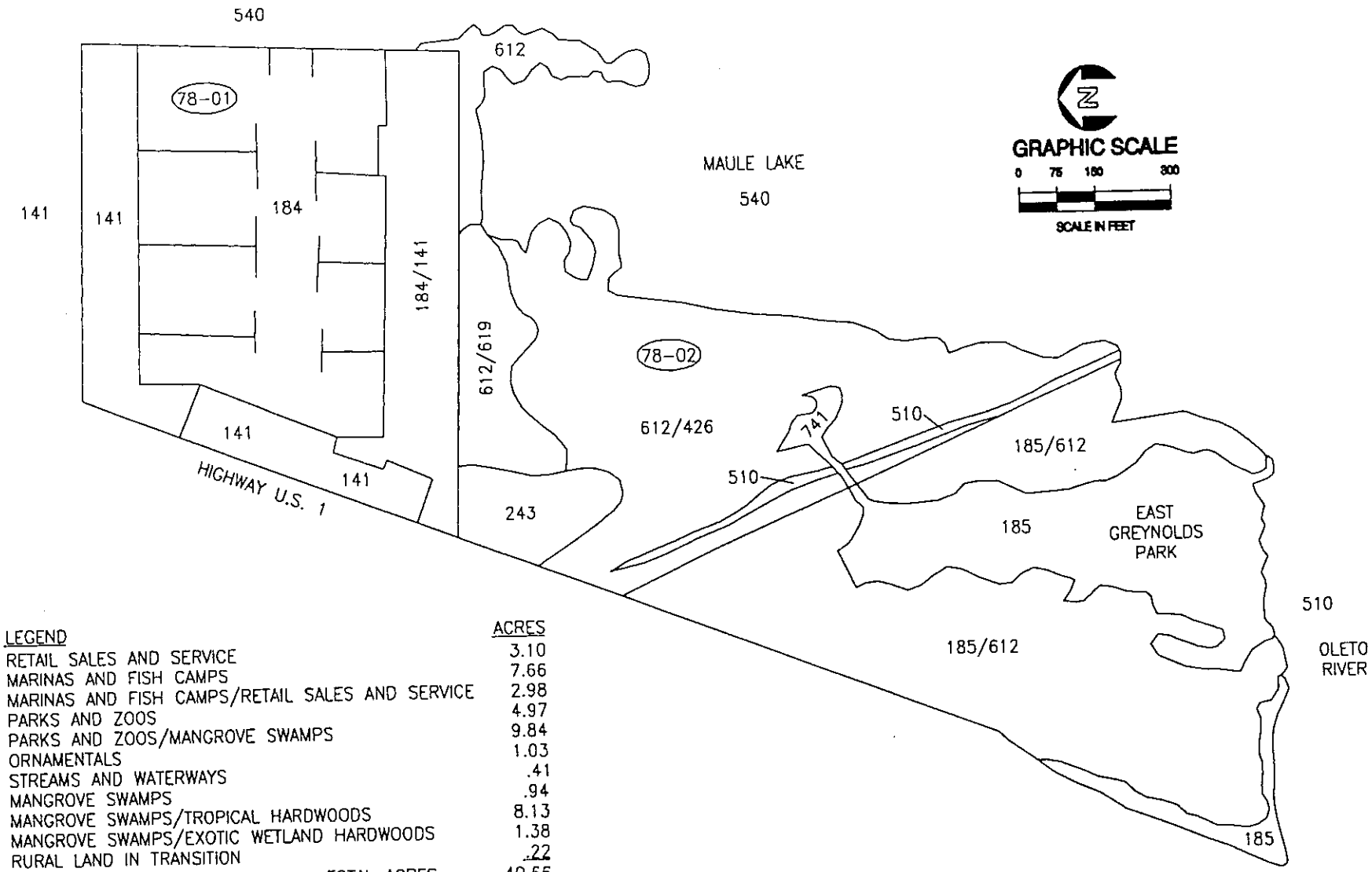
SITE PARAMETERS			
Mapped Area (ac):	3.7	**Storage Capacity (cy):**	N/A
Containment Area (ac):	N/A	**Dike Height (ft):**	N/A
Impacted Area (ac):	1.52	**Excavation Depth (ft):**	N/A
Buffer Area (ac):	2.18	**Existing Mean Site Elevation (ft):**	5.0
N Buffer Width (ft):	0	**Dike Volume (cy):**	N/A
S Buffer Width (ft):	100	**Max. Pumping Distance (mi):**	N/A
E Buffer Width (ft):	100	**Max. Barging Distance (mi):**	3.04
W Buffer Width (ft):	100	**Min. Distance from Waterway (mi):**	0.68
Total Site Area (ac):	3.70		

SITE			
Public Access:	NE 185th St	**Comprehensive Plan Designation:**	Residential (MHD)
		Adjacent Land Use:	
Road Easement (ft):	Not Required	Canal (N); Multi-family residential (E, S, SW)	
Pipeline Easement (ft):	N/A	**Land Use of Impacted Area:**	
Deep Draft Access:	Yes	High-density under Construction	
		Wetlands W/I Mapped Area (ac):	0.00
		Wetlands Impacted (ac):	0.00

Site Narrative:

Site 72-07 is a 3.7-acre vacant upland lot on the southern shore of the southernmost Thunder Alley Canal (510) and north of NE 185th Street (814). Currently, the site is undergoing development and thus is classified as high-density residential under construction (139). The lot is completely cleared of any buildings or vegetation.

The site is bounded on the north, across the southernmost Thunder Alley Canal, by Site 72-03/04, on the east and west by high-density multi-family residential (134), and on the south, across NE 185th Street, by urban land in transition (193).



	LEGEND	ACRES
141	RETAIL SALES AND SERVICE	3.10
184	MARINAS AND FISH CAMPS	7.66
184/141	MARINAS AND FISH CAMPS/RETAIL SALES AND SERVICE	2.98
185	PARKS AND ZOOS	4.97
185/612	PARKS AND ZOOS/MANGROVE SWAMPS	9.84
243	ORNAMENTALS	1.03
510	STREAMS AND WATERWAYS	.41
612	MANGROVE SWAMPS	.94
612/426	MANGROVE SWAMPS/TROPICAL HARDWOODS	8.13
612/619	MANGROVE SWAMPS/EXOTIC WETLAND HARDWOODS	1.38
741	RURAL LAND IN TRANSITION	.22
	TOTAL ACRES	40.66

OTHER COVER TYPES SHOWN

540 BAYS AND ESTUARIES

LAND USE AND VEGETATION OF CANDIDATE SITE 78-01 AND 78-02, MIAMI-DADE COUNTY, FLORIDA

TAYLOR ENGINEERING INC.
9000 CYPRESS GREEN DRIVE, SUITE 200
JACKSONVILLE, FLORIDA 32256

Figure B-2
Land Use and Vegetation of
Candidate Sites 78-01 And 78-02
Miami-Dade Coungy, Florida

PROJECT C1999-021
REVISION
SHEET
DATE July, 2001

SITE DATA SUMMARY SHEET

Name:	78-01, 78-02
AKA:	Maule Lake Marina and East Greynolds Park
Site Use:	Material Rehandling (Barge Offloading)
Comment:	Commercial Use -- Marina, Plant Nursery, and Patio Furniture Store

LOCATION

County:	Dade	**ICWW REACH MILEAGE:**	336.92
Municipality:	North Miami Beach	**East/West of**	West
Section/Township/Range:	9/52/42	**Receiving Waterbody:**	N/A
		FDEP	N/A

REACH

Reach Designation:	DA-1			**Projected Dredging Frequency (yr):**	20
Reach Length (mi):	3.99			**50-yr Dredging Requirement (cy):**	15,801
ICWW Mileage:	334.24	to	338.23	**50-yr Storage Requirement (cy):**	33,973
Cut/Station:	DA-1/0+00	to	DA-8/0+00		
Geographic: (FDEP Classification)	530 ft South of Broward/Dade County Line (III) to Haulover Beach County Park (III)				

SITE PARAMETERS

Mapped Area (ac):	40.66	**Storage Capacity (cy):**	N/A
Containment Area (ac):	N/A	**Dike Height (ft):**	N/A
Impacted Area (ac):	8.73	**Excavation Depth (ft):**	N/A
Buffer Area (ac):	5.02	**Existing Mean Site Elevation (ft):**	5.0
N Buffer Width (ft):	100	**Dike Volume (cy):**	N/A
S Buffer Width (ft):	100	**Max. Pumping Distance (mi):**	N/A
E Buffer Width (ft):	0	**Max. Barging Distance (mi):**	3.89
W Buffer Width (ft):	100	**Min. Distance from Waterway (mi):**	1.22
Total Site Area (ac):	13.75		

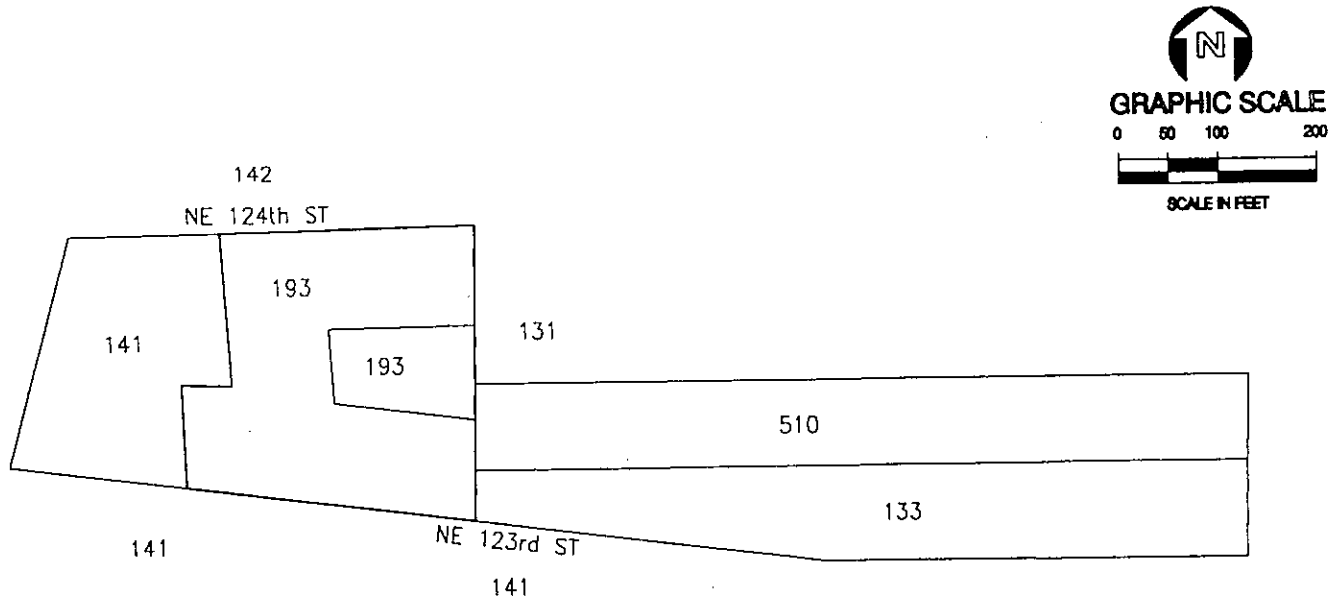
SITE

Public Access:	US Highway 1	**Comprehensive Plan Designation:**	Business and Office
		Adjacent Land Use:	
Road Easement (ft):	Not Required	Retail Sales and Services - Texaco Station (N); Maule Lake (E); Greynolds Park (S); US Highway 1 (W)	
Pipeline Easement (ft):	N/A	**Land Use of Impacted Area:**	
Deep Draft Access:	Yes	Retail Sales and Service	
		Wetlands W/I Mapped Area (ac):	20.29
		Wetlands Impacted (ac):	0.00

Site Narrative:

Site 78-01/78-02 is a 40.66-acre combined site consisting of the Maule Lake Marina (184) and East Greynolds Park (185). The site lies east of US Highway 1 (814) adjacent to Maule Lake (540). The combined site is a marina (184), restaurant, gas station, boat repair facility, furniture store (all 141), plant nursery (243), and a park (185). While the marina is primarily composed of wet boat slips, the park is predominantly mangrove swamp (612). Furthermore, wetlands or open water comprises 28.36 acres and uplands 12.3 acres. Site 78-01's land use is classified primarily as commercial development and the buildings are in relatively good condition. Site 78-02 contains little upland acreage, which is found primarily within the plant nursery (243) and the open grassy area within Greynolds Park (185). Landscape vegetation is located in the marina area and associated retail areas. The park, even though disturbed with exotic plants does contain natural vegetation assemblages. Predominant vegetation includes large red mangrove (*Rhizophora mangle*), black mangrove (*Avicennia germinans*), Brazilian pepper (Schinus terebinthifolius), buttonwood (*Conocarpus erecta*), wild coffee (*Psychotria nervosa*), giant leather leaf fern (*Acrostichum danaeifolium*), cabbage palm (Sabal palmetto), strangler fig (*Ficus aurea*), seaside mahoe (*Thespesia populnea*), and swamp fern (*Blechnum serrulatum*). Exotic vegetation appears to make up about 35 to 50 percent of the mangrove wetlands. Wildlife observed includes osprey, blue jay, and Cuban anoles.

The site is bounded on the north by a large retail facility (141), on the east and south by Maule Lake (540) and the Oleta River (510), and on the west by US Highway 1 (814) and single-family or multi-family housing.



	LEGEND	ACRES
133	MULTIPLE DWELLING UNITS, LOW RISE	1.53
141	RETAIL SALES AND SERVICES	.95
193	URBAN LAND IN TRANSITION	1.69
510	STREAMS AND WATERWAYS	1.53
	TOTAL ACRES	5.70

OTHER COVER TYPES SHOWN

131 FIXED SINGLE FAMILY UNITS
142 WHOLESALE SALES AND SERVICES

LAND USE AND VEGETATION OF CANDIDATE SITE 93-01, MIAMI-DADE COUNTY, FLORIDA

TAYLOR ENGINEERING INC.
9000 CYPRESS GREEN DRIVE, SUITE 200
JACKSONVILLE, FLORIDA 32256

Figure B-3
Land Use and Vegetation
of Candidate Site 93-01
Miami-Dade County, Florida

PROJECT C1999-021
REVISION
SHEET
DATE July, 2001

SITE DATA SUMMARY SHEET

Name: 93-01

AKA:

Site Use: Material Rehandling (Barge Offloading)

Comment: US Highway 1 and Broad Causeway (NE 123rd St) Intersection

LOCATION

County:	Dade	**ICWW REACH MILEAGE:**	340.39
Municipality:	North Miami	**East/West of**	West
Section/Township/Range:	28/52/42	**Receiving Waterbody:**	N/A
		FDEP	N/A

REACH

Reach Designation:	DA-2	**Projected Dredging Frequency (yr):**	5
Reach Length (mi):	4.53	**50-yr Dredging Requirement (cy):**	469,672
ICWW Mileage:	338.23 to 342.76	**50-yr Storage Requirement (cy):**	1,009,795
Cut/Station:	DA-8/0+00 to DA-11/12+50		
Geographic: (FDEP Classification)	Haulover Beach County Park Kennedy Causeway (NE 79th Street)	(III) to (III)	

SITE PARAMETERS

Mapped Area (ac):	5.7	**Storage Capacity (cy):**	N/A
Containment Area (ac):	Insufficient Area	**Dike Height (ft):**	N/A
Impacted Area (ac):	N/A	**Excavation Depth (ft):**	N/A
Buffer Area (ac):	N/A	**Existing Mean Site Elevation (ft):**	5.0
N Buffer Width (ft):	N/A	**Dike Volume (cy):**	N/A
S Buffer Width (ft):	N/A	**Max. Pumping Distance (mi):**	N/A
E Buffer Width (ft):	N/A	**Max. Barging Distance (mi):**	3.85
W Buffer Width (ft):	N/A	**Min. Distance from Waterway (mi):**	1.33
Total Site Area (ac):	N/A		

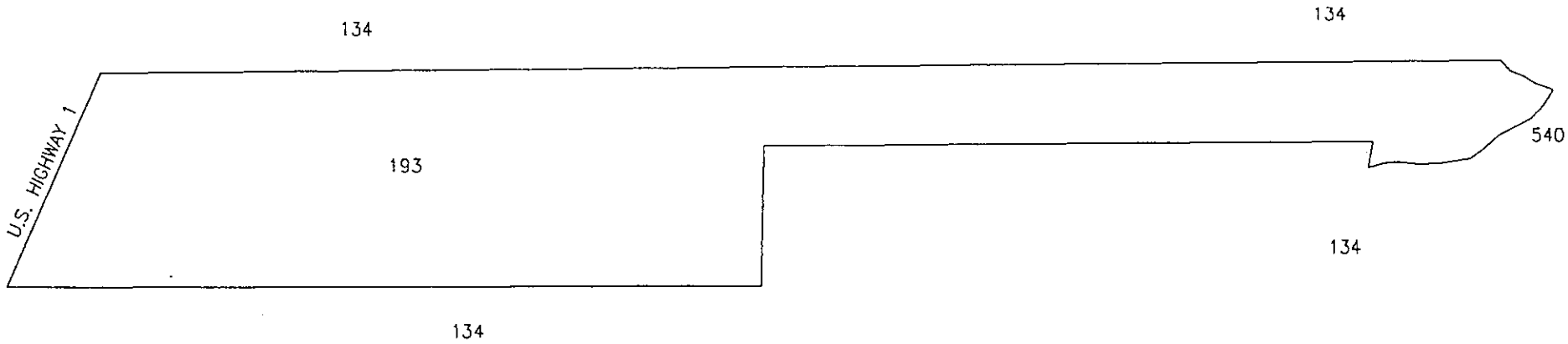
SITE

Public Access:	US Highway 1, NE 123rd St; NE 124th St	**Comprehensive Plan Designation:**	Residential (LMD)
		Adjacent Land Use:	
Road Easement (ft):	Not Required	Retail Sales and Services (N); Single family homes, Canal (E); Wholesales and Services (S, W)	
Pipeline Easement (ft):	N/A		
		Land Use of Impacted Area:	
Deep Draft Access:	Yes	Urban land in transition -- abandoned bank and paved parking lot	
		Wetlands W/I Mapped Area (ac):	0.00
		Wetlands Impacted (ac):	0.00

Site Narrative:

Site 93-01 is a 5.7-acre upland site located west of a canal (510), south of NE 124th Street, east of a Wendy's restaurant (141), and north of NE 123rd Street (814). The portion of the property west of the canal is urban land in transition (193) and appears to be a former commercial retail establishment with an old parking lot and several open-roofed structures remaining. The portion of the site south of the canal contains a low-rise, high-density multi-family residential area (133) with associated boat parking. Vegetation on the site is primarily exotic species used for landscaping.

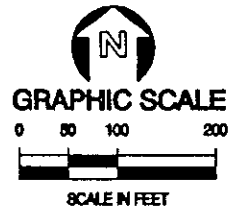
The site is bounded on the north by a wholesale sales and services facility (142), on the northeast by high-density single-family homes (131), on the southeast by high-density multi-family residential (133), on the south, across NE 123rd Street, by retail sales and services (141). A Wendy's restaurant (141) borders the site to the west.



	LEGEND	ACRES
193	URBAN LAND IN TRANSITION	7.41

OTHER COVER TYPES SHOWN

134 MULTIPLE DWELLING UNITS, HIGH RISE
540 BAYS AND ESTUARIES



LAND USE AND VEGETATION OF CANDIDATE SITE 97-03, MIAMI-DADE COUNTY, FLORIDA

TAYLOR ENGINEERING INC.
9000 CYPRESS GREEN DRIVE, SUITE 200
JACKSONVILLE, FLORIDA 32256

Figure B-4
Land Use and Vegetation
of Candidate Site 97-03
Miami-Dade County, Florida

PROJECT C1999-021
REVISION
SHEET
DATE July, 2001

SITE DATA SUMMARY SHEET

Name:	97-03
AKA:	Lear School
Site Use:	Dewatering & Short-Term Storage (Single Operation)
Comment:	Site is very narrow with multi-family residential to the north and south of the site

LOCATION

County:	Dade	ICWW REACH MILEAGE:	342.21
Municipality:	Biscayne Park	East/West of	West
Section/Township/Range:	32/52/42	Receiving Waterbody:	Biscayne Bay
		FDEP	III

REACH

Reach Designation:	DA-2	Projected Dredging Frequency (yr):	5
Reach Length (mi):	4.53	50-yr Dredging Requirement (cy):	469,672
ICWW Mileage:	338.23 to 342.76	50-yr Storage Requirement (cy):	1,009,795
Cut/Station:	DA-8/0+00 to DA-9/178+50		
Geographic: (FDEP Classification)	Haulover Beach County Park Kennedy Causeway (NE 79th Street)	(III) to (III)	

SITE PARAMETERS

Mapped Area (ac):	7.41	Storage Capacity (cy):	N/A
Containment Area (ac):	Insufficient Area	Dike Height (ft):	N/A
Impacted Area (ac):	N/A	Excavation Depth (ft):	N/A
Buffer Area (ac):	N/A	Existing Mean Site Elevation (ft):	5.0
N Buffer Width (ft):	N/A	Dike Volume (cy):	N/A
S Buffer Width (ft):	N/A	Max. Pumping Distance (mi):	3.66
E Buffer Width (ft):	N/A	Max. Barging Distance (mi):	N/A
W Buffer Width (ft):	N/A	Min. Distance from Waterway (mi):	0.86
Total Site Area (ac):	N/A		

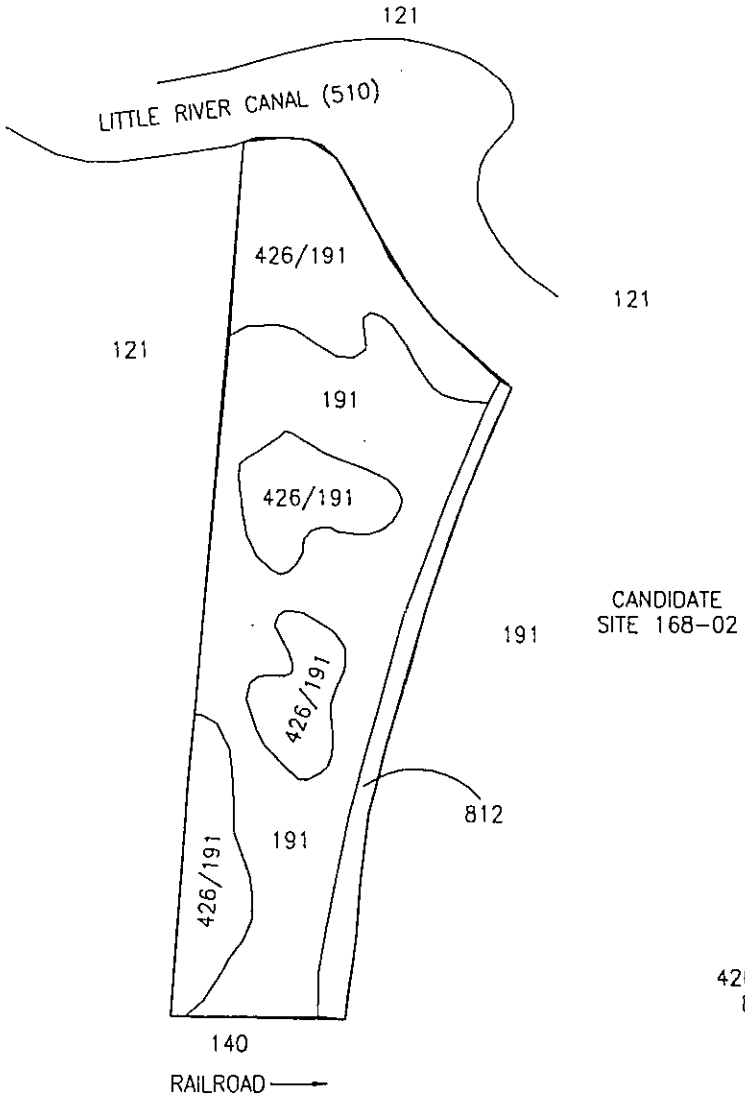
SITE

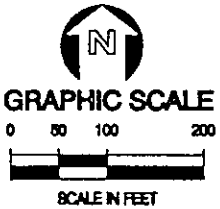
Public Access:	US Highway 1	Comprehensive Plan Designation:	Residential (MD)
		Adjacent Land Use:	
Road Easement (ft):	Not Required	Multiple dwelling units, high-rise (N, S); Biscayne Bay (E); US Highway 1 (W)	
Pipeline Easement (ft):	Not Required	Land Use of Impacted Area:	
Deep Draft Access:	N/A	N/A	
		Wetlands W/I Mapped Area (ac):	0.00
		Wetlands Impacted (ac):	0.00

Site Narrative:

Site 97-03, a 7.41-acre upland site, is the Old Lear School site and is mapped as urban land in transition (193). It contains primarily exotic landscape vegetation and an old paved road; however, no structures from the school remain. Most of the site is open grass with no tree canopy. Vegetation includes cabbage palm (*Sabal palmetto*), fig (*Ficus* sp.), scheffelera (*Scheffelera actinophylla*), Brazilian pepper (*Schinus terebinthifolius*), and centipede grass (*Eremochloa ophiuroides*). Wildlife observed includes European starling, mourning dove, and Cuban anole.

The site is bordered on the north and south by residential high-density multiple dwelling units, high-rise (134), on the east by Biscayne Bay (540) and on the west by US Highway 1 (814).





	LEGEND	ACRES
191	UNDEVELOPED LAND WITHIN URBAN AREAS	2.13
426/191	TROPICAL HARDWOODS/UNDEVELOPED LAND WITHIN URBAN AREAS	2.19
812	RAILROADS	.09
	TOTAL ACRES	4.41

	OTHER COVER TYPES SHOWN
121	FIXED SINGLE FAMILY UNITS
140	COMMERCIAL AND SERVICES

LAND USE AND VEGETATION FOR CANDIDATE SITE 168-01, MIAMI-DADE COUNTY, FLORIDA

TAYLOR ENGINEERING INC.
9000 CYPRESS GREEN DRIVE, SUITE 200
JACKSONVILLE, FLORIDA 32256

Figure B-5
Land Use and Vegetation
of Candidate Site 168-01
Miami-Dade County, Florida

PROJECT C1999-021
REVISION
SHEET
DATE Aug. 2001

SITE DATA SUMMARY SHEET

Name:	168-01
AKA:	Little River Canal (1)
Site Use:	Dewatering & Short-Term Storage (Single Operation)
Comment:	Undeveloped urban land adjacent to a railroad and Little River Canal

LOCATION

County:	Dade	ICWW REACH MILEAGE:	343.70
Municipality:	Miami	East/West of	West
Section/Township/Range:	7/53/42	Receiving Waterbody:	Little River Canal
		FDEP	III

REACH

Reach Designation:	DA-3	Projected Dredging Frequency (yr):	20
Reach Length (mi):	8.36	50-yr Dredging Requirement (cy):	17,524
ICWW Mileage:	342.76 to 351.12	50-yr Storage Requirement (cy):	37,677
Cut/Station:	DA-9/178+50 to D-3/57+80		
Geographic: (FDEP Classification)	Kennedy Causeway (NE 79th Street) Rickenbacker Causeway	(III) to (III)	

SITE PARAMETERS

Mapped Area (ac):	4.41	Storage Capacity (cy):	N/A
Containment Area (ac):	Insufficient Area	Dike Height (ft):	N/A
Impacted Area (ac):	N/A	Excavation Depth (ft):	N/A
Buffer Area (ac):	N/A	Existing Mean Site Elevation (ft):	5.0
N Buffer Width (ft):	N/A	Dike Volume (cy):	N/A
S Buffer Width (ft):	N/A	Max. Pumping Distance (mi):	N/A
E Buffer Width (ft):	N/A	Max. Barging Distance (mi):	N/A
W Buffer Width (ft):	N/A	Min. Distance from Waterway (mi):	1.11
Total Site Area (ac):	N/A		

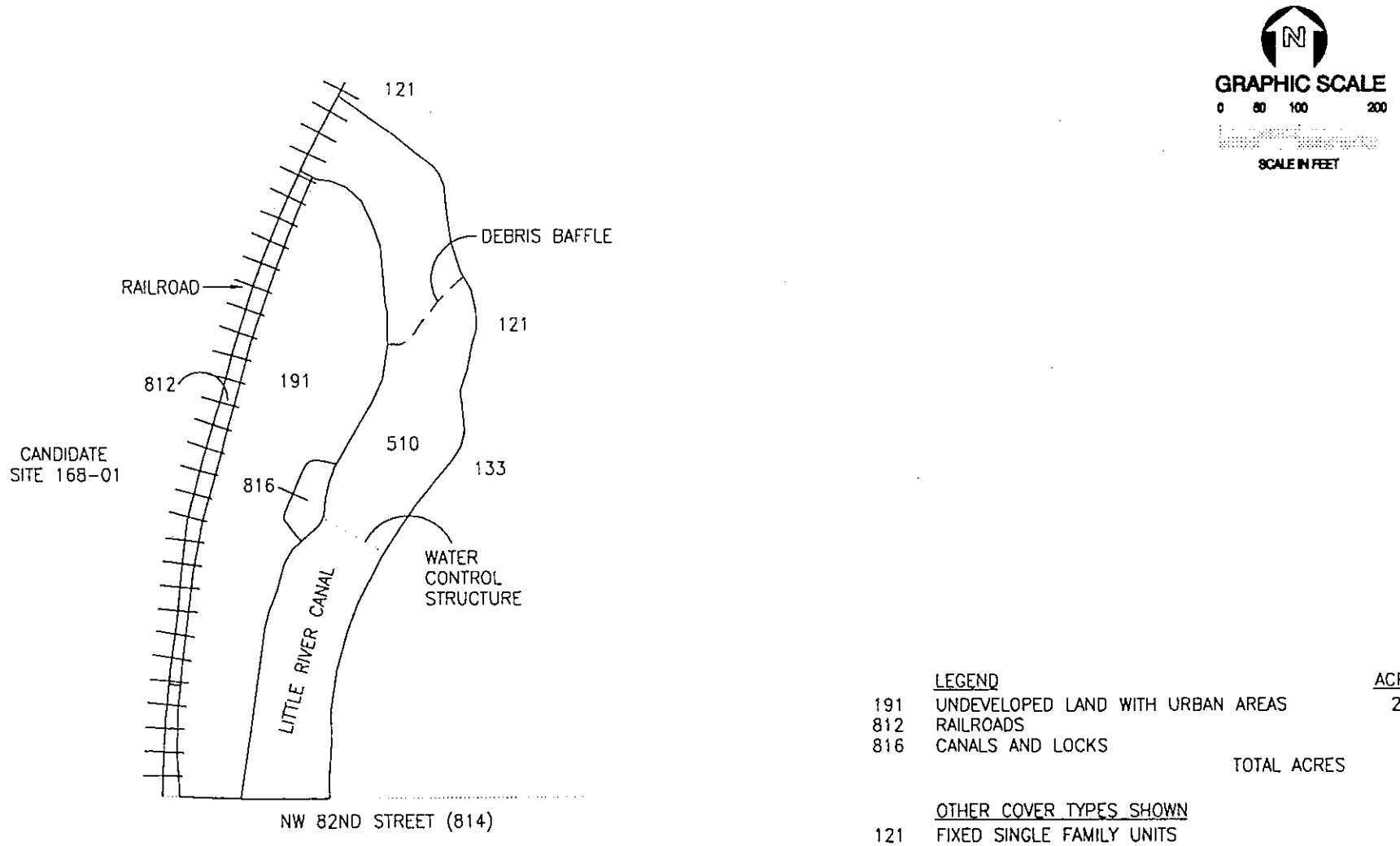
SITE

Public Access:	NE 4th Ave, NE 82nd Terrace	Comprehensive Plan Designation:	Residential (MHD)
		Adjacent Land Use:	
Road Easement (ft):	Not Required	Little River Canal (N); Railroad (E); Commercial and Services (S); Fixed single-family units (W)	
Pipeline Easement (ft):	Not Required		
		Land Use of Impacted Area:	
Deep Draft Access:	N/A	N/A	
		Wetlands W/I Mapped Area (ac):	0.00
		Wetlands Impacted (ac):	0.00

Site Narrative:

Site 168-01 is an urban 4.41-acre undeveloped upland tract of land (191). The northern end of the site abuts the Little River Canal (510). The property contains no structures but a railroad track (812) to the east separates this site from Site 168-02. The property is regularly mowed and it contained a mixture of open areas interspersed with several clusters of remnant tropical hardwood communities. The site had been previously fenced along its western border but is now accessible to vehicles from the nearby residential neighborhood. Some minor dumping was evident on the site. Tree and groundcover species include both native species and exotic species with the latter indicative of the disturbed nature of the site. Tree species observed include Javanese bishopwood (*Bischofia javanica*), galba (*Calophyllum antilalnum*), several species of fig (*Ficus carica, F. aurea*), black olive (*Bucida buceras*), sea grape (*Coccoloba uvifera*), citrus (*Citrus* sp.), umbrella tree (*Scheffelera actinophylla*), Brazilian pepper (*Schinus terebinthifolius*), Alexander palm (*Ptychosperma elegans*), loquat (*Eriobotrya japonica*), live oak (*Quercus virginiana*), gumbo-limbo (*Bursera simaruba*), paradise tree (*Simarouba glauca*), cabbage palm (*Sabal palmetto*) and an exotic species of sabal palm (*Sabal* sp.). Common ground cover included crowfoot grass (*Dactyloctenium aegyptium*), ragweed (Ambrosia artemisiifolia), beggar-ticks (*Bidens alba*), periwinkle (*Catharanthus roseus*), philodendron (*Philodendron* sp.), St. Augustine grass (*Stenotaphrum secundatum*), Virginia creeper (*Parthenocissus quinquefolia*), nightblooming cereus (*Hylocereus undatus*), creeping oxeye (*Wedelia trilobata*), giant foxtail (*Setaria magna*), and bowstring hemp (*Sansevieria trifasciata*).

Adjacent land uses include single family residential (121) north of the Little River Canal (510), railroad (812) and Site 168-02 to the east, commercial (140) to the south, and single family residential (121) to the west.



	LEGEND	ACRES
191	UNDEVELOPED LAND WITH URBAN AREAS	2.13
812	RAILROADS	.28
816	CANALS AND LOCKS	.09
	TOTAL ACRES	2.5

OTHER COVER TYPES SHOWN

121	FIXED SINGLE FAMILY UNITS
133	MULTIPLE DWELLING UNITS, LOW RISE
510	STREAMS AND WATERWAYS
814	ROADS AND HIGHWAYS

LAND USE AND VEGETATION FOR CANDIDATE SITE 168-02, MIAMI-DADE COUNTY, FLORIDA

TAYLOR ENGINEERING INC.
9000 CYPRESS GREEN DRIVE, SUITE 200
JACKSONVILLE, FLORIDA 32256

Figure B-6
Land Use and Vegetation
of Candidate Site 168-02
Miami-Dade County, Florida

PROJECT C1999-021
REVISION
SHEET
DATE Aug. 2001

SITE DATA SUMMARY SHEET

Name:	168-02
AKA:	Little River Canal (2)
Site Use:	Dewatering & Short-Term Storage (Single Operation)
Comment:	Site contains Little River Canal Water Control Structure, S-27

LOCATION

County:	Dade	ICWW REACH MILEAGE:	343.7
Municipality:	Miami	East/West of	West
Section/Township/Range:	7/53/42	Receiving Waterbody:	Little River Canal
		FDEP	III

REACH

Reach Designation:	DA-3	Projected Dredging Frequency (yr):	20
Reach Length (mi):	8.36	50-yr Dredging Requirement (cy):	17,524
ICWW Mileage:	342.76 to 351.12	50-yr Storage Requirement (cy):	37,677
Cut/Station:	DA-9/178+50 to D-3/57+80		
Geographic: (FDEP Classification)	Kennedy Causeway (NE 79th Street) Rickenbacker Causeway	(III) to (III)	

SITE PARAMETERS

Mapped Area (ac):	2.5	Storage Capacity (cy):	N/A
Containment Area (ac):	Insufficient Area	Dike Height (ft):	N/A
Impacted Area (ac):	N/A	Excavation Depth (ft):	N/A
Buffer Area (ac):	N/A	Existing Mean Site Elevation (ft):	5.0
N Buffer Width (ft):	N/A	Dike Volume (cy):	N/A
S Buffer Width (ft):	N/A	Max. Pumping Distance (mi):	N/A
E Buffer Width (ft):	N/A	Max. Barging Distance (mi):	N/A
W Buffer Width (ft):	N/A	Min. Distance from Waterway (mi):	1.03
Total Site Area (ac):	N/A		

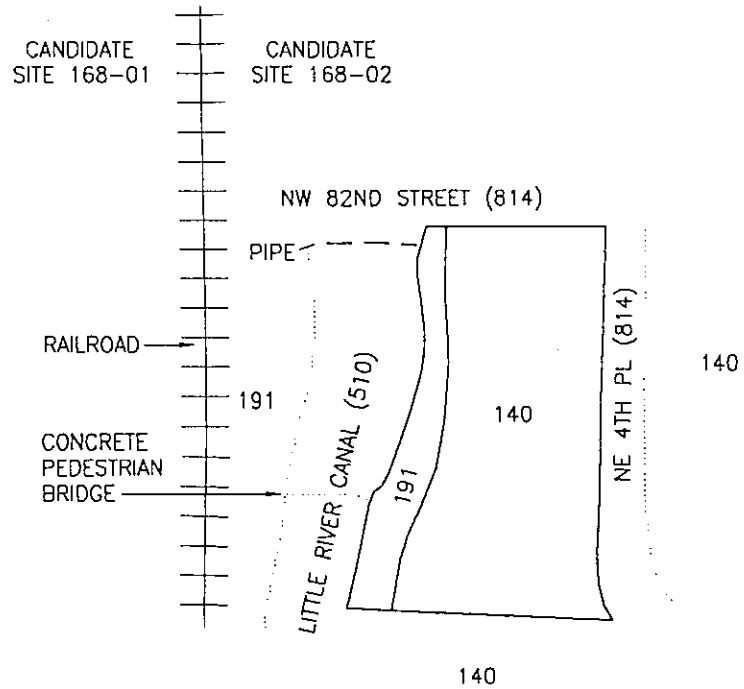
SITE

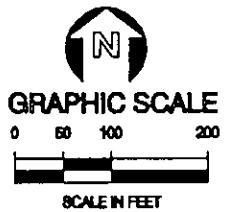
Public Access:	NW 82nd St	Comprehensive Plan Designation:	Residential (MHD)
		Adjacent Land Use:	
Road Easement (ft):	Not Required	Single and multiple family dwelling units (N, E); NW 82nd St (S); Railroad (W)	
Pipeline Easement (ft):	Not Required	Land Use of Impacted Area:	
Deep Draft Access:	N/A	N/A	
		Wetlands W/I Mapped Area (ac):	0.00
		Wetlands Impacted (ac):	0.00

Site Narrative:

Site 168-02 is an urban 2.5-acre mostly undeveloped site (191) located on the Little River Canal (510). The site abuts a railroad (812) and Site 168-01 to the west. A portion of the site is used for facilities related to the adjacent water control structure, S-27, on the Little River Canal. The related land-based facilities (816) include a fenced enclosure (8-foot high chain link) containing a small concrete pump house adjacent to the control structure, which crosses the canal about midway along the shoreline of the site. A series of wooden, utility power poles cross the site and provide electricity to the pump house. A stage recorder was located just north of the water control structure. The shore of the canal is steep, dropping three to four-feet to the level of the water. Sediments along the shoreline contain gravel and the steep slope is not conducive to emergent plant growth, however a few species such as arrowhead (*Sagittaria latifolia*), alligator weed (*Alernathera philoxeriodes*), and panicgrass (*Panicum* sp.) were noted. Just upstream from the control structure was a floating debris trap, which had entrained a large amount of floating trash. Aquatic birds, fish, turtles, and the endangered West Indian manatee use the canal. Filamentous algae are growing along the submerged, shallower portions of the canal bank. The rest of the site was mowed and maintained in low herbaceous vegetation. Common vegetation species include Bermuda grass (*Cynodon dactylon*), finger grass (*Eustachys petraea*), smut grass (*Sporobolus indicus*), beggar-ticks (*Bidens alba*), ragweed (*Ambrosia artemisiifolia*), St. Augustine grass (*Stenotaphrum secundatum*), morning glory (*Ipomoea* sp.), Virginia creeper (*Parthenocissus quinquefolia*), and hairy indigo (*Indigofera hirsuta*).

Adjacent land uses include Little River Canal (510), single family (121), and multi-family residential (133) to the north and east, highway (814) to the south, and the railroad (812) and Site 168-01 to the west.





	LEGEND	ACRES
140	COMMERCIAL AND SERVICES	1.58
191	UNDEVELOPED LAND WITHIN URBAN AREAS	.32
	TOTAL ACRES	1.90

	OTHER COVER TYPES SHOWN
510	STREAMS AND WATERWAYS
814	ROADS AND HIGHWAYS

LAND USE AND VEGETATION FOR CANDIDATE SITE 168-03, MIAMI-DADE COUNTY, FLORIDA

TAYLOR ENGINEERING INC.
9000 CYPRESS GREEN DRIVE, SUITE 200
JACKSONVILLE, FLORIDA 32256

Figure B-7
Land Use and Vegetation
of Candidate Site 168-03
Miami-Dade County, Florida

PROJECT C1999-021
REVISION
SHEET
DATE Aug. 2001

SITE DATA SUMMARY SHEET

Name:	168-03
AKA:	Little River Canal (3)
Site Use:	Dewatering & Short-Term Storage (Single Operation)
Comment:	Commercial Use -- Appears to be a gated parking lot for an adjacent business

LOCATION

County:	Dade	ICWW REACH MILEAGE:	343.81
Municipality:	Miami	East/West of	West
Section/Township/Range:	7/53/42	Receiving Waterbody:	Little River Canal
		FDEP	III

REACH

Reach Designation:	DA-3	Projected Dredging Frequency (yr):	20
Reach Length (mi):	8.36	50-yr Dredging Requirement (cy):	17,524
ICWW Mileage:	342.76 to 351.12	50-yr Storage Requirement (cy):	37,677
Cut/Station:	DA-9/178+50 to D-3/57+80		
Geographic: (FDEP Classification)	Kennedy Causeway (NE 79th Street) Rickenbacker Causeway	(III) to (III)	

SITE PARAMETERS

Mapped Area (ac):	1.9	Storage Capacity (cy):	N/A
Containment Area (ac):	Insufficient Area	Dike Height (ft):	N/A
Impacted Area (ac):	N/A	Excavation Depth (ft):	N/A
Buffer Area (ac):	N/A	Existing Mean Site Elevation (ft):	5.0
N Buffer Width (ft):	N/A	Dike Volume (cy):	N/A
S Buffer Width (ft):	N/A	Max. Pumping Distance (mi):	N/A
E Buffer Width (ft):	N/A	Max. Barging Distance (mi):	N/A
W Buffer Width (ft):	N/A	Min. Distance from Waterway (mi):	1.03
Total Site Area (ac):	N/A		

SITE

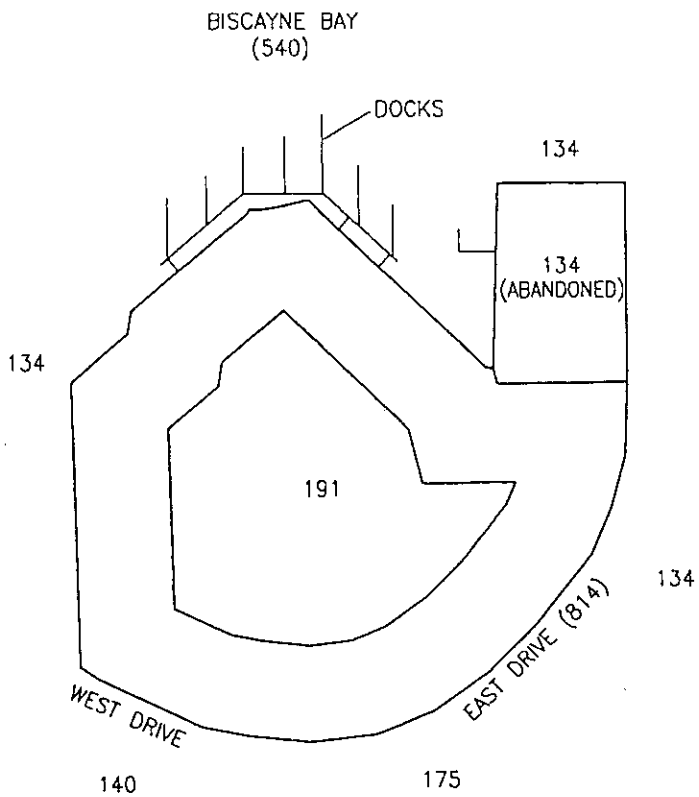
Public Access:	NW 82nd St	Comprehensive Plan Designation:	Business and Office
		Adjacent Land Use:	
Road Easement (ft):	Not Required	NW 82nd St and Site 168-02 (N); Commercial and Services (E, S); Little River Canal (W)	
Pipeline Easement (ft):	Not Required	Land Use of Impacted Area:	
Deep Draft Access:	N/A	N/A	
		Wetlands W/I Mapped Area (ac):	0.00
		Wetlands Impacted (ac):	0.00

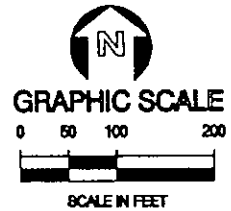
Site Narrative:

Site 168-03 is a 1.9-acre asphalt parking lot (140) with a strip of undeveloped land within urban areas (191) along the Little River Canal (510). The parking lot is completely enclosed by an 8-foot high chain link fence. There is an old sign located on the northeast corner of the parking lot and sidewalks are located along the northern and eastern side of the site. This area has no vegetation except for some tenacious weeds growing in the asphalt cracks.

The site is adjacent to the Little River Canal. A large water pipe crosses the canal just south of 82nd Street. A concrete pedestrian bridge also crosses the canal and connects along the property's shoreline. The right-of-way along the canal is mowed and maintained in low, herbaceous vegetation including St. Augustine grass (*Stenotaphrum secundatum*), finger grass (*Eustachys petraea*), beggar-ticks (*Bidens alba*), ragweed (*Ambrosia artemisiifolia*), Bermuda grass (*Cynodon dactylon*), and creeping oxeye (*Wedelia trilobata*). The shoreline along this section of the canal is steep and mowed to the end of the canal. A few emergent species were present and they include sea oxeye (*Borrichia frutescens*), torpedo grass (*Panicum repens*), and one specimen of leather fern (*Acrostichum* sp.).

Surrounding land uses include Site 168-02 across the highway (814) to the north, commercial (140) across NE 4th Place to the east, commercial (140) to the south, and undeveloped land along the railroad to the west.





	LEGEND	ACRES
134	MULTIPLE DWELLING UNITS, HIGH RISE	.63
191	UNDEVELOPED LAND WITHIN URBAN AREAS	5.08
	TOTAL ACRES	5.71

	OTHER COVER TYPES SHOWN
140	COMMERCIAL AND SERVICES
175	GOVERNMENTAL
540	BAYS AND ESTUARIES
814	ROADS AND HIGHWAYS

LAND USE AND VEGETATION OF CANDIDATE SITE 170-01, MIAMI-DADE COUNTY, FLORIDA

TAYLOR ENGINEERING INC.
9000 CYPRESS GREEN DRIVE, SUITE 200
JACKSONVILLE, FLORIDA 32256

Figure B-8
Land Use and Vegetation
of Candidate Site 170-01
Miami-Dade County, Florida

PROJECT C1999-021
REVISION
SHEET
DATE July, 2001

SITE DATA SUMMARY SHEET

Name: 170-01

AKA: North Bay Village site

Site Use: Material Rehandling (Barge Offloading)

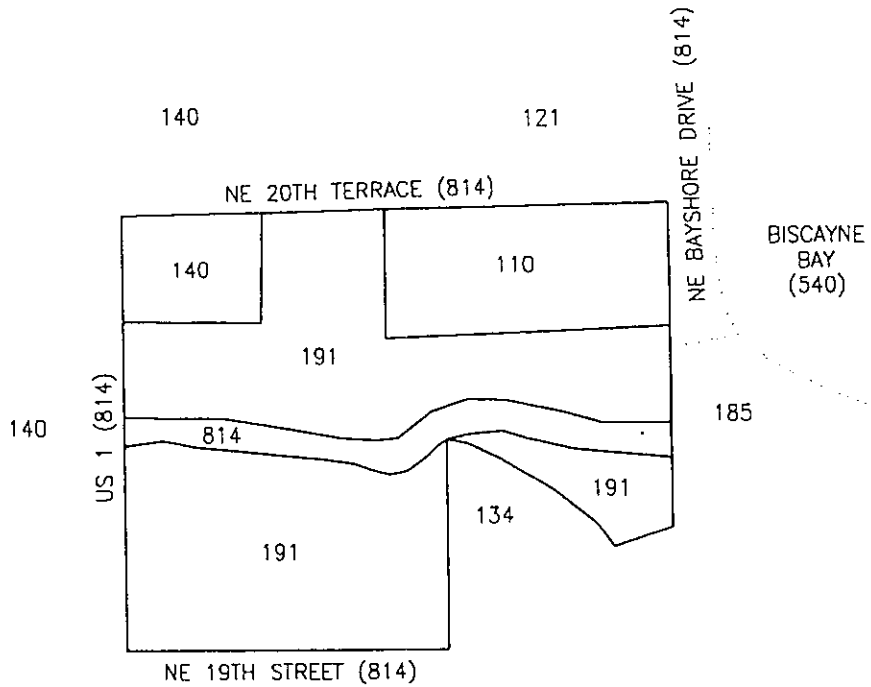
Comment: Vacant, cleared land surrounded by multi-family residential

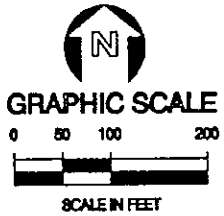
LOCATION			
County:	Dade	ICWW REACH MILEAGE:	343.75
Municipality:	North Bay Village	East/West of	East
Section/Township/Range:	9/53/42	Receiving Waterbody:	N/A
		FDEP	N/A
REACH			
Reach Designation:	DA-3	Projected Dredging Frequency (yr):	20
Reach Length (mi):	8.36	50-yr Dredging Requirement (cy):	17,524
ICWW Mileage:	342.76 to 351.12	50-yr Storage Requirement (cy):	37,677
Cut/Station:	DA-9/178+50 to D-3/57+80		
Geographic: (FDEP Classification)	Kennedy Causeway (NE 79th Street) Rickenbacker Causeway	(III) to (III)	
SITE PARAMETERS			
Mapped Area (ac):	5.71	Storage Capacity (cy):	N/A
Containment Area (ac):	N/A	Dike Height (ft):	N/A
Impacted Area (ac):	1.70	Excavation Depth (ft):	N/A
Buffer Area (ac):	3.38	Existing Mean Site Elevation (ft):	5.0
N Buffer Width (ft):	100	Dike Volume (cy):	N/A
S Buffer Width (ft):	100	Max. Pumping Distance (mi):	N/A
E Buffer Width (ft):	100	Max. Barging Distance (mi):	6.20
W Buffer Width (ft):	100	Min. Distance from Waterway (mi):	0.77
Total Site Area (ac):	5.08		
SITE			
Public Access:	West Dr, East Dr	Comprehensive Plan Designation:	Residential (MHD)
		Adjacent Land Use:	
Road Easement (ft):	Not Required	Biscayne Bay (N); Multiple dwelling units (NE, E, SW); Governmental and Commercial and Services (S)	
Pipeline Easement (ft):	N/A	Land Use of Impacted Area:	
Deep Draft Access:	Yes	Undeveloped land within urban areas	
		Wetlands W/I Mapped Area (ac):	0.00
		Wetlands Impacted (ac):	0.00

Site Narrative:

Site 170-01 is a 5.7-acre upland parcel, on Harbor Island, containing mostly undeveloped land within urban areas (191) adjacent to a vacant high-rise condominium (134). Harbor Island was created by fill deposited in Biscayne Bay. The parcel was completely fenced in with a low chain link fence. A sidewalk and parking area are located just off-site of the parcel along East and West Drive. A narrow, landscaped hedge is located between the sidewalk and the fence along the eastern and southern perimeter of the site. The shoreline along Biscayne Bay was completely bulkheaded and there was a series of wooden finger piers protruding into the bay. The water was clear with attached oysters and mussels growing on the seawall and pilings. Turtle grass (*Thalassia testudinum*) was observed growing on the bay bottom and fish were plentiful in the vicinity. Stormwater culverts entered the bay at several points along the shoreline. Most of the undeveloped portion of the site had sparse vegetation. Scattered trees and shrubs are located in the shell-laden fill material. Species observed include coconut palm (*Cocos nucifera*), cabbage palm (*Sabal palmetto*), umbrella tree (*Scheffelera actinophylla*), Australian pine (*Casuarina equisetifolia*), Brazilian pepper (*Schinus terebinthifolius*), and gumbo-limbo (*Bursera simaruba*). The low, sparse ground cover found over most of the site included foxtail (*Setaria* sp.), broomsedge (*Andropogon* sp.), smut grass (*Sporobolus indicus*), crowfoot grass (*Dactyloctenium aegyptium*), spurge (*Chamaesyce* sp.), and peppervine (*Ampelopsis arborea*). Several clusters of landscaping plants are located on the south end of the site at an old entrance. Planted vegetation included a variety of palms, umbrella tree (*Scheffelera actinophylla*), spider lily (*Hymenocallis* sp.), and ixora (*Ixora* sp.). The abandoned high-rise condominium is an 8-story concrete structure that was surrounding by asphalt parking or concrete pads. Some landscaping remains around the condominium. One pier was located behind this structure.

Adjacent land uses include Biscayne Bay (540) to the north, high-rise condominiums (134) to the east and west, and commercial (140) and local government (175) to the south.





	LEGEND	ACRES
110	RESIDENTIAL, LOW DENSITY	.87
140	COMMERCIAL AND SERVICES	.37
191	UNDEVELOPED LAND WITHIN URBAN AREAS	3.35
814	ROADS AND HIGHWAYS	.40
	TOTAL ACRES	4.99

	OTHER COVER TYPES SHOWN
121	FIXED SINGLE FAMILY UNITS
134	MULTIPLE DWELLING UNITS, HIGH RISE
185	PARKS AND ZOOS
540	BAYS AND ESTUARIES

LAND USE AND VEGETATION FOR CANDIDATE SITE 181-01, MIAMI-DADE COUNTY, FLORIDA

TAYLOR ENGINEERING INC.
9000 CYPRESS GREEN DRIVE, SUITE 200
JACKSONVILLE, FLORIDA 32256

Figure B-9
Land Use and Vegetation
of Candidate Site 181-01
Miami-Dade County, Florida

PROJECT C1999-021
REVISION
SHEET
DATE Aug. 2001

SITE DATA SUMMARY SHEET

Name:	181-01
AKA:	Finger Multifamily Site
Site Use:	Material Rehandling (Barge Offloading)
Comment:	Residential Use -- Vacant land parcel with frontage on Biscayne Bay and Pace Park

LOCATION

County:	Dade	ICWW REACH MILEAGE:	347.64
Municipality:	Miami	East/West of	West
Section/Township/Range:	30/53/42 & 31/53/42	Receiving Waterbody:	N/A
		FDEP	N/A

REACH

Reach Designation:	DA-3	Projected Dredging Frequency (yr):	20
Reach Length (mi):	8.36	50-yr Dredging Requirement (cy):	17,524
ICWW Mileage:	342.76 to 351.12	50-yr Storage Requirement (cy):	37,677
Cut/Station:	DA-9/178+50 to D-3/57+80		
Geographic: (FDEP Classification)	Kennedy Causeway (NE 79th Street) Rickenbacker Causeway	(III) to (III)	

SITE PARAMETERS

Mapped Area (ac):	4.99	Storage Capacity (cy):	N/A
Containment Area (ac):	N/A	Dike Height (ft):	N/A
Impacted Area (ac):	1.09	Excavation Depth (ft):	N/A
Buffer Area (ac):	3.63	Existing Mean Site Elevation (ft):	5.0
N Buffer Width (ft):	100	Dike Volume (cy):	N/A
S Buffer Width (ft):	100	Max. Pumping Distance (mi):	N/A
E Buffer Width (ft):	0	Max. Barging Distance (mi):	4.08
W Buffer Width (ft):	100	Min. Distance from Waterway (mi):	0.45
Total Site Area (ac):	4.72		

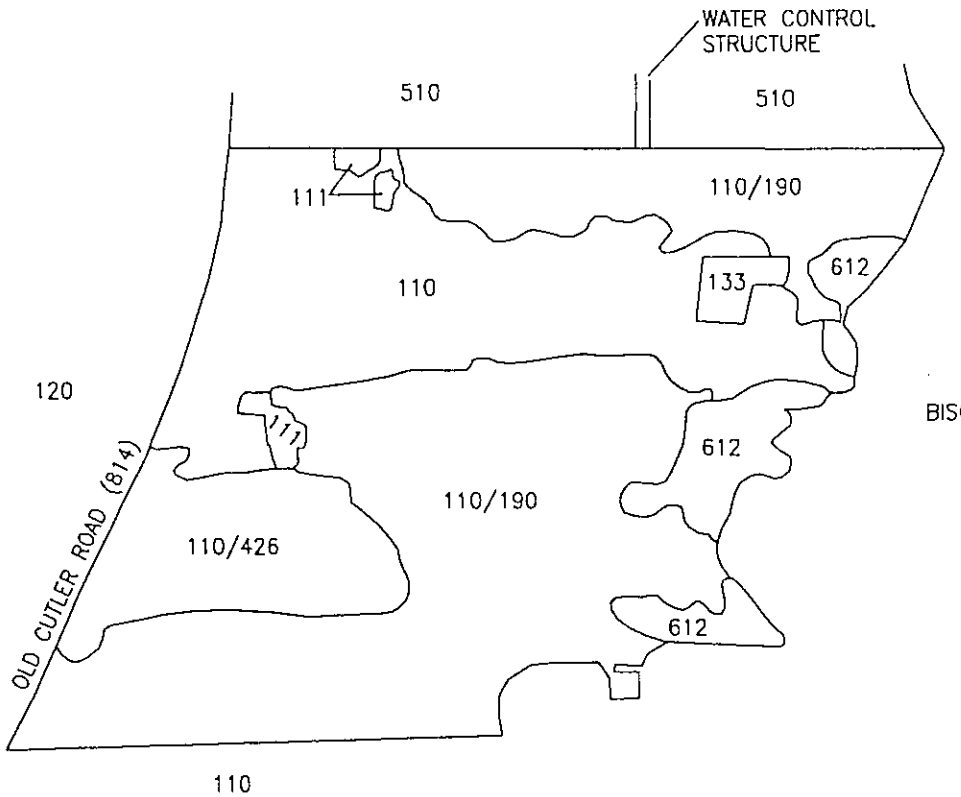
SITE

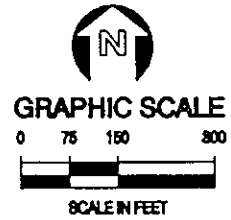
Public Access:	NE Bayshore Dr, NE 20th Terrace, US Highway 1, NE 19th St	Comprehensive Plan Designation:	Residential (HD)
		Adjacent Land Use:	Single-family homes and Commercial and Services (N, W); Biscayne Bay (E); Multi-family residential (S)
Road Easement (ft):	Not Required		
Pipeline Easement (ft):	N/A	Land Use of Impacted Area:	Undeveloped Land within urban areas, Roads and Highways
Deep Draft Access:	Yes		
		Wetlands W/I Mapped Area (ac):	0.00
		Wetlands Impacted (ac):	0.00

Site Narrative:

Site 181-01 is a 5-acre mostly undeveloped tract fronting US Highway 1 (814). The site is located a short distance across NE Bayshore Drive (814) from a small, very shallow cove of Biscayne Bay (540). The property includes a commercial tract (140) on the northwest corner containing a recently closed clothing store and an older two-story bungalow-style home with a detached garage/apartment behind it in the northeastern corner of the site. The main residence appeared to be occupied. There was a vacant gravel/grass lot between the commercial parcel and the home site. Surrounding the home was a mowed lawn of St. Augustine grass (*Stenotaphrum secundatum*). Landscape trees and shrubs were limited but several species of palm were planted on the large residential lot. The commercial site consisted of a one-story storefront with a fenced asphalt area behind the store. The undeveloped portions of the site (191) may currently be used for parking. Presently it contains asphalt and concrete pads possibly related to a former use of the site. Larger areas of low sparse vegetation cover the rest of the site including creeping oxeye (*Wedelia trilobata*), smut grass (*Sporobolus indicus*), and beggar-ticks (*Bidens alba*). A road bisects the site but it does not appear to be frequently used. Scattered trees are located on the undeveloped parts of the site including fig tree (*Ficus carica*), Caribbean trumpet tree (*Tabebuia aurea*), Washington palm (*Washingtonia robusta*), jacaranda (Jacaranda acutifolia), and umbrella tree (*Scheffelera actinophylla*). A cluster of Australian pine (*Casuarina equisetifolia*) is located on the eastern side of the site. Royal palms (*Roystonea* sp.) line US Highway 1 and NE 19th Street on the perimeter of the site.

Adjacent land uses include single-family homes (121) to the north, the City of Miami's Margaret Pave Park (185) and Biscayne Bay (540) across NE Bayshore Drive (814) to the east, high-rise multi-family residential to the south, and commercial (140), across US Highway 1, to the west.





	LEGEND	ACRES
110	RESIDENTIAL, LOW DENSITY	5.67
110/190	RESIDENTIAL, LOW DENSITY/OPEN LAND	16.30
110/426	RESIDENTIAL, LOW DENSITY/TROPICAL HARDWOODS	2.35
111	FIXED SINGLE FAMILY UNITS	.23
133	MULTIPLE DWELLING UNITS (ABANDONED)	.23
612	MANGROVE SWAMPS	1.43
	TOTAL ACRES	26.21

	OTHER COVER TYPES SHOWN
120	RESIDENTIAL, MEDIUM DENSITY
510	STREAMS AND WATERWAYS
540	BAYS AND ESTUARIES
814	ROADS AND HIGHWAYS

LAND USE AND VEGETATION FOR CANDIDATE SITE 318-01, MIAMI-DADE COUNTY, FLORIDA

TAYLOR ENGINEERING INC.
9000 CYPRESS GREEN DRIVE, SUITE 200
JACKSONVILLE, FLORIDA 32256

Figure B-10
Land Use and Vegetation
of Candidate Site 318-01
Miami-Dade County, Florida

PROJECT C1999-021
REVISION
SHEET
DATE Aug. 2001

SITE DATA SUMMARY SHEET

Name:	318-01
AKA:	Cutler Canal site
Site Use:	Dewatering & Short-Term Storage (Single Operation)
Comment:	Residential Use -- Site fronts Old Cutler Rd, Biscayne Bay, and Cutler Canal

LOCATION

County:	Dade	ICWW REACH MILEAGE:	361.03
Municipality:	Unincorporated	East/West of	West
Section/Township/Range:	35/55/40	Receiving Waterbody:	Biscayne Bay
		FDEP	III

REACH

Reach Designation:	DA-4	Projected Dredging Frequency (yr):	20
Reach Length (mi):	15.75	50-yr Dredging Requirement (cy):	0
ICWW Mileage:	351.12 to 366.87	50-yr Storage Requirement (cy):	0
Cut/Station:	D-3/57+80 to D-5/0+00		
Geographic: (FDEP Classification)	Rickenbacker Causeway Black Point	(III) to (III)	

SITE PARAMETERS

Mapped Area (ac):	26.21	Storage Capacity (cy):	46,676
Containment Area (ac):	6.24	Dike Height (ft):	8.0
Impacted Area (ac):	8.94	Excavation Depth (ft):	4.78
Buffer Area (ac):	7.23	Existing Mean Site Elevation (ft):	5.0
N Buffer Width (ft):	150	Dike Volume (cy):	23,431
S Buffer Width (ft):	150	Max. Pumping Distance (mi):	15.62
E Buffer Width (ft):	150	Max. Barging Distance (mi):	N/A
W Buffer Width (ft):	150	Min. Distance from Waterway (mi):	5.75
Total Site Area (ac):	16.17		

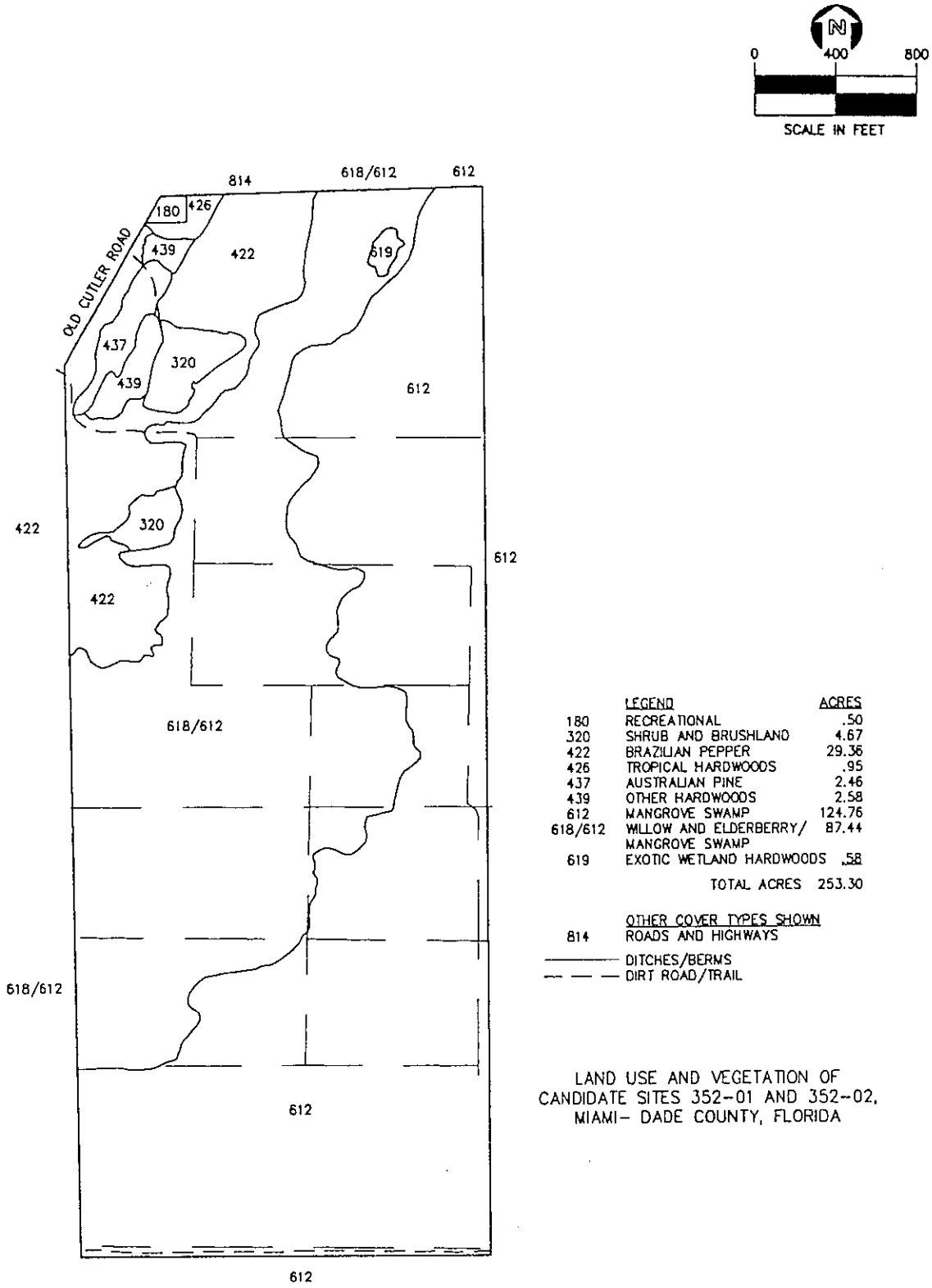
SITE

Public Access:	Old Cutler Rd	Comprehensive Plan Designation:	Residential (ED)
		Adjacent Land Use:	
Road Easement (ft):	Not Required	Cutler Canal (N); Biscayne Bay (E); Residential (S, W)	
Pipeline Easement (ft):	Not Required		
		Land Use of Impacted Area:	
Deep Draft Access:	N/A	Low-density residential, tropical hardwoods, open land	
		Wetlands W/I Mapped Area (ac):	1.43
		Wetlands Impacted (ac):	0.00

Site Narrative:

Site 318-01 is a 26.2-acre site containing at least three large estate-type residences (110), or former residences, fronting Biscayne Bay (540). Site inspection was conducted from along the Cutler Canal (C-100) and Old Cutler Road (814) as a result of limited site access. The northernmost tract of the property contained a cluster of buildings that appeared to be an older Spanish-style home. Several other buildings are located around the main house. The site was well landscaped with a mowed lawn, numerous established landscape plantings, as well as thick natural vegetation in some areas. Out toward Biscayne Bay was a large, three-story concrete building, which appeared to be abandoned or perhaps never completed. The building had the appearance of a commercial office building although it was difficult to determine the intended use of the structure. The middle tract contained another single family home, but it was not visible from the road. Significant clearing had recently taken place on the southernmost tract, demolishing the former home. Throughout the entire site are small stands of the native vegetation including part of a tropical hammock (426) and mangrove swamp (612) along the Biscayne Bay shoreline. Vegetation observed includes live oak *(Quercus virginiana)*, fig tree (*Ficus benghalensis*), Australian pine (*Casuarina equisetifolia*), sea grape *(Coccoloba uvifera)*, bananas (*Musa acuminata*), coconut palm (*Cocos nucifera*), gumbo-limbo (*Bursera simaruba*), cabbage palm (*Sabal palmetto*), bamboo, and parlor palm (Chamaedorea elegans).

The Cutler Canal (C-100, 510) borders the northern part of the site. The canal was cut through a vertical limestone bluff creating a straight drop from the property to the canal. A water control structure is located on the canal and abuts the site in the middle of the northern boundary. Adjacent land uses include the canal to the north (510), Biscayne Bay to the east (540), low density residential to the south (110), and single-family homes (121) to the west across Old Cutler Road.



	LEGEND	ACRES
180	RECREATIONAL	.50
320	SHRUB AND BRUSHLAND	4.67
422	BRAZILIAN PEPPER	29.36
426	TROPICAL HARDWOODS	.95
437	AUSTRALIAN PINE	2.46
439	OTHER HARDWOODS	2.58
612	MANGROVE SWAMP	124.76
618/612	WILLOW AND ELDERBERRY/ MANGROVE SWAMP	87.44
619	EXOTIC WETLAND HARDWOODS	.58
	TOTAL ACRES	253.30

OTHER COVER TYPES SHOWN

814 ROADS AND HIGHWAYS

——— DITCHES/BERMS

— — — DIRT ROAD/TRAIL

LAND USE AND VEGETATION OF
CANDIDATE SITES 352-01 AND 352-02,
MIAMI- DADE COUNTY, FLORIDA

TAYLOR ENGINEERING INC.
9000 CYPRESS GREEN DRIVE, SUITE 200
JACKSONVILLE, FLORIDA 32256

Figure B-11
Land Use and Vegetation of
Candidate Sites 352-01 and 352-02
Miami-Dade County, Florida

PROJECT C1999-021
REVISION
SHEET
DATE July, 2001

SITE DATA SUMMARY SHEET

Name:	352-01, 352-02
AKA:	Hugo Morales property, Old Cutler Estates
Site Use:	Multi-Reach Inland Storage
Comment:	Site is primarily mangrove swamp (213-acres) with small upland area (20-acres) located in the northeast section

LOCATION

County:	Dade	ICWW REACH MILEAGE:	361.28
Municipality:	Unincorporated	East/West of	West
Section/Township/Range:	2/56/40	Receiving Waterbody:	N/A
		FDEP	N/A

REACH

Reach Designation:	DA-4			Projected Dredging Frequency (yr):	20
Reach Length (mi):	15.75			50-yr Dredging Requirement (cy):	0
ICWW Mileage:	351.12	to	366.87	50-yr Storage Requirement (cy):	0
Cut/Station:	D-3/57+80	to	D-5/0+00		
Geographic: (FDEP Classification)	Rickenbacker Causeway Black Point			(III) to (III)	

SITE PARAMETERS

Mapped Area (ac):	253.3	Storage Capacity (cy):	163,465
Containment Area (ac):	N/A	Dike Height (ft):	N/A
Impacted Area (ac):	12.66	Excavation Depth (ft):	N/A
Buffer Area (ac):	8.23	Existing Mean Site Elevation (ft):	5.0
N Buffer Width (ft):	100	Dike Volume (cy):	N/A
S Buffer Width (ft):	100	Max. Pumping Distance (mi):	N/A
E Buffer Width (ft):	100	Max. Barging Distance (mi):	N/A
W Buffer Width (ft):	100	Min. Distance from Waterway (mi):	5.71
Total Site Area (ac):	20.89		

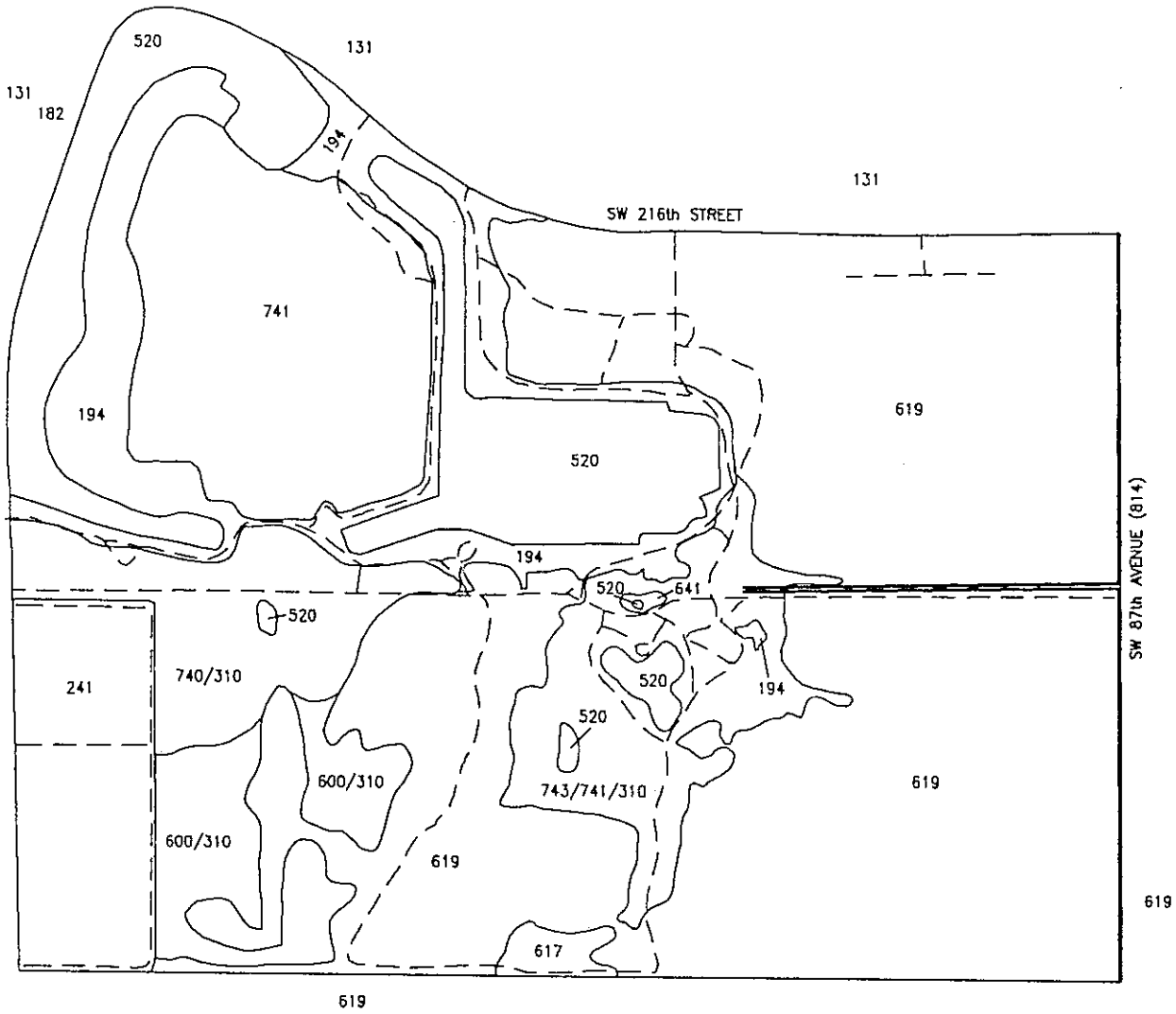
SITE

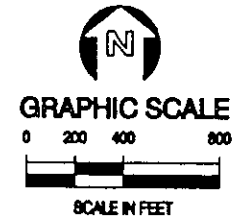
Public Access:	Old Cutler Rd.	Comprehensive Plan Designation:	Residential (ED)
		Adjacent Land Use:	
Road Easement (ft):	Not Required	Mangrove Swamp (N, E, S, SW); Brazilian Pepper (W)	
Pipeline Easement (ft):	N/A	Land Use of Impacted Area:	
Deep Draft Access:	N/A	Recreational, Shrub and Brushland, Brazilian Pepper, Tropical Hardwoods, Australian pine, Other Hardwoods	
		Wetlands W/I Mapped Area (ac):	212.78
		Wetlands Impacted (ac):	0.00

Site Narrative:

Site 352-01/352-02 is a nearly rectangular 253-acre composite site. The property is located southeast of the intersection of Old Cutler Road and SW 184th Street (814). The majority of the site is wetland (83%) with an extensive band of mangrove swamp (612) lining the shoreline of Biscayne Bay. Inland from the mangrove zone is a band of fresh to brackish water swamp characterized as willow and elderberry/mangrove swamp (618/612). This area contained Carolina willow (*Salix caroliniana*), Brazilian pepper (*Schinus terebinthifolius*), giant foxtail (*Setaria magna*), and scattered white mangrove (*Laguncularia racemosa*) near the ditches. Only the northwest portions of the site contain upland vegetation communities. Much of the upland areas are covered by communities dominated by exotic trees including Brazilian pepper (422), Australian pine (437), and other hardwoods (439). The dominant tree in the other hardwoods community was mimosa (*Albizzia* sp.). A nearly 5-acre area of grasses, herbs, and small shrubs are located in the northwest portion of the site (320). This area was vegetated with giant foxtail, dogfennel (*Eupatorium capillifolium*), camphorweed (*Pluchea* sp.), fogfruit (*Phyla nodiflora*), and scattered unidentified tall clump grasses. The area is low with occasional, scattered clumps of wax myrtle (*Myrica cerifera*) and Carolina willow moving into the community. All the upland areas may have been previously disturbed. Extensive ditch systems are located on the property. In addition, some of the wetlands appear to have been used for agriculture. A small corner of the site, designated recreational (180), contains a picnic area, and may be affiliated with the corporate offices located to the north.

Adjacent land uses include a private road (814), leading to the Burger King World Headquarters office complex, and mangrove swamp (612) to the north, mangrove swamp to the east and south, willow/elderberry/mangrove swamp (618/612) and Brazilian pepper (422) to the west, and Old Cutler Road (814) to the northeast.





	LEGEND	ACRES
194	OTHER OPEN LAND	32.47
241	TREE NURSERIES	22.58
520	LAKES	41.63
600/310	WETLANDS/HERBACEOUS	16.03
617	MIXED WETLAND HARDWOODS	2.11
619	EXOTIC WETLAND HARDWOODS	182.18
641	FRESHWATER MARSHES	.27
740/310	DISTURBED LAND/HERBACEOUS	20.59
741	RURAL LAND IN TRANSITION	40.90
743/741/310	SPOIL AREAS/RURAL LAND IN TRANSITION/HERBACEOUS	24.83
	TOTAL ACRES	383.59

	OTHER COVER TYPES SHOWN
131	FIXED SINGLE FAMILY UNITS
182	GOLF COURSES
814	ROADS AND HIGHWAYS

- - - - JEEP TRAILS AND LIMEROCK ROADS

LARGE DITCHES (510)

LAND USE AND VEGETATION FOR CANDIDATE SITE 361A-01, MIAMI-DADE COUNTY, FLORIDA

TAYLOR ENGINEERING INC.
9000 CYPRESS GREEN DRIVE, SUITE 200
JACKSONVILLE, FLORIDA 32256

Figure B-12
Land Use and Vegetation
of Candidate Site 361A-01
Miami-Dade County, Florida

PROJECT	C1999-021
REVISION	
SHEET	
DATE	Aug. 2001

SITE DATA SUMMARY SHEET

Name:	361A-01
AKA:	Lakes by the Bay PUD (1)
Site Use:	Multi-Reach Inland Storage
Comment:	Agricultural Use -- 22.6 acre tree nursery

LOCATION

County:	Dade	ICWW REACH MILEAGE:	364.39
Municipality:	Unincorporated	East/West of	West
Section/Township/Range:	16/56/40	Receiving Waterbody:	N/A
		FDEP	N/A

REACH

Reach Designation:	DA-4	Projected Dredging Frequency (yr):	20
Reach Length (mi):	15.75	50-yr Dredging Requirement (cy):	0
ICWW Mileage:	351.12 to 366.87	50-yr Storage Requirement (cy):	0
Cut/Station:	D-3/57+80 to D-5/0+00		
Geographic: (FDEP Classification)	Rickenbacker Causeway Black Point	(III) to (III)	

SITE PARAMETERS

Mapped Area (ac):	383.59	Storage Capacity (cy):	153,600
Containment Area (ac):	N/A	Dike Height (ft):	N/A
Impacted Area (ac):	11.90	Excavation Depth (ft):	N/A
Buffer Area (ac):	8.87	Existing Mean Site Elevation (ft):	5.0
N Buffer Width (ft):	100	Dike Volume (cy):	N/A
S Buffer Width (ft):	100	Max. Pumping Distance (mi):	N/A
E Buffer Width (ft):	100	Max. Barging Distance (mi):	N/A
W Buffer Width (ft):	100	Min. Distance from Waterway (mi):	6.52
Total Site Area (ac):	20.77		

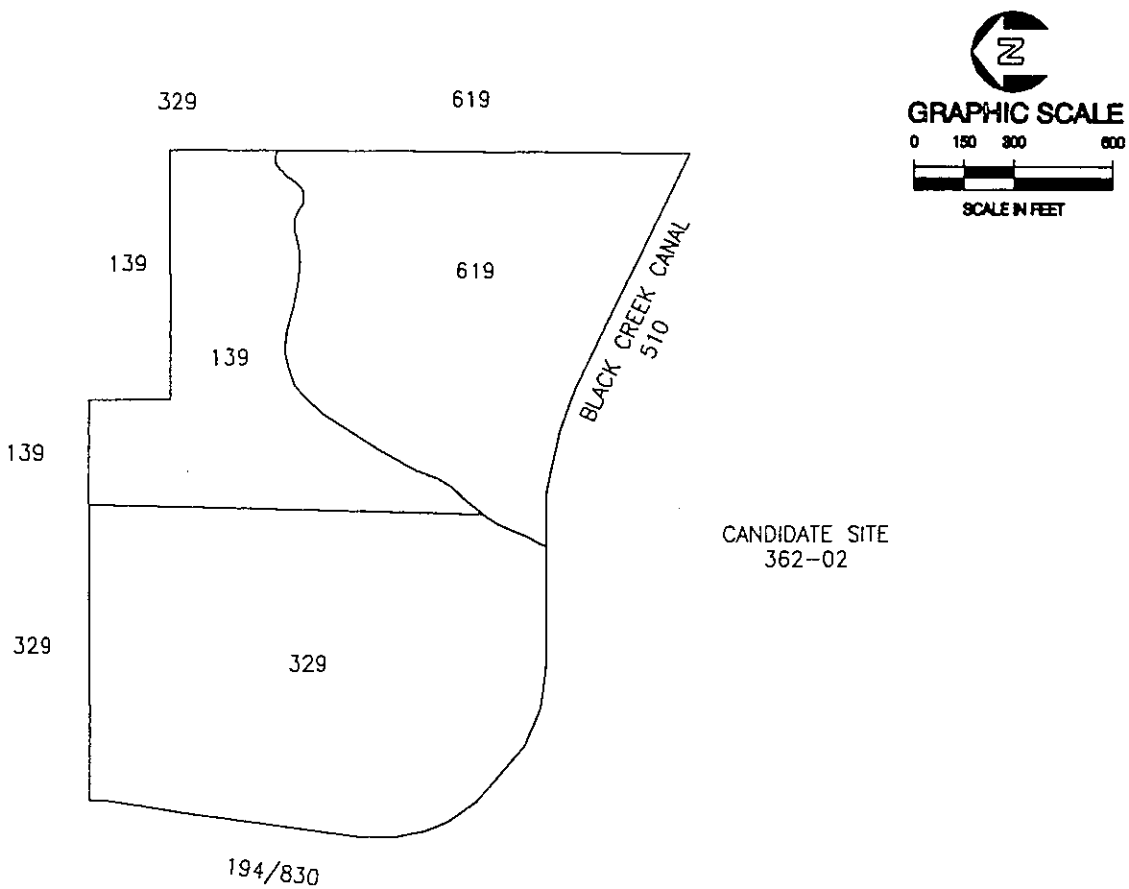
SITE

Public Access:	SW 87th Ave. (Galloway Rd.), SW 216th St. (Hainlin Mill Dr.)	Comprehensive Plan Designation:	Residential (LD)
		Adjacent Land Use:	Single-family homes (N, SE); Exotic Wetland Hardwoods (E, S); Tree Nurseries (SW); Golf Course (SE)
Road Easement (ft):	Not Required		
Pipeline Easement (ft):	N/A	Land Use of Impacted Area:	Tree Nurseries, Disturbed Land/Herbaceous
Deep Draft Access:	N/A		
		Wetlands W/I Mapped Area (ac):	200.59
		Wetlands Impacted (ac):	0.00

Site Narrative:

Site 361A-01 is 384-acre site primarily consisting of the Lakes by the Bay planned unit development (PUD). The site is located south of SW 216th Street and west of SW 87th Avenue (814). It is comprised primarily of borrow pit lakes (520), exotic wetland hardwoods (619), herbaceous wetlands (600/310), rural land in transition (741), and disturbed herbaceous land (740/310). Much of the area south of the large central borrow pit is spoil-filled wetlands revegetated with herbaceous species (743/741/310). Many jeep trails and several ditches are mainly on the eastern side of the disturbed but undeveloped site. Vegetation in the exotic wetland hardwoods community (619) is primarily Brazilian pepper (*Schinus terebinthifolius*), with some native vegetation like giant leather leaf fern (*Acrostichum danaeifolium*), Carolina willow (*Salix caroliniana*), thelypteris fern (*Thelypteris* sp.), and pennywort (*Hydrocotyle* sp.). Within the filled areas (743/741/310), common reed (*Phragmites australis*) is abundant. The herbaceous wetlands (600/310) contain cattails (*Typha* sp.), pennywort, camphorweed (*Pluchea* sp.), some Brazilian pepper, and thelypteris ferns. A tree nursery (241) is located in the southwestern corner of the site.

The site is bounded on the north, across 216th Street, by high density single-family residential (131) and on the east, across SW 87th Avenue, by what appears to be exotic wetland hardwoods (619) and an unidentifiable facility. The southern boundary is a Brazilian pepper wetland (619) and beyond that a waste water treatment facility. Site 361A-01 is bounded on the west by a tree nursery (241), a high density single-family residential (131), and a golf course (182).



	LEGEND	ACRES
139	HIGH DENSITY UNDER CONSTRUCTION	13.87
329	OTHER SHRUBS AND BRUSH	29.79
619	WETLAND EXOTIC HARDWOODS	22.52
	TOTAL ACRES	66.18

	OTHER COVER TYPES SHOWN
131	FIXED SINGLE FAMILY UNITS
194/830	OTHER OPEN LAND/UTILITIES
510	STREAMS AND WATERWAYS

LAND USE AND VEGETATION OF CANDIDATE SITE 362-01,
MIAMI-DADE COUNTY, FLORIDA

TAYLOR ENGINEERING INC.
9000 CYPRESS GREEN DRIVE, SUITE 200
JACKSONVILLE, FLORIDA 32256

Figure B-13
Land Use and Vegetation
of Candidate Site 362-01
Miami-Dade County, Florida

PROJECT C1999-021
REVISION
SHEET
DATE July, 2001

SITE DATA SUMMARY SHEET

Name:	362-01
AKA:	Triad Housing Partners property
Site Use:	Multi-Reach Inland Storage
Comment:	Residential development under construction

LOCATION

County:	Dade	ICWW REACH MILEAGE:	364.6
Municipality:	Unincorporated	East/West of	West
Section/Township/Range:	17/56/40	Receiving Waterbody:	N/A
		FDEP	N/A

REACH

Reach Designation:	DA-4	Projected Dredging Frequency (yr):	20
Reach Length (mi):	15.75	50-yr Dredging Requirement (cy):	0
ICWW Mileage:	351.12 to 366.87	50-yr Storage Requirement (cy):	0
Cut/Station:	D-3/57+80 to D-5/0+00		
Geographic: (FDEP Classification)	Rickenbacker Causeway Black Point	(III) to (III)	

SITE PARAMETERS

Mapped Area (ac):	66.18	Storage Capacity (cy):	N/A
Containment Area (ac):	N/A	Dike Height (ft):	N/A
Impacted Area (ac):	Insufficient Area	Excavation Depth (ft):	N/A
Buffer Area (ac):	N/A	Existing Mean Site Elevation (ft):	5.0
N Buffer Width (ft):	N/A	Dike Volume (cy):	N/A
S Buffer Width (ft):	N/A	Max. Pumping Distance (mi):	N/A
E Buffer Width (ft):	N/A	Max. Barging Distance (mi):	N/A
W Buffer Width (ft):	N/A	Min. Distance from Waterway (mi):	7.84
Total Site Area (ac):	N/A		

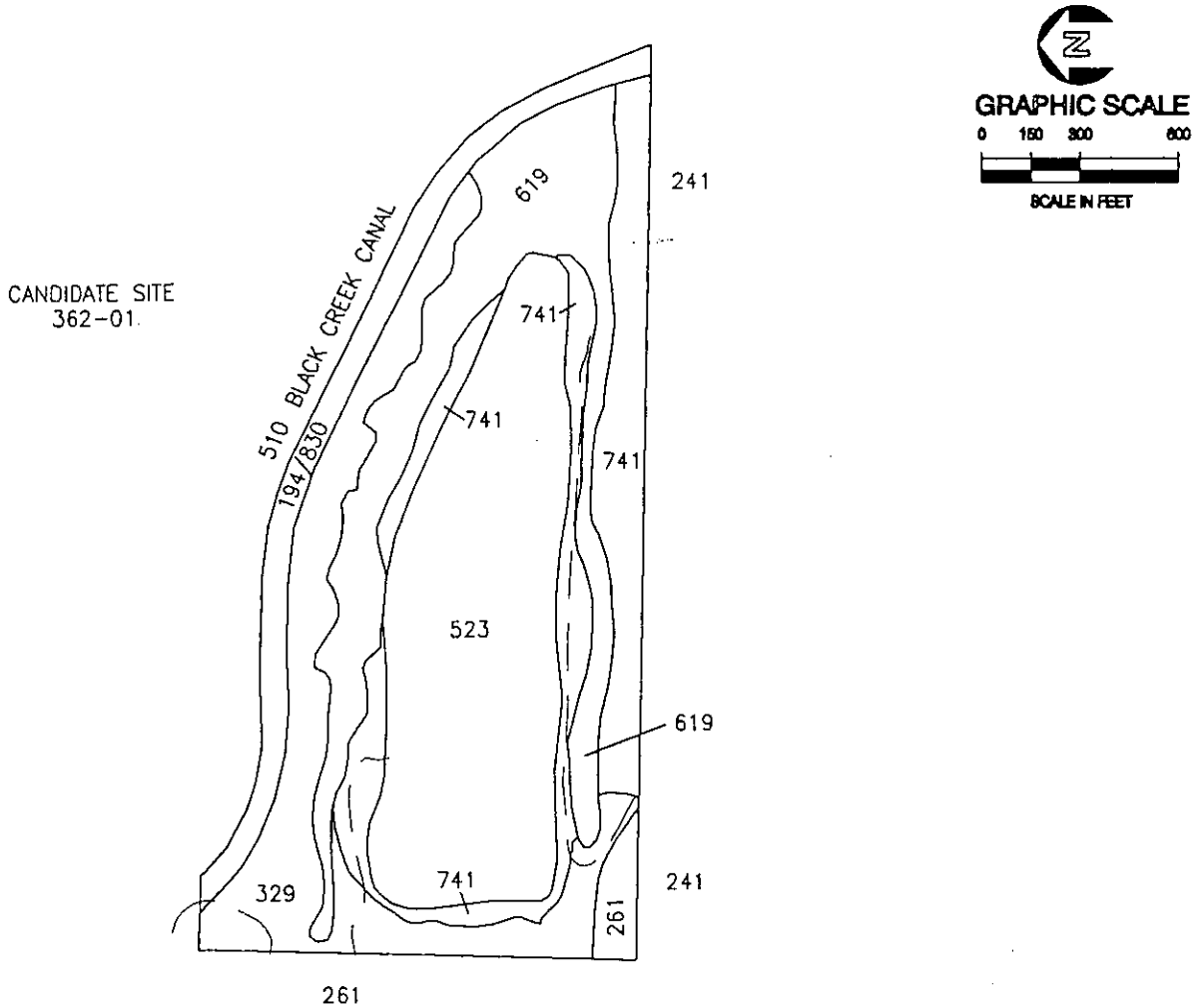
SITE

Public Access:	Old Cutler Rd., SW 224th St.	Comprehensive Plan Designation:	Residential (LD)
		Adjacent Land Use:	
Road Easement (ft):	800	Wetland Exotic Hardwoods (N); Black Creek Canal (E), Open Land (S); High-density Residential (W)	
Pipeline Easement (ft):	N/A		
		Land Use of Impacted Area:	
Deep Draft Access:	N/A	N/A	
		Wetlands W/I Mapped Area (ac):	22.52
		Wetlands Impacted (ac):	0.00

Site Narrative:

Site 362-01 is a 66-acre site located north and east of the Black Creek Canal (510). A large portion of the site (22.52 acres) is wetland exotic hardwoods (619). Almost 14 acres are high-density residential under construction (139), and the rest of the site was cleared of the tree canopy and revegetated in other shrubs and brush (329). A portion of this category may be wetland but lack of access precluded a wetland assessment. Vegetation within this community is primarily common reed (*Phragmites australis*) and Brazilian pepper (*Schinus terebinthifolius*). Both are interspersed throughout the site and common along the edge of the canal, especially along the edge of the wetland exotic hardwood community (619). The wetland exotic hardwood community also contains fig (*Ficus* sp.) and large Brazilian pepper trees.

The site is bounded on the north by high density residential under construction (139) and other shrubs and brush (329). To the east are other shrubs and brush (329), exotic wetland hardwoods (619), and Site 362-03. Along the southern boundary is the Black Creek Canal (510) and Site 362-02. To the west are the Black Creek Canal (510) and other open lands/utilities (194/830).



	LEGEND	ACRES
194/830	OTHER OPEN LAND/UTILITIES	5.43
261	FALLOW CROP LAND	1.10
329	OTHER SHRUBS AND BRUSH	11.52
523	LAKES (>10 ACRES, BUT <100 ACRES)	20.96
619	WETLAND EXOTIC HARDWOODS	12.78
741	RURAL LAND IN TRANSITION	12.15
	TOTAL ACRES	63.94

OTHER COVER TYPES SHOWN

241	TREE NURSERIES
510	STREAMS AND WATERWAYS

JEEP TRAILS

LAND USE AND VEGETATION OF CANDIDATE SITE 362-02
MIAMI-DADE COUNTY, FLORIDA

TAYLOR ENGINEERING INC.
9000 CYPRESS GREEN DRIVE, SUITE 200
JACKSONVILLE, FLORIDA 32256

Figure B-14
Land Use and Vegetation
of Candidate Site 362-02
Miami-Dade County, Florida

PROJECT C1999-021
REVISION
SHEET
DATE July, 2001

SITE DATA SUMMARY SHEET

Name:	362-02
AKA:	Jordash Investment Realty property
Site Use:	Multi-Reach Inland Storage
Comment:	Primarily open land with 20-acre interior lake; Utility easement runs adjacent to Black Creek Canal

LOCATION

County:	Dade	ICWW REACH MILEAGE:	364.65
Municipality:	Unincorporated	East/West of	West
Section/Township/Range:	17/56/40	Receiving Waterbody:	N/A
		FDEP	N/A

REACH

Reach Designation:	DA-4	Projected Dredging Frequency (yr):	20
Reach Length (mi):	15.75	50-yr Dredging Requirement (cy):	0
ICWW Mileage:	351.12 to 366.87	50-yr Storage Requirement (cy):	0
Cut/Station:	D-3/57+80 to D-5/0+00		
Geographic: (FDEP Classification)	Rickenbacker Causeway Black Point	(III) to (III)	

SITE PARAMETERS

Mapped Area (ac):	63.94	Storage Capacity (cy):	N/A
Containment Area (ac):	N/A	Dike Height (ft):	N/A
Impacted Area (ac):	Insufficient Area	Excavation Depth (ft):	N/A
Buffer Area (ac):	N/A	Existing Mean Site Elevation (ft):	5.0
N Buffer Width (ft):	N/A	Dike Volume (cy):	N/A
S Buffer Width (ft):	N/A	Max. Pumping Distance (mi):	N/A
E Buffer Width (ft):	N/A	Max. Barging Distance (mi):	N/A
W Buffer Width (ft):	N/A	Min. Distance from Waterway (mi):	7.84
Total Site Area (ac):	N/A		

SITE

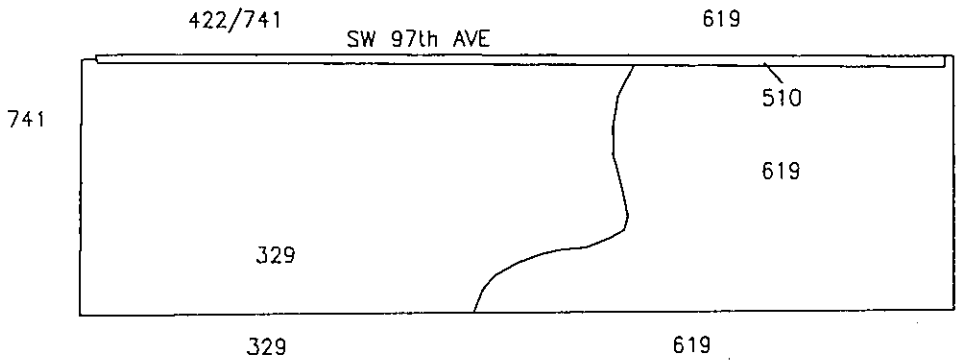
Public Access:	SW 232nd St. (Silver Palm Dr.)	Comprehensive Plan Designation:	Residential (LD)
		Adjacent Land Use:	
Road Easement (ft):	Not Required	Black Creek Canal (N, E); Tree Nurseries (S); Fallow crop land (W)	
Pipeline Easement (ft):	N/A		
		Land Use of Impacted Area:	
Deep Draft Access:	N/A	N/A	
		Wetlands W/I Mapped Area (ac):	12.78
		Wetlands Impacted (ac):	0.00

Site Narrative:

Site 362-02 is a 64-acre site located south of the Black Creek Canal (510) and Site 362-01. The predominant land use is a borrow pit lake (523) and wetland exotic hardwoods (619). Other communities include other open land/utilities (741/830). The utility designation is for an underground natural gas pipeline. Located north of the borrow pit lake (523) is an other shrubs and brush community (329), which is predominantly comprised of common reed (*Phragmites australis*) growing on fill. Rural land in transition (741) comprises the open non-vegetated areas and a small fallow cropland community (261) lies in the southwest corner of the site. Vegetation within the wetland exotic hardwoods (619) is predominantly Brazilian pepper (Schinus terebinthifolius) and figs (*Ficus* sp.), and the rural land in transition community (741) is principally broomsedge (*Andropogon virginicus*) and groundsel bush (*Baccharis* sp.). Wildlife observed includes American bald eagle, red-shouldered hawk, laughing gull, double crested cormorant, and bobcat sign.

The site is bordered on the north and east by the Black Creek Canal (510), Site 362-01, and Site 362-03, on the south by tree nurseries (241), and on the west by fallow cropland (261).

GRAPHIC SCALE
0 150 300 600
SCALE IN FEET



	LEGEND	ACRES
329	OTHER SHRUBS AND BRUSH	27.56
510	STREAMS AND WATERWAYS	1.71
619	WETLAND EXOTIC HARDWOODS	19.55
	TOTAL ACRES	48.82

	OTHER COVER TYPES SHOWN
422/741	BRAZILIAN PEPPER/ RURAL LAND IN TRANSITION
741	RURAL LAND IN TRANSITION
834	SEWAGE TREATMENT

LAND USE AND VEGETATION OF CANDIDATE SITE 362-03
MIAMI-DADE COUNTY, FLORIDA

TAYLOR ENGINEERING INC.
9000 CYPRESS GREEN DRIVE, SUITE 200
JACKSONVILLE, FLORIDA 32256

Figure B-15
Land Use and Vegetation
of Candidate Site 362-03
Miami-Dade County, Florida

PROJECT C1999-021
REVISION
SHEET
DATE July, 2001

SITE DATA SUMMARY SHEET

Name:	362-03
AKA:	Lakes by the Bay PUD (2)
Site Use:	Multi-Reach Inland Storage
Comment:	Undeveloped land with access to Black Creek Canal

LOCATION

County:	Dade	ICWW REACH MILEAGE:	364.62
Municipality:	Unincorporated	East/West of	West
Section/Township/Range:	17/56/40	Receiving Waterbody:	N/A
		FDEP	N/A

REACH

Reach Designation:	DA-4	Projected Dredging Frequency (yr):	20
Reach Length (mi):	15.75	50-yr Dredging Requirement (cy):	0
ICWW Mileage:	351.12 to 366.87	50-yr Storage Requirement (cy):	0
Cut/Station:	D-3/57+80 to D-5/0+00		
Geographic: (FDEP Classification)	Rickenbacker Causeway Black Point	(III) to (III)	

SITE PARAMETERS

Mapped Area (ac):	48.82	Storage Capacity (cy):	227,009
Containment Area (ac):	N/A	Dike Height (ft):	N/A
Impacted Area (ac):	17.58	Excavation Depth (ft):	N/A
Buffer Area (ac):	9.98	Existing Mean Site Elevation (ft):	5.0
N Buffer Width (ft):	100	Dike Volume (cy):	N/A
S Buffer Width (ft):	100	Max. Pumping Distance (mi):	N/A
E Buffer Width (ft):	100	Max. Barging Distance (mi):	N/A
W Buffer Width (ft):	100	Min. Distance from Waterway (mi):	7.38
Total Site Area (ac):	27.56		

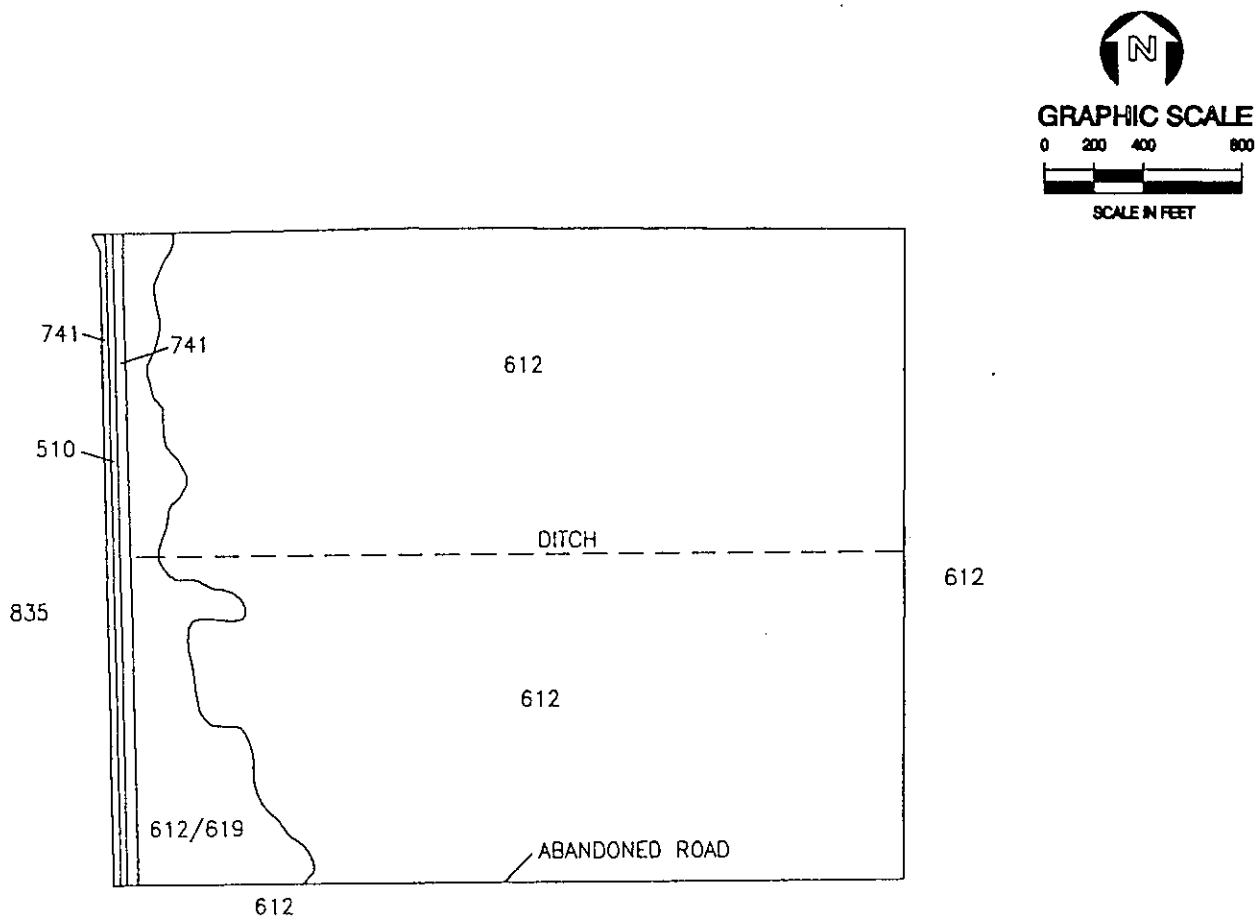
SITE

Public Access:	SW 97th Ave	Comprehensive Plan Designation:	Residential (LD)
		Adjacent Land Use:	
Road Easement (ft):	Not Required	Rural land in transition and Brazilian Pepper (N, NE); Wetland exotic hardwoods (E, S, W)	
Pipeline Easement (ft):	N/A	Land Use of Impacted Area:	
Deep Draft Access:	N/A	Shrubs and Brushland	
		Wetlands W/I Mapped Area (ac):	19.55
		Wetlands Impacted (ac):	0.00

Site Narrative:

Site 362-03 is a 49-acre site that lies west of SW 97th Avenue (814) and east of Site 362-01. A large ditch (510) separates SE 97th Avenue from the site. The largest community type is other shrubs and brush (329), containing primarily common reed (*Phragmites australis*) and some Brazilian pepper (*Schinus terebinthifolius*). The southern portion of the site is wetland exotic hardwoods, which is composed mainly of Brazilian pepper, fig (*Ficus* sp.), shoebutton (*Ardisia elliptica*), common reed, and thelypteris fern (*Thelypteris* sp.). Wildlife observed include cardinal, osprey, and an exotic iguana.

The site is bounded on the north by rural land in transition (741) and on the east by a canal (510), SW 97th Avenue, and Brazilian pepper/rural land in transition (422/741). The lands adjacent to the southern boundary consist of wetland exotic hardwoods (619). The site is bounded on the west by other shrubs and brush (329), exotic wetland hardwoods (619), Site 362-01, and Site 362-02.



	LEGEND	ACRES
510	STREAMS AND WATERWAYS	1.66
612	MANGROVE SWAMPS	178.47
612/619	MANGROVE SWAMP/EXOTIC WETLAND HARDWOODS	17.29
741	RURAL LAND IN TRANSITION	4.33
	TOTAL ACRES	201.75

LAND USE AND VEGETATION OF CANDIDATE SITE 365A-01, MIAMI-DADE COUNTY, FLORIDA

TAYLOR ENGINEERING INC. 9000 CYPRESS GREEN DRIVE, SUITE 200 JACKSONVILLE, FLORIDA 32256	Figure B-16 Land Use and Vegetation of Candidate Site 365A-01 Miami-Dade County, Florida	PROJECT C1999-021 REVISION SHEET DATE July, 2001

SITE DATA SUMMARY SHEET

Name:	365A-01
AKA:	Goulds Canal site
Site Use:	Multi-Reach Inland Storage
Comment:	Insufficient Upland Area -- Site is primarily mangrove swamp and exotic wetland hardwoods

LOCATION

County:	Dade	ICWW REACH MILEAGE:	366.71
Municipality:	Unincorporated	East/West of	West
Section/Township/Range:	30/56/40	Receiving Waterbody:	N/A
		FDEP	N/A

REACH

Reach Designation:	DA-4	Projected Dredging Frequency (yr):	20
Reach Length (mi):	15.75	50-yr Dredging Requirement (cy):	0
ICWW Mileage:	351.12 to 366.87	50-yr Storage Requirement (cy):	0
Cut/Station:	D-3/57+80 to D-5/0+00		
Geographic: (FDEP Classification)	Rickenbacker Causeway Black Point	(III) to (III)	

SITE PARAMETERS

Mapped Area (ac):	201.75	Storage Capacity (cy):	N/A
Containment Area (ac):	N/A	Dike Height (ft):	N/A
Impacted Area (ac):	Insufficient Area	Excavation Depth (ft):	N/A
Buffer Area (ac):	N/A	Existing Mean Site Elevation (ft):	5.0
N Buffer Width (ft):	N/A	Dike Volume (cy):	N/A
S Buffer Width (ft):	N/A	Max. Pumping Distance (mi):	N/A
E Buffer Width (ft):	N/A	Max. Barging Distance (mi):	N/A
W Buffer Width (ft):	N/A	Min. Distance from Waterway (mi):	6.90
Total Site Area (ac):	N/A		

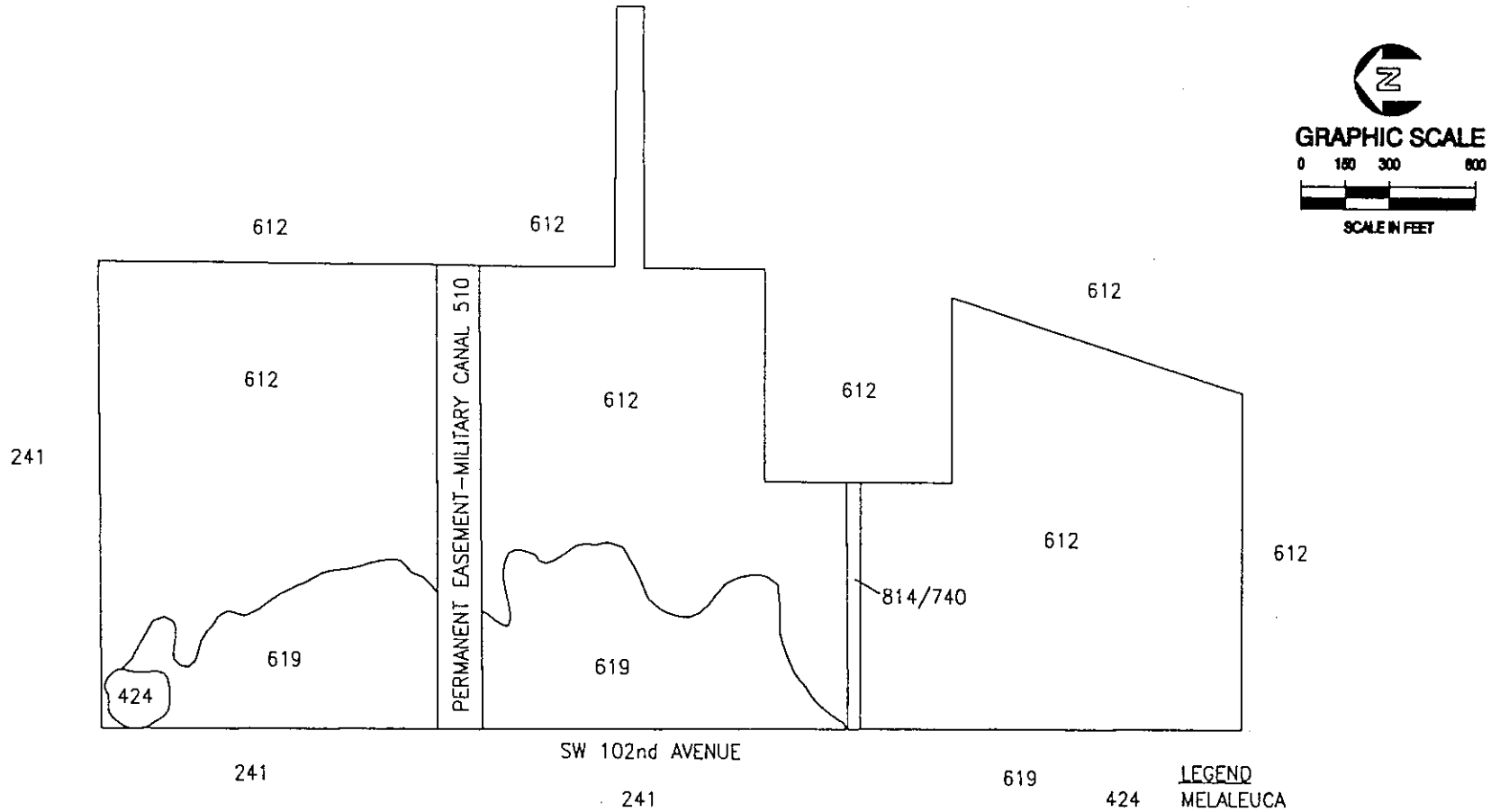
SITE

Public Access:	SW 256 St.	Comprehensive Plan Designation:	Open Land
		Adjacent Land Use:	
Road Easement (ft):	Not Required	Mangrove Swamps (N, E, S); Urban land in transition, Tree Nurseries (W)	
Pipeline Easement (ft):	N/A	Land Use of Impacted Area:	
Deep Draft Access:	N/A	N/A	
		Wetlands W/I Mapped Area (ac):	195.76
		Wetlands Impacted (ac):	0.00

Site Narrative:

Site 365A-01 is a 202-acre site located south of the Southeast Landfill Site, west of SW 97th Avenue (814) and a large canal (510), and north of a mangrove preserve. Apparently, much of the site is owned by Miami-Dade County. A ditch bisects the property and an abandoned paved road is the southern boundary. The western portion of the property contains a small linear strip of rural land in transition (741) associated with a large canal (510) and a mixed mangrove and exotic wetland hardwoods community (612/619). This community is predominantly Australian pine (*Casuarina equisetifolia*), Brazilian pepper (*Schinus terebinthifolius*), buttonwood (*Conocarpus erectus*), and white mangrove (*Laguncularia racemosa*). Some areas previously dominated by Australian pine contained cattail (*Typha* sp.), camphorweed (*Pluchea* sp.), dogfennel (*Eupatorium* sp.), and broomsedge (*Andropogon* sp.). The Australian pine community was dead and could have been killed by high water levels. The mangrove community (612) did not contain much Brazilian pepper or Australian pine, although there were a few scattered in areas of higher elevation. In addition to the aforementioned species, the area also contained sawgrass (*Cladium jamaicense*) and possibly the other mangroves farther east. Most of the site, especially the eastern portion, was not accessible. Wildlife observed include osprey, catbird, mourning dove, red-tailed hawk, great blue heron, and holes belonging to an unidentified crab.

The site is bordered on the north by the Southeast Landfill (835), on the east and south by mangrove swamps (612), and on the west by a landfill (835).



	LEGEND	ACRES
424	MELALEUCA	.84
510	STREAMS AND WATERWAYS	5.30
612	MANGROVE SWAMPS	96.39
619	EXOTIC WETLAND HARDWOODS	22.65
814/740	ROADS AND HIGHWAYS/DISTURBED LAND	.85
	TOTAL ACRES	126.03

	OTHER COVER TYPES SHOWN
241	TREE NURSERIES
540	BAYS AND ESTUARIES
612/619	MANGROVE SWAMPS/WETLAND EXOTIC HARDWOODS
741	RURAL LAND IN TRANSITION

LAND USE AND VEGETATION OF CANDIDATE SITE 394C-01, MIAMI-DADE COUNTY, FLORIDA

TAYLOR ENGINEERING INC.
9000 CYPRESS GREEN DRIVE, SUITE 200
JACKSONVILLE, FLORIDA 32256

Figure B-17
Land Use and Vegetation
of Candidate Site 394C-01
Miami-Dade County, Florida

PROJECT C1999-021
REVISION
SHEET
DATE July, 2001

SITE DATA SUMMARY SHEET

Name: 394C-01

AKA: Military Canal site

Site Use: Multi-Reach Inland Storage

Comment: Insufficient Upland Area -- 1.7-acres of upland area; 119-acres of mangrove swamp and exotic wetland hardwoods

LOCATION

County:	Dade	ICWW REACH MILEAGE:	369.43
Municipality:	Unincorporated	East/West of	West
Section/Township/Range:	8/57/40	Receiving Waterbody:	N/A
		FDEP	N/A

REACH

Reach Designation:	DA-5	Projected Dredging Frequency (yr):	20
Reach Length (mi):	15.29	50-yr Dredging Requirement (cy):	71,295
ICWW Mileage:	366.87 to 382.16	50-yr Storage Requirement (cy):	153,284
Cut/Station:	D-5/0+00 to D-9/201+74.60		
Geographic: (FDEP Classification)	Black Point Dade/Monroe County line	(III) to (III)	

SITE PARAMETERS

Mapped Area (ac):	126.03	Storage Capacity (cy):	N/A
Containment Area (ac):	Insufficient Area	Dike Height (ft):	N/A
Impacted Area (ac):	N/A	Excavation Depth (ft):	N/A
Buffer Area (ac):	N/A	Existing Mean Site Elevation (ft):	5.0
N Buffer Width (ft):	N/A	Dike Volume (cy):	N/A
S Buffer Width (ft):	N/A	Max. Pumping Distance (mi):	N/A
E Buffer Width (ft):	N/A	Max. Barging Distance (mi):	N/A
W Buffer Width (ft):	N/A	Min. Distance from Waterway (mi):	7.14
Total Site Area (ac):	N/A		

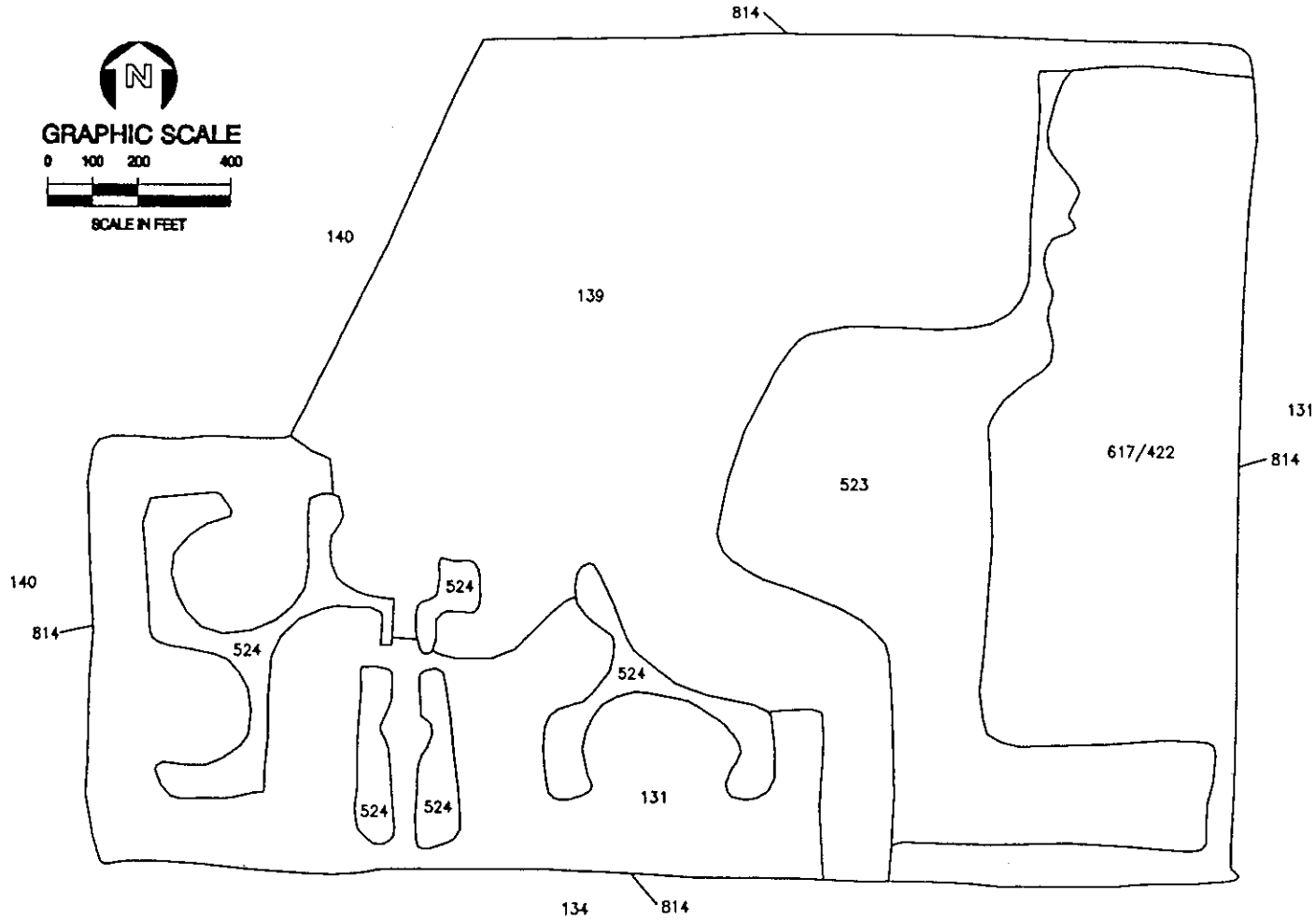
SITE

Public Access:	SW 107th Ave.	Comprehensive Plan Designation:	Open Land
		Adjacent Land Use:	
Road Easement (ft):	Not Required	Tree Nurseries (N, W); Mangrove Swamps (E, S); Exotic Wetland Hardwoods (SW)	
Pipeline Easement (ft):	N/A	Land Use of Impacted Area:	
Deep Draft Access:	N/A	N/A	
		Wetlands W/I Mapped Area (ac):	119.04
		Wetlands Impacted (ac):	0.00

Site Narrative:

Site 394C-01 is a 126-acre site located due east of the former Homestead Air Force Base and west of a mangrove preserve along Biscayne Bay. The site is predominantly mangrove swamp (612) with some exotic wetland hardwoods (619) along the western boundary. A permanent easement, Military Canal (510), bisects (east to west) the northern portion of the site and an abandoned road (814/740) bisects the southern portion of the site. A small patch of Melaleuca (424) occurs in the northwestern corner on old fill. The mangrove communities (612) are predominantly white mangrove *(Laguncularia racemosa)*, red mangrove (*Rhizophora mangle*), fig (*Ficus* sp.), pond apple *(Annona glabra)*, giant leather leaf fern (*Acrostichum danaeifolium*), and shoebutton (*Ardisia elliptica*). The exotic wetland hardwoods (619) are principally Brazilian pepper (*Schinus terebinthifolius*). Wildlife observed includes snowy and great egrets, red-tailed hawk, yellow-rumped warbler, American alligator, and an unidentified turtle, possibly a peninsula cooter.

The site is bounded on the north by tree nurseries (241), on the east and south by mangrove swamps (612), and on the west by SW 102nd Avenue and tree nurseries (241).



LEGEND D-1

		ACRES
131	FIXED SINGLE FAMILY UNITS	18.63
139	HIGH DENSITY UNDER CONSTRUCTION	38.13
523	LAKES LARGER THAN 10 ACRES, BUT LESS THAN 100 ACRES	13.51
524	LAKES LESS THAN 10 ACRES WHICH ARE DOMINANT FEATURES	5.35
617/422	MIXED WETLAND HARDWOODS/BRAZILIAN PEPPER	18.26
	TOTAL ACRES	93.88

OTHER COVER TYPES SHOWN

134	MULTIPLE DWELLING UNITS, HIGH RISE
140	COMMERCIAL AND SERVICES
814	ROADS AND HIGHWAYS

LAND USE AND VEGETATION OF CANDIDATE SITE D-1, MIAMI-DADE COUNTY, FLORIDA

TAYLOR ENGINEERING INC.
9000 CYPRESS GREEN DRIVE, SUITE 200
JACKSONVILLE, FLORIDA 32256

Figure B-18
Land Use and Vegetation
of Candidate Site D-1
Miami-Dade County, Florida

PROJECT C1999-021
REVISION
SHEET
DATE Aug., 2000

SITE DATA SUMMARY SHEET

Name: D-1

AKA:

Site Use: Multi-Reach Inland Storage

Comment: Insufficient Undeveloped Area -- High-density residential under construction, fixed single-family units, lakes, and ponds

LOCATION

County:	Dade	ICWW REACH MILEAGE:	334.32
Municipality:	Aventura	East/West of	West
Section/Township/Range:	27/51/42 & 34/51/42	Receiving Waterbody:	N/A
		FDEP	N/A

REACH

Reach Designation:	DA-1	Projected Dredging Frequency (yr):	20
Reach Length (mi):	3.99	50-yr Dredging Requirement (cy):	15,801
ICWW Mileage:	334.24 to 338.23	50-yr Storage Requirement (cy):	33,973
Cut/Station:	DA-1/0+00 to DA-8/0+00		
Geographic: (FDEP Classification)	530 ft South of Broward/Dade County Line (III) to Haulover Beach County Park (III)		

SITE PARAMETERS

Mapped Area (ac):	93.88	Storage Capacity (cy):	N/A
Containment Area (ac):	N/A	Dike Height (ft):	N/A
Impacted Area (ac):	Insufficient Area	Excavation Depth (ft):	N/A
Buffer Area (ac):	N/A	Existing Mean Site Elevation (ft):	5
N Buffer Width (ft):	N/A	Dike Volume (cy):	N/A
S Buffer Width (ft):	N/A	Max. Pumping Distance (mi):	N/A
E Buffer Width (ft):	N/A	Max. Barging Distance (mi):	N/A
W Buffer Width (ft):	N/A	Min. Distance from Waterway (mi):	1.01
Total Site Area (ac):	N/A		

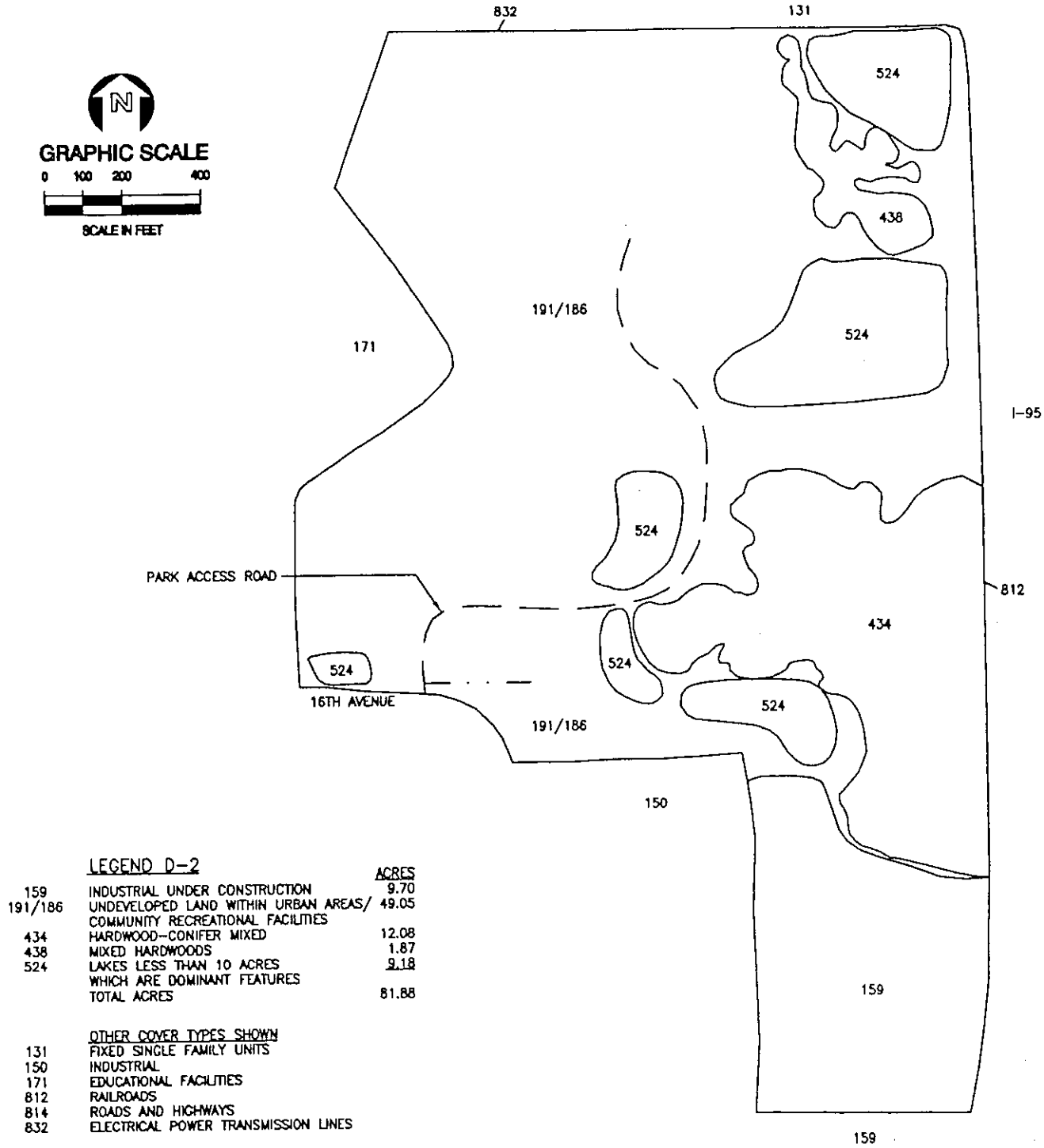
SITE

Public Access:	Holiday Dr	Comprehensive Plan Designation:	Residential (MHD)
		Adjacent Land Use:	
Road Easement (ft):	Not Required	Holiday Dr. (N); Single-family homes (E); Multiple dwelling units (S); Subdivision and commercial (W)	
Pipeline Easement (ft):	N/A		
		Land Use of Impacted Area:	
Deep Draft Access:	N/A	N/A	
		Wetlands W/I Mapped Area (ac):	18.26
		Wetlands Impacted (ac):	0.00

Site Narrative:

This 94-acre site, D-1, is primarily high-density residential under construction (139), fixed single family units (131), lakes and ponds (523 and 524), and mixed wetland hardwoods/Brazilian pepper (617/422). The wetland is mainly red maple (*Acer rubrum*) and Brazilian pepper (*Schinus terebinthifolius*).

The site is bounded on the north by Holiday Drive (814), on the east by an access road (814) for fixed single family units (131), on the south by multiple dwelling units (134), and on the west by an access road (814) to the subdivision and commercial (140).



	LEGEND D-2	ACRES
159	INDUSTRIAL UNDER CONSTRUCTION	9.70
191/186	UNDEVELOPED LAND WITHIN URBAN AREAS/ COMMUNITY RECREATIONAL FACILITIES	49.05
434	HARDWOOD-CONIFER MIXED	12.08
438	MIXED HARDWOODS	1.87
524	LAKES LESS THAN 10 ACRES WHICH ARE DOMINANT FEATURES	9.18
	TOTAL ACRES	81.88

OTHER COVER TYPES SHOWN

131	FIXED SINGLE FAMILY UNITS
150	INDUSTRIAL
171	EDUCATIONAL FACILITIES
812	RAILROADS
814	ROADS AND HIGHWAYS
832	ELECTRICAL POWER TRANSMISSION LINES

— — ROAD

LAND USE AND VEGETATION OF CANDIDATE SITE D-2, MIAMI-DADE COUNTY, FLORIDA

TAYLOR ENGINEERING INC.
9000 CYPRESS GREEN DRIVE, SUITE 200
JACKSONVILLE, FLORIDA 32256

Figure B-19
Land Use and Vegetation
of Candidate Site D-2
Miami-Dade County, Florida

PROJECT C1999-021
REVISION
SHEET
DATE Aug., 2000

SITE DATA SUMMARY SHEET

Name: D-2

AKA:

Site Use: Multi-Reach Inland Storage

Comment: Recreational Use -- Old landfill currently under development for a planned community park

LOCATION			
County:	Dade	ICWW REACH MILEAGE:	334.63
Municipality:	Unincorporated	East/West of	West
Section/Township/Range:	32/51/42	Receiving Waterbody:	N/A
		FDEP	N/A

REACH			
Reach Designation:	DA-1	Projected Dredging Frequency (yr):	20
Reach Length (mi):	3.99	50-yr Dredging Requirement (cy):	15,801
ICWW Mileage:	334.24 to 338.23	50-yr Storage Requirement (cy):	33,973
Cut/Station:	DA-1/0+00 to DA-8/0+00		
Geographic: (FDEP Classification)	530 ft South of Broward/Dade County Line (III) to Haulover Beach County Park (III)		

SITE PARAMETERS			
Mapped Area (ac):	81.88	Storage Capacity (cy):	71,245
Containment Area (ac):	N/A	Dike Height (ft):	N/A
Impacted Area (ac):	5.52	Excavation Depth (ft):	N/A
Buffer Area (ac):	16.27	Existing Mean Site Elevation (ft):	10
N Buffer Width (ft):	350	Dike Volume (cy):	N/A
S Buffer Width (ft):	100	Max. Pumping Distance (mi):	N/A
E Buffer Width (ft):	100	Max. Barging Distance (mi):	N/A
W Buffer Width (ft):	350	Min. Distance from Waterway (mi):	2.73
Total Site Area (ac):	21.79		

SITE			
Public Access:	16th Ave	Comprehensive Plan Designation:	Industrial and Office
		Adjacent Land Use:	
Road Easement (ft):	585	Fixed single-family units (N); I-95 and CSX RR (E); Industrial (S); High School (W)	
Pipeline Easement (ft):	N/A	Land Use of Impacted Area:	
Deep Draft Access:	N/A	Undeveloped land within urban areas / Community recreational facilities	
		Wetlands W/I Mapped Area (ac):	0.00
		Wetlands Impacted (ac):	0.00

Site Narrative:

This 82-acre site, D-2, is an old landfill, which is currently under construction for a planned community park (186). The community park code was not used for all of the areas that may later become part of the park. Instead, individual areas within the site are mapped according to vegetation community and land use type. The main site area was mapped as undeveloped land within urban areas/community recreational facility (191/186). This area, predominantly bare ground, was recently prepared for sod. One main access road is located within this area. The southeastern portion of the site appears to be some type of industrial facility under construction (159). Wooded areas include mixed hardwoods (438) that contain primarily strangler fig (*Ficus aurea*) and an area of hardwood-conifer mixed (434). This area contains large live oaks (*Quercus virginiana*) with an understory of beautyberry (*Callicarpa americana*), coontie (*Zamia* sp.), laurel oak (*Quercus laurifolia*), and wild coffee (*Psychotria* sp.) mixed with some large slash pine (*Pinus elliottii*) and saw palmetto (*Serenoa repens*). Exotic species such as Brazilian pepper (*Schinus terebinthifolius*) and Boston fern (*Nephrolepsis exaltata*) are common.

The site is bounded on the north by fixed single family units (131), on the east by Interstate 95 (814) and the CSX Railroad (812), on the south by industrial (150), and on the west by a high school (171).

LEGEND D-3

		ACRES
134	MULTIPLE DWELLING UNITS, HIGH RISE	15.16
140	COMMERCIAL AND SERVICES	26.05
194	OTHER OPEN LAND	48.16
411/185	PINE FLATWOODS/PARKS AND ZOOS	14.34
439	OTHER HARDWOODS	8.66
	TOTAL ACRES	112.37

OTHER COVER TYPES SHOWN

131	FIXED SINGLE FAMILY UNITS
133	MULTIPLE DWELLING UNITS, LOW RISE
182	GOLF COURSES
185	PARKS AND ZOOS
814	ROADS AND HIGHWAYS
— —	ROAD

N

GRAPHIC SCALE

0 100 200 400

SCALE IN FEET

LAND USE AND VEGETATION OF CANDIDATE SITE D-3, MIAMI-DADE COUNTY, FLORIDA

TAYLOR ENGINEERING INC.
9000 CYPRESS GREEN DRIVE, SUITE 200
JACKSONVILLE, FLORIDA 32256

Figure B-20
Land Use and Vegetation
of Candidate Site D-3
Miami-Dade County, Florida

PROJECT C1999-021
REVISION
SHEET
DATE Aug., 2000

SITE DATA SUMMARY SHEET

Name: D-3

AKA:

Site Use: Multi-Reach Inland Storage

Comment: Commercial Use -- Land surrounding Bell South and AT&T corporate facilities

LOCATION

County:	Dade	ICWW REACH MILEAGE:	334.44
Municipality:	Unincorporated	East/West of	West
Section/Township/Range:	31/51/42	Receiving Waterbody:	N/A
		FDEP	N/A

REACH

Reach Designation:	DA-1	Projected Dredging Frequency (yr):	20
Reach Length (mi):	3.99	50-yr Dredging Requirement (cy):	15,801
ICWW Mileage:	334.24 to 338.23	50-yr Storage Requirement (cy):	33,973
Cut/Station:	DA-1/0+00 to DA-8/0+00		
Geographic: (FDEP Classification)	530 ft South of Broward/Dade County Line (III) to Haulover Beach County Park (III)		

SITE PARAMETERS

Mapped Area (ac):	112.37	Storage Capacity (cy):	149,330
Containment Area (ac):	N/A	Dike Height (ft):	N/A
Impacted Area (ac):	11.57	Excavation Depth (ft):	N/A
Buffer Area (ac):	12.31	Existing Mean Site Elevation (ft):	10
N Buffer Width (ft):	100	Dike Volume (cy):	N/A
S Buffer Width (ft):	100	Max. Pumping Distance (mi):	N/A
E Buffer Width (ft):	350	Max. Barging Distance (mi):	N/A
W Buffer Width (ft):	100	Min. Distance from Waterway (mi):	4.13
Total Site Area (ac):	23.88		

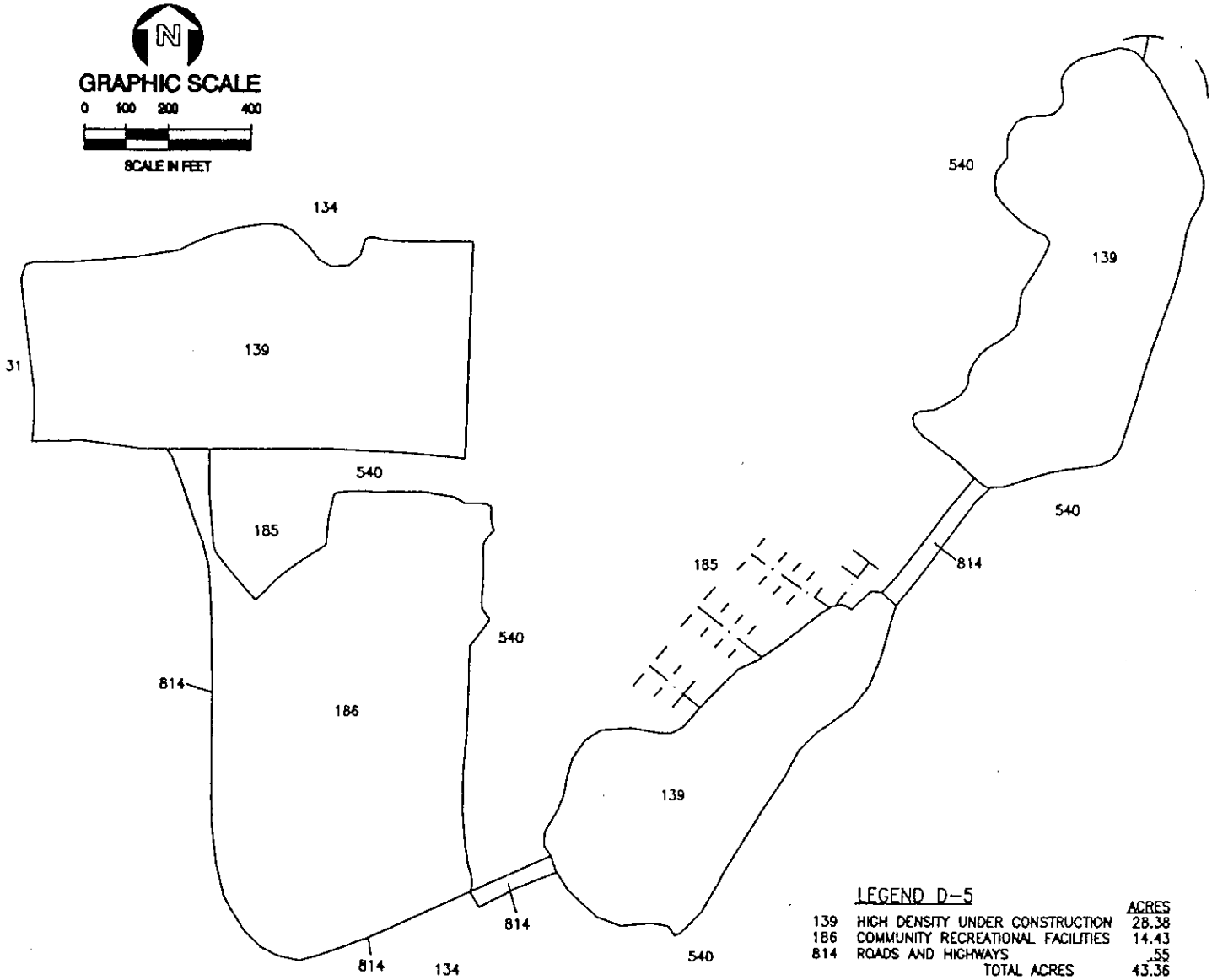
SITE

Public Access:	County Line Rd (State Road 852), San Simeon Way	Comprehensive Plan Designation:	Industrial and Office, Residential (LMD), Environmental Protected Park
		Adjacent Land Use:	State Road 852 (N); Fixed single-family units and golf course (E); Golf course (S); San Simeon Way (S, W)
Road Easement (ft):	Not Required		
Pipeline Easement (ft):	N/A	Land Use of Impacted Area:	Commercial open land, Hardwoods
Deep Draft Access:	N/A		
		Wetlands W/I Mapped Area (ac):	0.00
		Wetlands Impacted (ac):	0.00

Site Narrative:

Site D-3 is a 112-acre site, primarily commercial (140) land, which consists of large corporate facilities for Bell South and AT&T. Open land (194) makes up much of the grounds and areas surrounding the corporate facilities. The Bell South compound contains a few areas mapped as other hardwoods (439), which primarily consists of the exotic species paper mulberry (*Broussonetia papyrifera*). The middle of the western portion of Site D-3 contains an area of old pine flatwoods/parks and zoos (411/185) designated as a protected natural area. The southwestern corner of the site is residential high-density (134).

The site is bounded on the north by County Line Road (State Road 852), on the east by fixed single-family units (131) and a golf course (182), on the south by a golf course (182) and San Simeon Way (814), and on the west by San Simeon Way (814).



LEGEND D-5

		ACRES
139	HIGH DENSITY UNDER CONSTRUCTION	28.38
186	COMMUNITY RECREATIONAL FACILITIES	14.43
814	ROADS AND HIGHWAYS	.55
	TOTAL ACRES	43.36

OTHER COVER TYPES SHOWN

131	FIXED SINGLE FAMILY UNITS
134	MULTIPLE DWELLING UNITS, HIGH RISE
185	PARKS AND ZOOS
540	BAYS AND ESTUARIES

——— DOCKS/BREAKWATERS

LAND USE AND VEGETATION OF CANDIDATE SITE D-5, MIAMI-DADE COUNTY, FLORIDA

TAYLOR ENGINEERING INC.
9000 CYPRESS GREEN DRIVE, SUITE 200
JACKSONVILLE, FLORIDA 32256

Figure B-21
Land Use and Vegetation
of Candidate Site D-5
Miami-Dade County, Florida

PROJECT C1999-021
REVISION
SHEET
DATE Aug., 2000

SITE DATA SUMMARY SHEET

Name:	D-5
AKA:	Williams Island gated community
Site Use:	Dewatering & Short-Term Storage (Single Operation)
Comment:	Insufficient Undeveloped Area -- Exclusive, gated community consisting of 2 or 3 old dredge spoil islands

LOCATION

County:	Dade	ICWW REACH MILEAGE:	336.24
Municipality:	Aventura	East/West of	West
Section/Township/Range:	10/52/42, 2/52/42, & 3/52/42	Receiving Waterbody:	N/A
		FDEP	N/A

REACH

Reach Designation:	DA-1	Projected Dredging Frequency (yr):	20
Reach Length (mi):	3.99	50-yr Dredging Requirement (cy):	15,801
ICWW Mileage:	334.24 to 338.23	50-yr Storage Requirement (cy):	33,973
Cut/Station:	DA-1/0+00 to DA-8/0+00		
Geographic: (FDEP Classification)	530 ft South of Broward/Dade County Line (III) to Haulover Beach County Park (III)		

SITE PARAMETERS

Mapped Area (ac):	43.36	Storage Capacity (cy):	N/A
Containment Area (ac):	Insufficient Area	Dike Height (ft):	N/A
Impacted Area (ac):	N/A	Excavation Depth (ft):	N/A
Buffer Area (ac):	N/A	Existing Mean Site Elevation (ft):	5
N Buffer Width (ft):	N/A	Dike Volume (cy):	N/A
S Buffer Width (ft):	N/A	Max. Pumping Distance (mi):	2.23
E Buffer Width (ft):	N/A	Max. Barging Distance (mi):	N/A
W Buffer Width (ft):	N/A	Min. Distance from Waterway (mi):	0.25
Total Site Area (ac):	N/A		

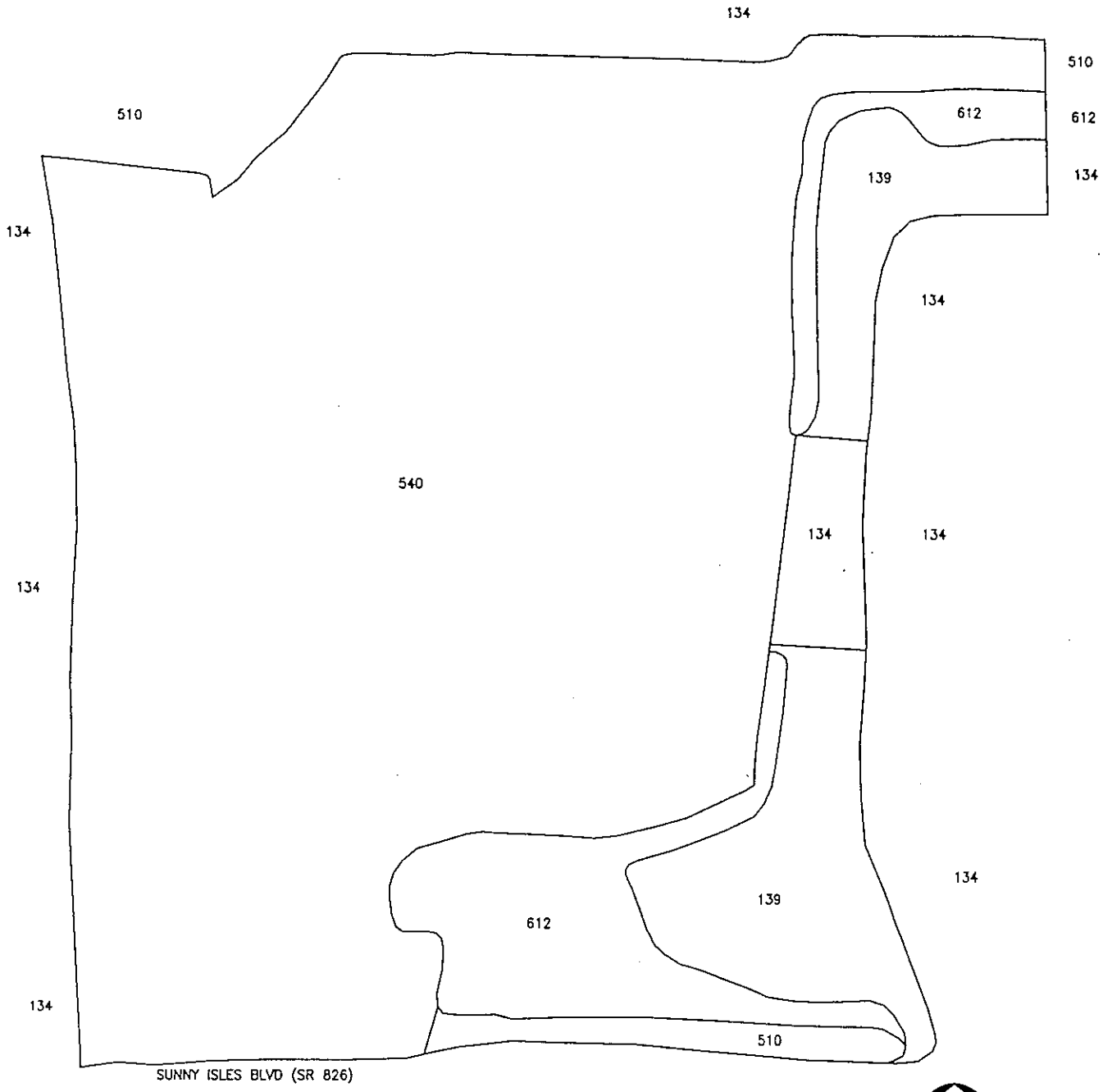
SITE

Public Access:	None	Comprehensive Plan Designation:	Residential (MHD)
		Adjacent Land Use:	
Road Easement (ft):	Not Required	Residential high-density (N, S, W); Bays and Estuaries (E)	
Pipeline Easement (ft):	Not Required		
		Land Use of Impacted Area:	
Deep Draft Access:	N/A	N/A	
		Wetlands W/I Mapped Area (ac):	0.00
		Wetlands Impacted (ac):	0.00

Site Narrative:

This 43-acre site, D-5, is an exclusive, gated residential community called Williams Island. It is primarily residential high-density, high-rise condominiums under construction (139), with associated marinas (185) and streets (814). The site consists of two or possibly three old dredge spoil islands. The center of the site contains a facility mapped as a community recreational facility (186); however, this private facility serves the condominium owners exclusively.

The site is bounded on the north by residential high-density (134), on the east by bays and estuaries (540), on the south by residential high-density (134), and on the west by the entrance road (814) and residential high-density (134).



LEGEND D-6

		ACRES
134	MULTIPLE DWELLING UNITS, HIGH RISE	1.42
139	HIGH DENSITY UNDER CONSTRUCTION	7.35
510	STREAMS AND WATERWAYS	1.14
540	BAYS AND ESTUARIES	50.74
612	MANGROVE SWAMPS	5.90
	TOTAL ACRES	66.55

OTHER COVER TYPES SHOWN

814 ROADS AND HIGHWAYS

LAND USE AND VEGETATION OF CANDIDATE SITE D-6, MIAMI-DADE COUNTY, FLORIDA

TAYLOR ENGINEERING INC.
9000 CYPRESS GREEN DRIVE, SUITE 200
JACKSONVILLE, FLORIDA 32256

Figure B-22
Land Use and Vegetation
of Candidate Site D-6
Miami-Dade County, Florida

PROJECT C1999-021
REVISION
SHEET
DATE Aug., 2000

SITE DATA SUMMARY SHEET

Name: D-6

AKA:

Site Use: Dewatering & Short-Term Storage (Single Operation)

Comment: Residential Use -- High-density, high-rise condominiums

LOCATION

County:	Dade	ICWW REACH MILEAGE:	337.28
Municipality:	Sunny Isles	East/West of	East
Section/Township/Range:	11/52/42	Receiving Waterbody:	N/A
		FDEP	N/A

REACH

Reach Designation:	DA-1	Projected Dredging Frequency (yr):	20
Reach Length (mi):	3.99	50-yr Dredging Requirement (cy):	15,801
ICWW Mileage:	334.24 to 338.23	50-yr Storage Requirement (cy):	33,973
Cut/Station:	DA-1/0+00 to DA-8/0+00		
Geographic: (FDEP Classification)	530 ft South of Broward/Dade County Line (III) to Haulover Beach County Park (III)		

SITE PARAMETERS

Mapped Area (ac):	66.55	Storage Capacity (cy):	N/A
Containment Area (ac):	Insufficient Area	Dike Height (ft):	N/A
Impacted Area (ac):	N/A	Excavation Depth (ft):	N/A
Buffer Area (ac):	N/A	Existing Mean Site Elevation (ft):	5
N Buffer Width (ft):	N/A	Dike Volume (cy):	N/A
S Buffer Width (ft):	N/A	Max. Pumping Distance (mi):	3.23
E Buffer Width (ft):	N/A	Max. Barging Distance (mi):	N/A
W Buffer Width (ft):	N/A	Min. Distance from Waterway (mi):	0.19
Total Site Area (ac):	N/A		

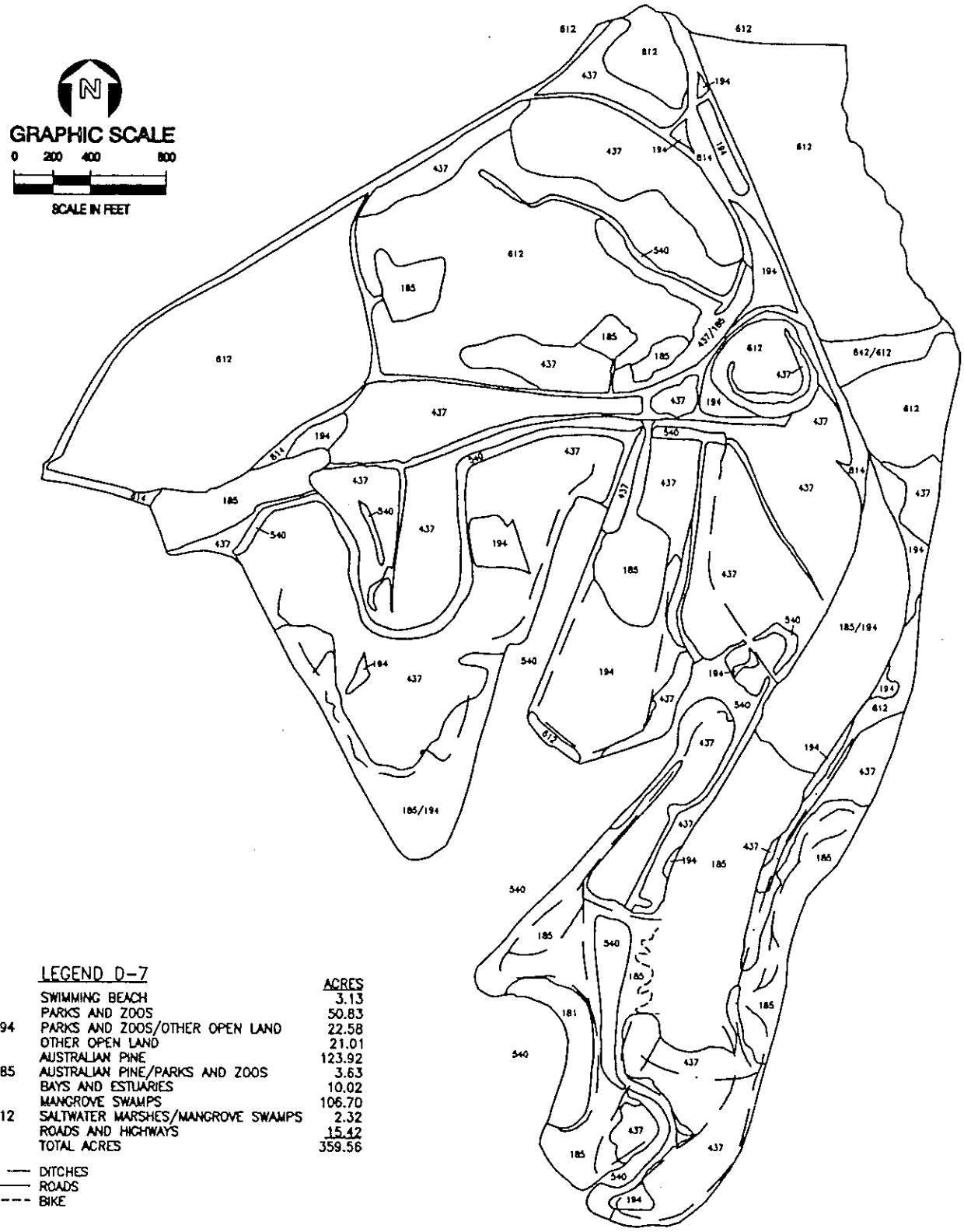
SITE

Public Access:	Sunny Isles Blvd (State Road 826), 163rd St	Comprehensive Plan Designation:	Residential (MHD)
		Adjacent Land Use:	
Road Easement (ft):	Not Required	Residential high-density, high-rise condominiums (N, E, W); Sunny Isles Blvd (State Road 862) (S)	
Pipeline Easement (ft):	Not Required	Land Use of Impacted Area:	
Deep Draft Access:	N/A	N/A	
		Wetlands W/I Mapped Area (ac):	5.90
		Wetlands Impacted (ac):	0.00

Site Narrative:

This 67-acre site, D-6, consists primarily of bays and estuaries (540), mangrove swamp (612) with mainly red mangrove (*Rhizophora mangle*), residential high-density (134), and residential high-density under construction (139). Additionally, a small area was mapped as streams and waterways (510). Several large high-rise condominiums (134) occupy the site with several more under construction (139).

The site is bounded on the north and east by residential high-density, high-rise condominiums (134). A small street separates the condominiums on the east from the site. The site is bounded on the south by Sunny Isles Boulevard (State Road 826) and on the west by residential high-density, high-rise condominiums (134).



LEGEND D-7

		ACRES
181	SWIMMING BEACH	3.13
185	PARKS AND ZOOS	50.83
185/194	PARKS AND ZOOS/OTHER OPEN LAND	22.58
194	OTHER OPEN LAND	21.01
437	AUSTRALIAN PINE	123.92
437/185	AUSTRALIAN PINE/PARKS AND ZOOS	3.63
540	BAYS AND ESTUARIES	10.02
612	MANGROVE SWAMPS	106.70
642/612	SALTWATER MARSHES/MANGROVE SWAMPS	2.32
814	ROADS AND HIGHWAYS	15.42
	TOTAL ACRES	359.56

— · — DITCHES
—— —— ROADS
- - - - - - BIKE

LAND USE AND VEGETATION OF CANDIDATE SITE D-7, MIAMI-DADE COUNTY, FLORIDA

TAYLOR ENGINEERING INC.
9000 CYPRESS GREEN DRIVE, SUITE 200
JACKSONVILLE, FLORIDA 32256

Figure B-23
Land Use and Vegetation
of Candidate Site D-7
Miami-Dade County, Florida

PROJECT C1999-021
REVISION
SHEET
DATE Oct., 2000

SITE DATA SUMMARY SHEET

Name:	D-7
AKA:	Oleta River State Recreation Area
Site Use:	Dewatering & Long-Term Storage (Multiple Operation)
Comment:	Incompatible Land Use -- Several park structures (i.e., cabins, picnic areas, service centers, parking lots, bike trails)

LOCATION

County:	Dade	ICWW REACH MILEAGE:	338.09
Municipality:	North Miami	East/West of	West
Section/Township/Range:	14/52/42, 15/52/42, & 22/52/42	Receiving Waterbody:	ICWW
		FDEP	III

REACH

Reach Designation:	DA-1	Projected Dredging Frequency (yr):	20
Reach Length (mi):	3.99	50-yr Dredging Requirement (cy):	15,801
ICWW Mileage:	334.24 to 338.23	50-yr Storage Requirement (cy):	33,973
Cut/Station:	DA-1/0+00 to DA-8/0+00		
Geographic: (FDEP Classification)	530 ft South of Broward/Dade County Line (III) to Haulover Beach County Park (III)		

SITE PARAMETERS

Mapped Area (ac):	359.56	Storage Capacity (cy):	N/A
Containment Area (ac):	Insufficient Area	Dike Height (ft):	N/A
Impacted Area (ac):	N/A	Excavation Depth (ft):	N/A
Buffer Area (ac):	N/A	Existing Mean Site Elevation (ft):	5
N Buffer Width (ft):	N/A	Dike Volume (cy):	N/A
S Buffer Width (ft):	N/A	Max. Pumping Distance (mi):	3.99
E Buffer Width (ft):	N/A	Max. Barging Distance (mi):	N/A
W Buffer Width (ft):	N/A	Min. Distance from Waterway (mi):	0.46
Total Site Area (ac):	N/A		

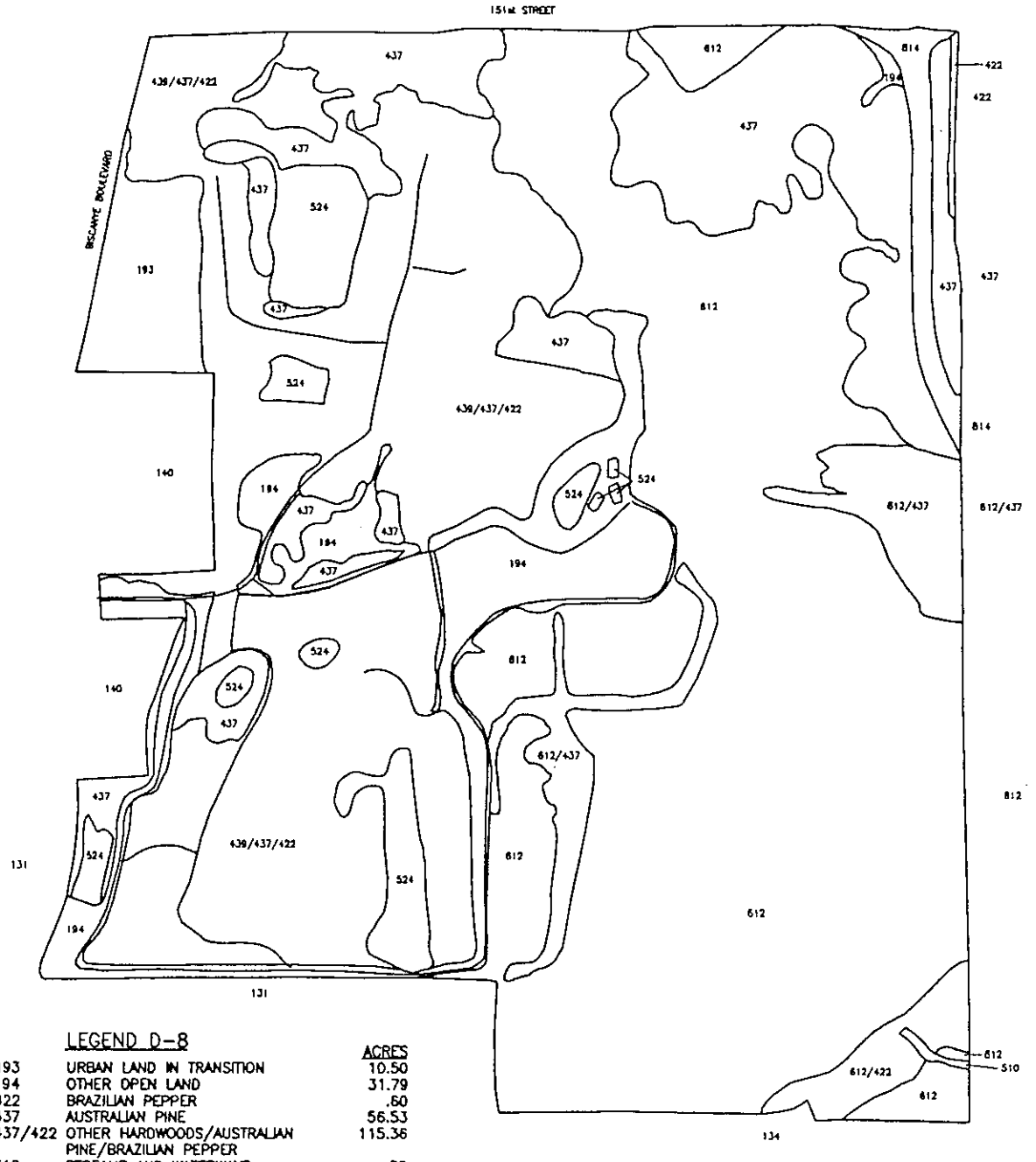
SITE

Public Access:	151st St	Comprehensive Plan Designation:	Parks and Recreation
		Adjacent Land Use:	
Road Easement (ft):	Not Required	Mangrove swamp (N); ICWW (E); Bal Harbor (S); FIU campus and Oleta River State Recreation Area (W)	
Pipeline Easement (ft):	Not Required		
		Land Use of Impacted Area:	
Deep Draft Access:	Yes	N/A	
		Wetlands W/I Mapped Area (ac):	109.02
		Wetlands Impacted (ac):	0.00

Site Narrative:

This large 360-acre site, D-7, is composed of many land use and community types within the Oleta River State Recreation Area. The entire site is considered parks and zoos (185); however, due to the many natural vegetation community types present, the parks and zoos designation (185) is not included in the name for each community type. Instead, the parks and zoos designation is used to indicate park structures such as cabins, service structures, parking lots, and picnic areas. The largest community types on site are mangrove swamp (612), Australian pine (437), and bays and estuaries (540). The site also has contains many dirt service roads, bicycle trails, and several tidal ditches, containing red mangrove. Open areas within the parking lots and some of the larger road medians were designated as other open land (194).

The site is bounded on the north by mangrove swamp (612), on the east by the ICWW (510), on the south by Bal Harbour Bay (540), and on the west by other areas of the Oleta River State Recreation Area and the Florida International University (FIU) campus.



LEGEND D-8

		ACRES
193	URBAN LAND IN TRANSITION	10.50
194	OTHER OPEN LAND	31.79
422	BRAZILIAN PEPPER	.60
437	AUSTRALIAN PINE	56.53
439/437/422	OTHER HARDWOODS/AUSTRALIAN PINE/BRAZILIAN PEPPER	115.36
510	STREAMS AND WATERWAYS	.32
524	LAKES LESS THAN 10 ACRES	15.60
612	MANGROVE SWAMPS	170.78
612/422	MANGROVE SWAMPS/BRAZILIAN PEPPER	5.56
612/437	MANGROVE SWAMPS/AUSTRALIAN PINE	15.88
814	ROADS AND HIGHWAYS	5.27
	TOTAL ACRES	428.19

OTHER COVER TYPES SHOWN

131	FIXED SINGLE FAMILY UNITS
134	MULTIPLE DWELLING UNITS
140	COMMERCIAL AND SERVICES
———	ROADS

LAND USE AND VEGETATION FOR CANDIDATE SITE D-8, MIAMI-DADE COUNTY, FLORIDA

TAYLOR ENGINEERING INC.
9000 CYPRESS GREEN DRIVE, SUITE 200
JACKSONVILLE, FLORIDA 32256

Figure B-24
Land Use and Vegetation
of Candidate Site D-8
Miami-Dade County, Florida

PROJECT C1999-021
REVISION
SHEET
DATE Aug., 2000

SITE DATA SUMMARY SHEET

Name:	D-8
AKA:	Florida International University (FIU) North Miami Campus
Site Use:	Dewatering & Long-Term Storage (Multiple Operation)
Comment:	Primarily mangrove, 171-acres, and a mix of exotic forested areas that overlie an old solid waste landfill

LOCATION

County:	Dade	ICWW REACH MILEAGE:	338.99
Municipality:	North Miami	East/West of	West
Section/Township/Range:	21/52/42	Receiving Waterbody:	ICWW
		FDEP	III

REACH

Reach Designation:	DA-2	Projected Dredging Frequency (yr):	5
Reach Length (mi):	4.53	50-yr Dredging Requirement (cy):	469,672
ICWW Mileage:	338.23 to 342.76	50-yr Storage Requirement (cy):	1,009,795
Cut/Station:	DA-8/0+00 to DA-9/178+50		
Geographic: (FDEP Classification)	Haulover Beach County Park Kennedy Causeway (NE 79th Street)	(III) to (III)	

SITE PARAMETERS

Mapped Area (ac):	428.19	Storage Capacity (cy):	95,247
Containment Area (ac):	9.28	Dike Height (ft):	10.0
Impacted Area (ac):	12.50	Excavation Depth (ft):	4.95
Buffer Area (ac):	11.93	Existing Mean Site Elevation (ft):	5.0
N Buffer Width (ft):	150	Dike Volume (cy):	39,746
S Buffer Width (ft):	350	Max. Pumping Distance (mi):	6.25
E Buffer Width (ft):	150	Max. Barging Distance (mi):	N/A
W Buffer Width (ft):	150	Min. Distance from Waterway (mi):	1.66
Total Site Area (ac):	24.43		

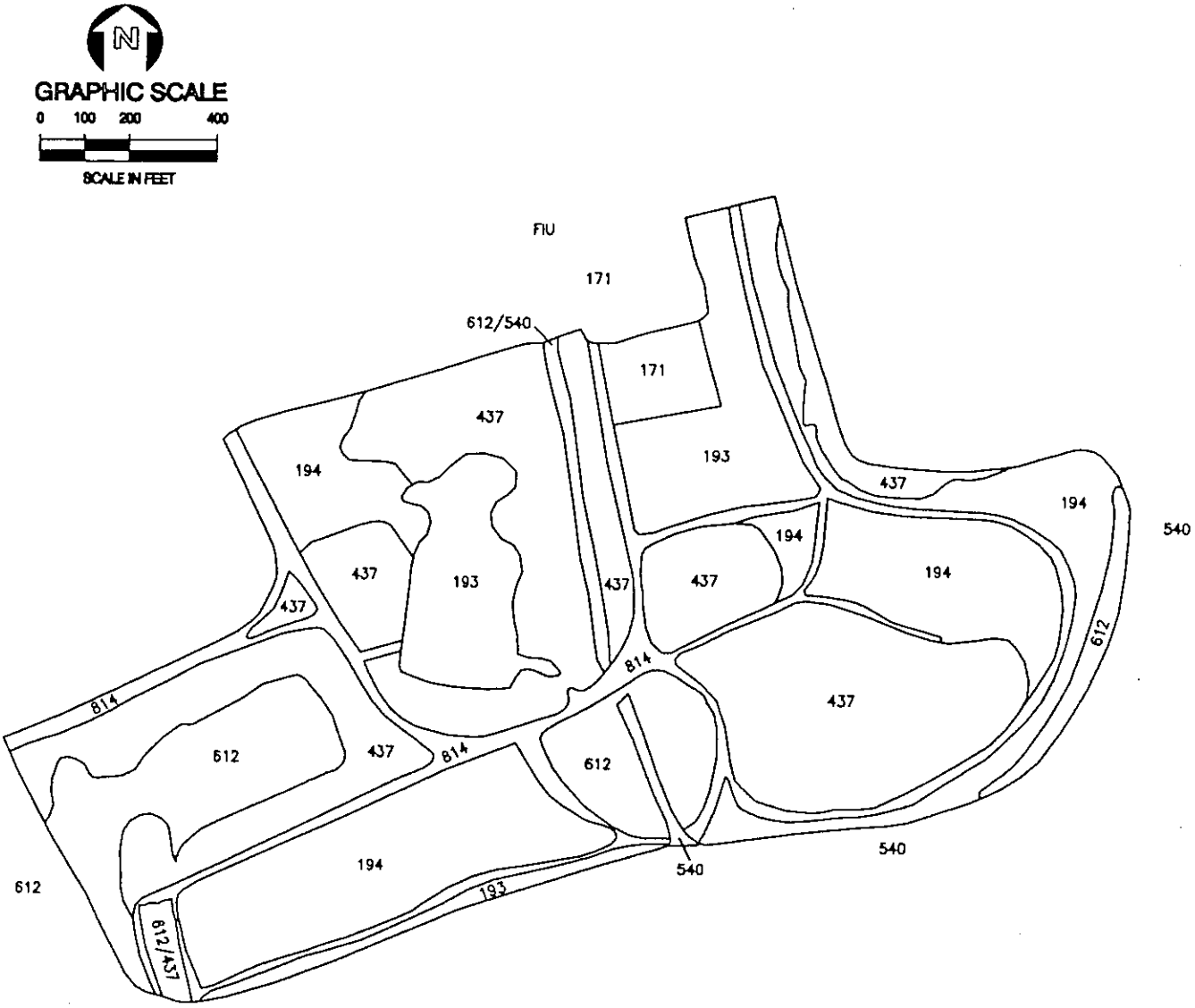
SITE

Public Access:	Biscayne Blvd (US-1), 151st St, Bay Vista Blvd	Comprehensive Plan Designation:	Parks and Recreation
		Adjacent Land Use:	
Road Easement (ft):	1,000	151st St (N); Bay Vista Blvd and FIU (E); Residential high-density (S); Single-family units and commercial (W)	
Pipeline Easement (ft):	1,700	Land Use of Impacted Area:	
Deep Draft Access:	No	Forested Land -- Australian pine and Brazilian Pepper	
		Wetlands W/I Mapped Area (ac):	192.22
		Wetlands Impacted (ac):	0.00

Site Narrative:

This 428-acre site, D-8, makes up the western portion of the Florida International University's (FIU) North Miami campus. The area is forested and no university buildings or facilities are located on the site. The site is primarily mangrove (612, 171 acres) and a mix of exotic forested area that overlie an old solid waste landfill. Most of the upland communities on this site are old landfill (835); however, current mapping designates the present community type and not the old landfill designation. Mangrove wetlands (612) are located throughout most of the site's eastern half and are composed of red, white, and black mangroves. In addition, many of the mangrove areas at slightly higher elevations, are infected with Australian pine, and are mapped as mangrove/Australian pine (612/437, 16 acres). There are large upland areas that are forested mainly with Australian pine (437, 57 acres) and other hardwoods/Australian pine/Brazilian pepper (439/437/422, 115 acres). These areas contain exposed limestone and in several areas, tree fall has exposed large amounts of trash. Additionally, there is an abundance of exotic palms and other exotic species. A large area of other open land (194, 32 acres) is located in the center of the site and appears to be associated with the landfill and possible monitoring activities. Furthermore, a network of dirt roads apparently connects a series of monitoring wells that are located on site. Several small man-made ponds also are located on site (524, 16 acres).

The site is bounded on the north by 151st Street, the east by a portion of Bay Vista Boulevard and the FIU Campus, the south by residential high-density (134), and the west by fixed single-family units (131), commercial (140), and Biscayne Boulevard (814).



	LEGEND D-9	ACRES
171	EDUCATIONAL FACILITIES	1.10
193	URBAN LAND IN TRANSITION	6.77
194	OTHER OPEN LAND	14.65
437	AUSTRALIAN PINE	20.65
540	BAYS AND ESTUARIES	.24
612	MANGROVE SWAMPS	6.87
612/437	MANGROVE SWAMPS/ AUSTRALIAN PINE	.38
612/540	MANGROVE SWAMPS/ BAYS AND ESTUARIES	.54
814	ROADS AND HIGHWAYS	5.84
	TOTAL ACRES	57.04

LAND USE AND VEGETATION FOR CANDIDATE SITE D-9, MIAMI-DADE COUNTY, FLORIDA

TAYLOR ENGINEERING INC.
9000 CYPRESS GREEN DRIVE, SUITE 200
JACKSONVILLE, FLORIDA 32256

Figure B-25
Land Use and Vegetation
of Candidate Site D-9
Miami-Dade County, Florida

PROJECT C1999-021
REVISION
SHEET
DATE Aug., 2000

SITE DATA SUMMARY SHEET

Name:	D-9
AKA:	Florida International University (FIU) North Miami Campus
Site Use:	Dewatering & Short-Term Storage (Single Operation)
Comment:	Located at southern end of the FIU campus -- presumably part of future expansion plans for FIU

LOCATION

County:	Dade	ICWW REACH MILEAGE:	339.20
Municipality:	North Miami	East/West of	West
Section/Township/Range:	22/52/42	Receiving Waterbody:	ICWW
		FDEP	III

REACH

Reach Designation:	DA-2	Projected Dredging Frequency (yr):	5
Reach Length (mi):	4.53	50-yr Dredging Requirement (cy):	469,672
ICWW Mileage:	338.23 to 342.76	50-yr Storage Requirement (cy):	1,009,795
Cut/Station:	DA-8/0+00 to DA-9/178+50		
Geographic: (FDEP Classification)	Haulover Beach County Park Kennedy Causeway (NE 79th Street)	(III) to (III)	

SITE PARAMETERS

Mapped Area (ac):	57.04	Storage Capacity (cy):	7,341
Containment Area (ac):	1.91	Dike Height (ft):	5
Impacted Area (ac):	3.45	Excavation Depth (ft):	4.60
Buffer Area (ac):	7.60	Existing Mean Site Elevation (ft):	5
N Buffer Width (ft):	350	Dike Volume (cy):	5,829
S Buffer Width (ft):	150	Max. Pumping Distance (mi):	5.24
E Buffer Width (ft):	150	Max. Barging Distance (mi):	N/A
W Buffer Width (ft):	150	Min. Distance from Waterway (mi):	0.49
Total Site Area (ac):	11.05		

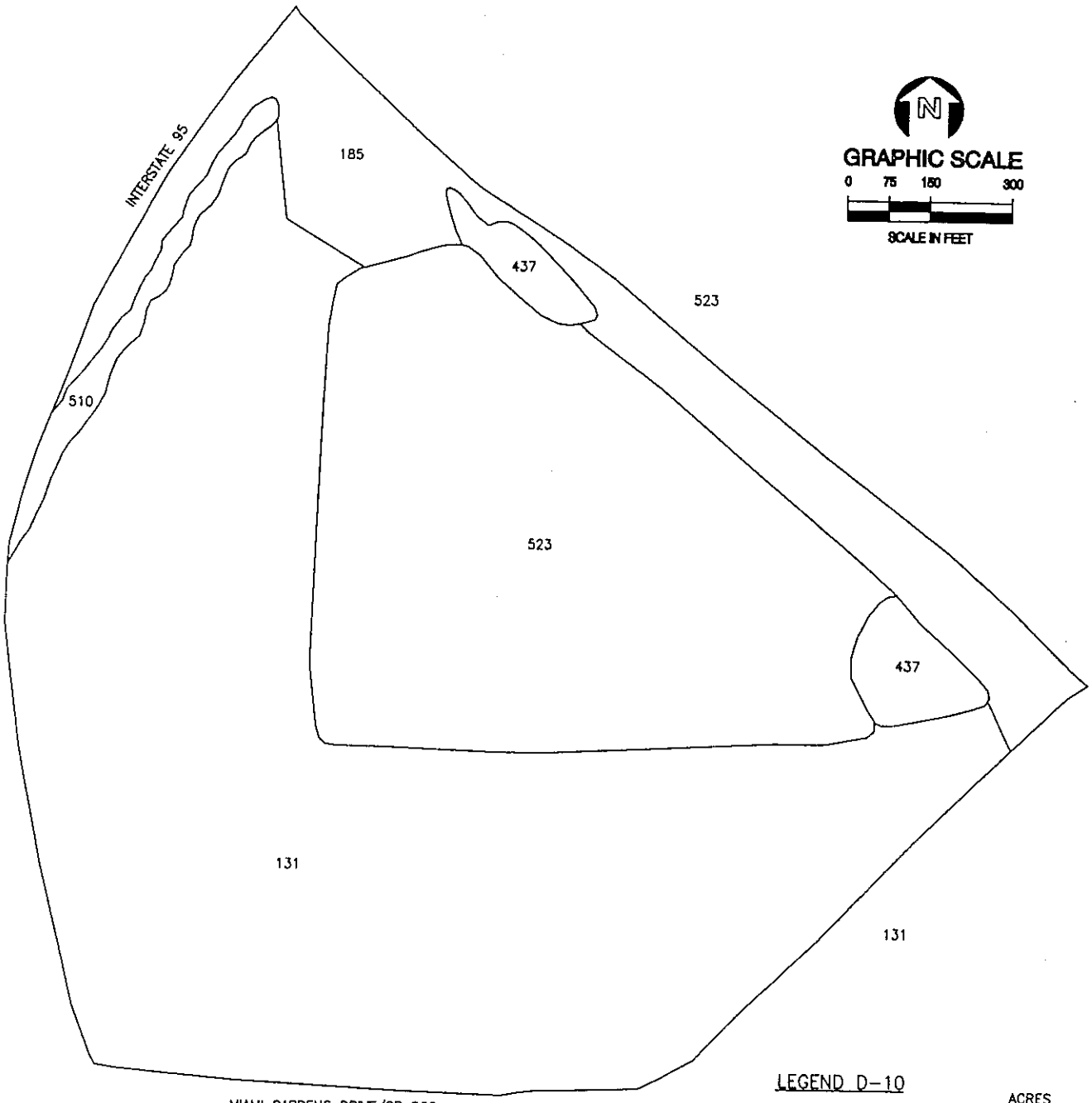
SITE

Public Access:	Bay Vista Blvd	Comprehensive Plan Designation:	Institutional and Public Facility
		Adjacent Land Use:	
Road Easement (ft):	Not Required	FIU campus (N); Bays and Estuaries (E, S); Mangroves (W)	
Pipeline Easement (ft):	Not Required		
Deep Draft Access:	Yes	Land Use of Impacted Area:	
		Australian Pine, Open land associated with southern FIU campus	
		Wetlands W/I Mapped Area (ac):	7.79
		Wetlands Impacted (ac):	0.00

Site Narrative:

This 57-acre site, D-9, is the southern end of the Florida International University (FIU) Miami Campus. It consists primarily of other open land (194), Australian pine (437), mangrove (612), and urban land in transition without positive indicators of intended activity (193). A tidally influenced linear ditch, mapped as bays and estuaries (540), bisects the site. The northern portion of the ditch contains red mangrove (*Rhizophora mangle*). Several large dirt roads (814) are located throughout the site. Many of the areas, especially the 194, 193, and 437 community types, contain little native vegetation due to past disturbances. Indications are that Site D-9 will presumably be part of future expansion plans for FIU.

The site is bounded on the north by the FIU campus (171), on the east and south by bays and estuaries (540), and on the west by dense mangroves (612).



LEGEND D-10

		ACRES
131	FIXED SINGLE FAMILY UNITS	32.42
185	PARKS AND ZOOS	6.68
437	AUSTRALIAN PINE	1.48
510	STREAMS AND WATERWAYS	.93
523	LAKES 10 ACRES	16.88
	TOTAL ACRES	58.39

LAND USE AND VEGETATION OF CANDIDATE SITE D-10, MIAMI-DADE COUNTY, FLORIDA

TAYLOR ENGINEERING INC.
9000 CYPRESS GREEN DRIVE, SUITE 200
JACKSONVILLE, FLORIDA 32256

Figure B-26
Land Use and Vegetation
of Candidate Site D-10
Miami-Dade County, Florida

PROJECT C1999-021
REVISION
SHEET
DATE Aug., 2000

SITE DATA SUMMARY SHEET

Name: D-10

AKA:

Site Use: Multi-Reach Inland Storage

Comment: Insufficient Upland Area -- Small man-made lake, 1.69-acre, surrounded by residential development

LOCATION

County:	Dade	ICWW REACH MILEAGE:	336.19
Municipality:	North Miami	East/West of	West
Section/Township/Range:	5/52/42 & 6/52/42	Receiving Waterbody:	N/A
		FDEP	N/A

REACH

Reach Designation:	DA-1	Projected Dredging Frequency (yr):	20
Reach Length (mi):	3.99	50-yr Dredging Requirement (cy):	15,801
ICWW Mileage:	334.24 to 338.23	50-yr Storage Requirement (cy):	33,973
Cut/Station:	DA-1/0+00 to DA-8/0+00		
Geographic: (FDEP Classification)	530 ft South of Broward/Dade County Line (III) to Haulover Beach County Park (III)		

SITE PARAMETERS

Mapped Area (ac):	43.2	Storage Capacity (cy):	N/A
Containment Area (ac):	N/A	Dike Height (ft):	N/A
Impacted Area (ac):	Insufficient Area	Excavation Depth (ft):	N/A
Buffer Area (ac):	N/A	Existing Mean Site Elevation (ft):	5
N Buffer Width (ft):	N/A	Dike Volume (cy):	N/A
S Buffer Width (ft):	N/A	Max. Pumping Distance (mi):	N/A
E Buffer Width (ft):	N/A	Max. Barging Distance (mi):	N/A
W Buffer Width (ft):	N/A	Min. Distance from Waterway (mi):	3.50
Total Site Area (ac):	N/A		

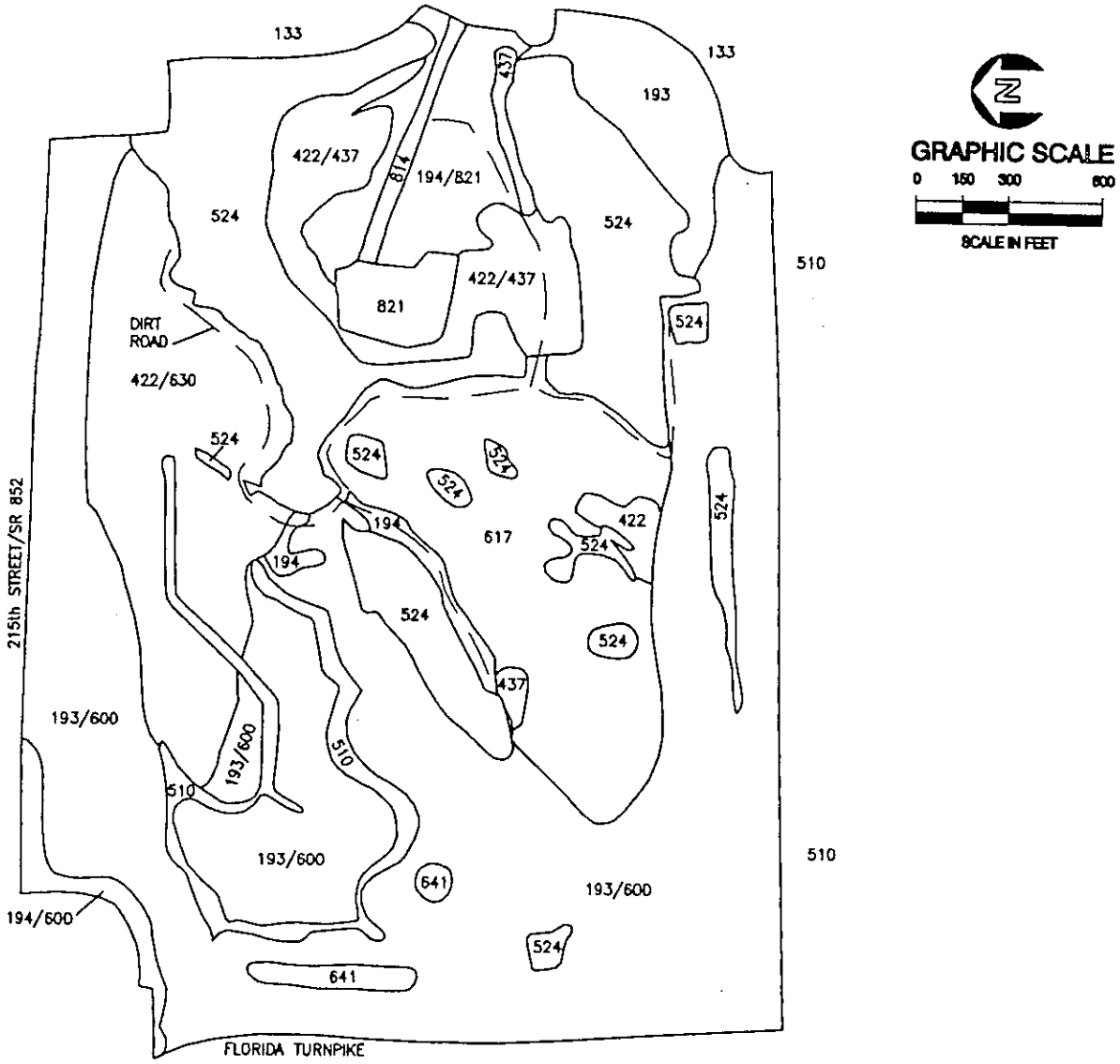
SITE

Public Access:	I-95, Miami Gardens Dr (State Road 860)	Comprehensive Plan Designation:	Residential (LD)
		Adjacent Land Use:	
Road Easement (ft):	Not Required	I-95 (NW); Lake and Snake Creek Canal (NE); Miami Gardens Dr (State Road 860) (SE, S); I-95 entrance ramp (SW)	
Pipeline Easement (ft):	N/A		
Deep Draft Access:	N/A	Land Use of Impacted Area:	
		N/A	
		Wetlands W/I Mapped Area (ac):	0.00
		Wetlands Impacted (ac):	0.00

Site Narrative:

This 43-acre site, D-10, is comprised of a central lake larger than ten acres (523), two small stands of Australian pine (437), a bike/walking path mapped as parks and zoos (185), and fixed single-family units (131). The man-made lake contains abundant aquatic vegetation around its edges, primarily emergent vegetation; however, some Brazilian peppers also are located along the lake margins.

Interstate 95 bounds the site on the northwest, lakes larger than ten acres (523) on the northeast, Miami Gardens Drive (State Road 860) on the southeast and south, and an I-95 entrance ramp on the southwest.



LEGEND D-11

		ACRES
193	URBAN LAND IN TRANSITION	5.58
193/600	URBAN LAND IN TRANSITION/WETLANDS	74.48
194	OTHER OPEN LAND	1.44
194/600	OTHER OPEN LAND/WETLANDS	1.88
194/821	OTHER OPEN LAND/TRANSMISSION TOWERS	6.61
422	BRAZILIAN PEPPER	.92
422/437	BRAZILIAN PEPPER/AUSTRALIAN PINE	8.14
422/630	BRAZILIAN PEPPER/WETLAND FORESTED MIXED	18.30
437	AUSTRALIAN PINE	.95
510	STREAMS AND WATERWAYS	4.30
524	LAKES LESS THAN 10 ACRES WHICH ARE DOMINANT FEATURES	29.43
617	MIXED WETLAND HARDWOODS	19.30
641	FRESHWATER MARSHES	1.17
814	ROADS AND HIGHWAYS	.99
821	TRANSMISSION TOWERS	2.19
	TOTAL ACRES	175.68

OTHER COVER TYPES SHOWN

133	MULTIPLE DWELLING UNITS, LOW RISE
215	FIELD CROPS
— —	ROADS

LAND USE AND VEGETATION OF CANDIDATE SITE D-11, MIAMI-DADE COUNTY, FLORIDA

TAYLOR ENGINEERING INC.
9000 CYPRESS GREEN DRIVE, SUITE 200
JACKSONVILLE, FLORIDA 32256

Figure B-27
Land Use and Vegetation
of Candidate Site D-11
Miami-Dade County, Florida

PROJECT C1999-021
REVISION
SHEET
DATE Sept., 2000

SITE DATA SUMMARY SHEET

Name: D-11

AKA:

Site Use: Multi-Reach Inland Storage

Comment: Insufficient Upland Area -- Wetland areas, 115.13-acres, and open water, 33.73-acres, are predominant

LOCATION

County:	Dade	ICWW REACH MILEAGE:	334.68
Municipality:	Unincorporated	East/West of	West
Section/Township/Range:	35/51/41 & 36/51/41	Receiving Waterbody:	N/A
		FDEP	N/A

REACH

Reach Designation:	DA-1	Projected Dredging Frequency (yr):	20
Reach Length (mi):	3.99	50-yr Dredging Requirement (cy):	15,801
ICWW Mileage:	334.24 to 338.23	50-yr Storage Requirement (cy):	33,973
Cut/Station:	DA-1/0+00 to DA-8/0+00		
Geographic: (FDEP Classification)	530 ft South of Broward/Dade County Line (III) to Haulover Beach County Park (III)		

SITE PARAMETERS

Mapped Area (ac):	175.68	Storage Capacity (cy):	N/A
Containment Area (ac):	N/A	Dike Height (ft):	N/A
Impacted Area (ac):	Insufficient Area	Excavation Depth (ft):	N/A
Buffer Area (ac):	N/A	Existing Mean Site Elevation (ft):	5
N Buffer Width (ft):	N/A	Dike Volume (cy):	N/A
S Buffer Width (ft):	N/A	Max. Pumping Distance (mi):	N/A
E Buffer Width (ft):	N/A	Max. Barging Distance (mi):	N/A
W Buffer Width (ft):	N/A	Min. Distance from Waterway (mi):	6.35
Total Site Area (ac):	N/A		

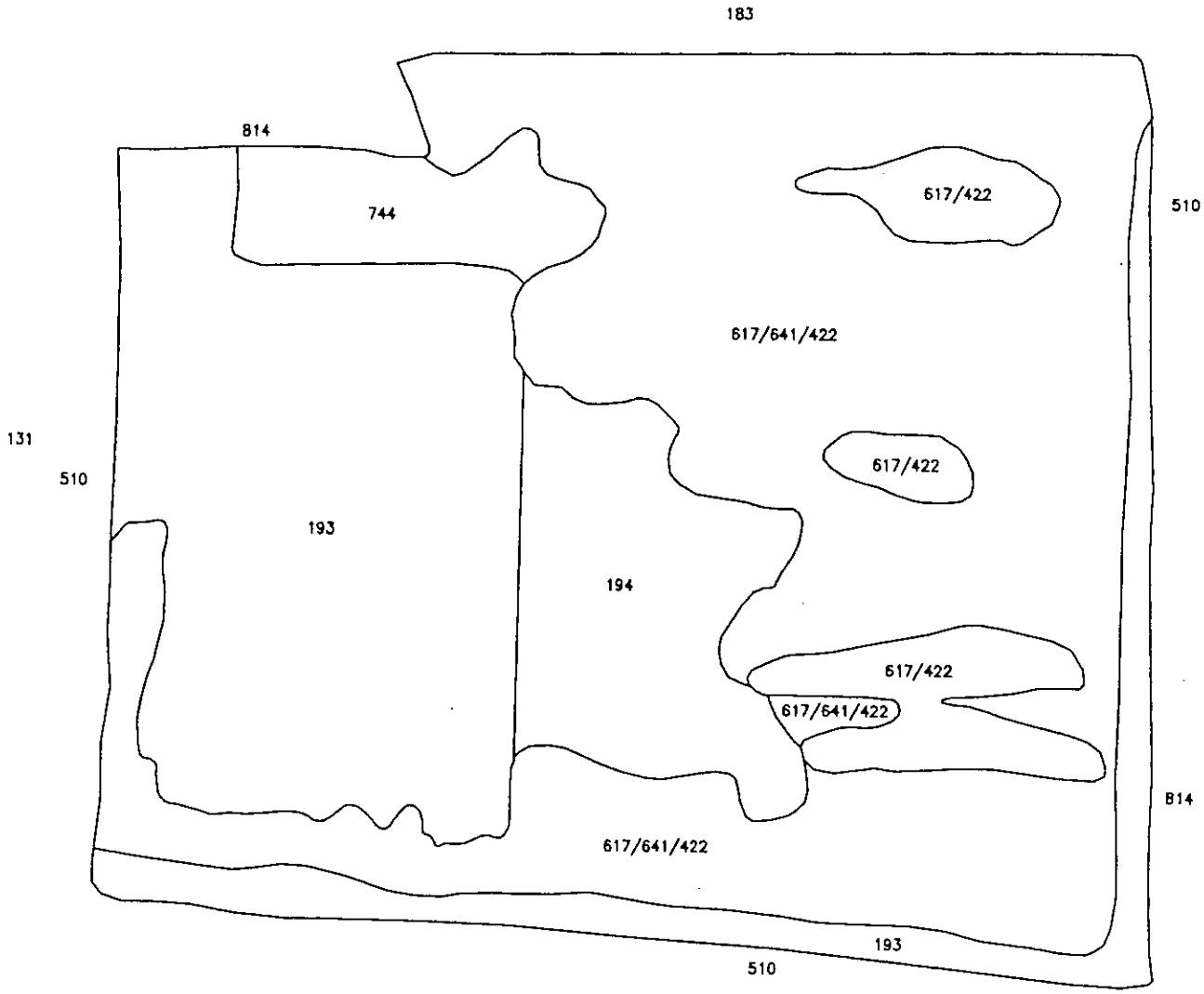
SITE

Public Access:	215th Street (State Road 852), FL Turnpike	Comprehensive Plan Designation:	Residential (MD)
		Adjacent Land Use:	
Road Easement (ft):	Not Required	215th St (State Road 852) (N); Multiple low-rise dwelling units (E); Large canal (S); FL Turnpike (W)	
Pipeline Easement (ft):	N/A		
		Land Use of Impacted Area:	
Deep Draft Access:	N/A	N/A	
		Wetlands W/I Mapped Area (ac):	115.13
		Wetlands Impacted (ac):	0.00

Site Narrative:

This 176-acre site, D-11, consists primarily of a transmission tower (821), associated other open lands/transmission tower (194/821), and man-made ponds (524). The southern half of the site consists of recently cleared areas mapped as urban land in transition without positive indicators of intended activity/wetlands (193/600), a network of streams and waterways (510), and vegetated areas mapped as wetland forested mixed (617). Brazilian pepper (422) occupies areas within the wetland mixed forest. Two small freshwater marshes (641), predominantly cattails, are located in the southern portion of the site. Several areas near the transmission tower (821) are predominantly Australian pine/Brazilian pepper (437/422).

The site is bounded on the north by 215th Street (State Road 852), on the east by multiple dwelling units low rise (133), on the south by a large canal (510), and on the west by the Florida Turnpike (814).



	LEGEND D-12	ACRES
193	URBAN LAND IN TRANSITION	18.17
194	OTHER OPEN LAND	5.40
617/422	MIXED WETLAND HARDWOODS/ BRAZILIAN PEPPER	3.54
617/641/422	MIXED WETLAND HARDWOODS/FRESHWATER MARSHES/BRAZILIAN PEPPER	26.67
744	FILL AREAS	2.54
	TOTAL ACRES	56.32

	OTHER COVER TYPES SHOWN
131	FIXED SINGLE FAMILY UNITS
183	RACE TRACKS
510	STREAMS AND WATERWAYS
814	ROADS AND HIGHWAYS

N

GRAPHIC SCALE

0 75 150 300

SCALE IN FEET

LAND USE AND VEGETATION OF CANDIDATE SITE D-12, MIAMI-DADE COUNTY, FLORIDA

TAYLOR ENGINEERING INC.
9000 CYPRESS GREEN DRIVE, SUITE 200
JACKSONVILLE, FLORIDA 32256

Figure B-28
Land Use and Vegetation
of Candidate Site D-12
Miami-Dade County, Florida

PROJECT C1999-021
REVISION
SHEET
DATE Sept., 2000

SITE DATA SUMMARY SHEET

Name: D-12

AKA:

Site Use: Multi-Reach Inland Storage

Comment: Site is bounded on the south by Snake Creek Canal

LOCATION

County:	Dade	ICWW REACH MILEAGE:	335.02
Municipality:	Unincorporated	East/West of	West
Section/Township/Range:	34/51/41	Receiving Waterbody:	N/A
		FDEP	N/A

REACH

Reach Designation:	DA-1	Projected Dredging Frequency (yr):	20
Reach Length (mi):	3.99	50-yr Dredging Requirement (cy):	15,801
ICWW Mileage:	334.24 to 338.23	50-yr Storage Requirement (cy):	33,973
Cut/Station:	DA-1/0+00 to DA-8/0+00		
Geographic: (FDEP Classification)	530 ft South of Broward/Dade County Line (III) to Haulover Beach County Park (III)		

SITE PARAMETERS

Mapped Area (ac):	56.32	Storage Capacity (cy):	141,715
Containment Area (ac):	N/A	Dike Height (ft):	N/A
Impacted Area (ac):	10.98	Excavation Depth (ft):	N/A
Buffer Area (ac):	8.22	Existing Mean Site Elevation (ft):	10
N Buffer Width (ft):	100	Dike Volume (cy):	N/A
S Buffer Width (ft):	100	Max. Pumping Distance (mi):	N/A
E Buffer Width (ft):	100	Max. Barging Distance (mi):	N/A
W Buffer Width (ft):	100	Min. Distance from Waterway (mi):	6.68
Total Site Area (ac):	19.20		

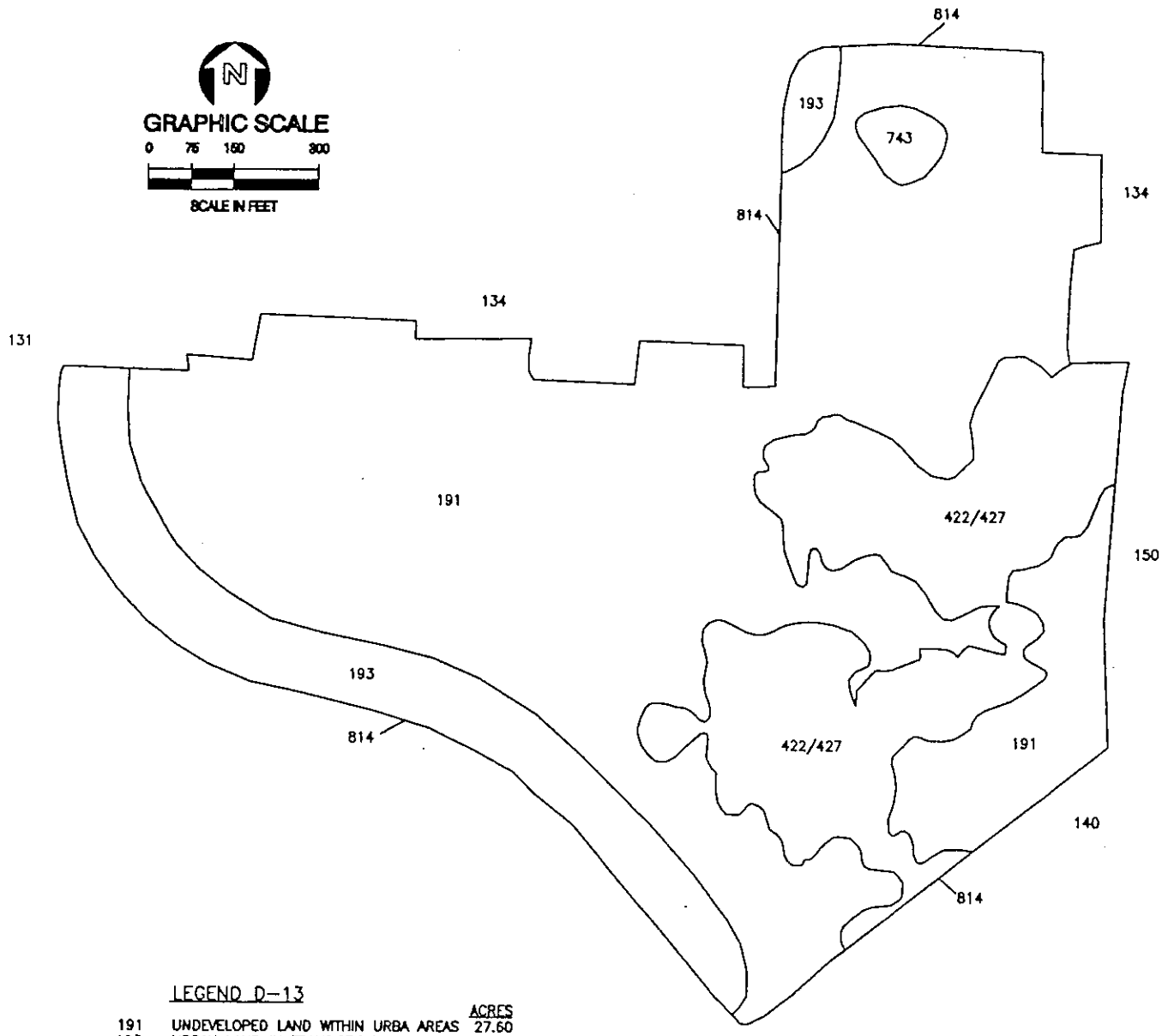
SITE

Public Access:	207th St	Comprehensive Plan Designation:	Residential (MD)
		Adjacent Land Use:	
Road Easement (ft):	Not Required	Dog-racing track (N); Canal and FL Turnpike (E); Snake Creek Canal (S); Canal and single-family units (W)	
Pipeline Easement (ft):	N/A		
Deep Draft Access:	Yes	Land Use of Impacted Area:	
		Urban land in transition and Fill areas	
		Wetlands W/I Mapped Area (ac):	30.21
		Wetlands Impacted (ac):	0.00

Site Narrative:

This 56-acre site, D-12, is primarily composed of mixed wetland hardwoods/Brazilian pepper (617/422), urban land in transition without positive indicators of intended use (193), and other open land (194). Several other species of exotic trees (legumes) are located within the mixed wetland hardwoods/Brazilian pepper community. Small open areas, apparently ditched in the past, contain wetland herbaceous species such as sawgrass (*Cladium jamaicense*), royal fern (*Osmunda regalis*), camphorweed (*Pluchea odorata*), and yellow-eyed grass (*Xyris* sp.). The soils within these areas are mucky wetland soils. The other open land areas (194) consist of an old field inundated by weedy species such as ragweed (*Ambrosia artemisiifolia*) and beggar-ticks (*Bidens alba*). Sections of the urban land in transition community (193), which is maintained through mowing, contain linearly placed trees along small swales. The northern part of the site contains a large area of fill dirt (744). Household trash is scattered throughout several of the communities on-site.

The site is bounded on the north by a dog-racing track (183), on the east by a canal (510) and the Florida Turnpike (814), on the south by Snake Creek Canal (510), and on the west by another canal (510) and fixed single-family units (131).



LEGEND D-13

		ACRES
191	UNDEVELOPED LAND WITHIN URBA AREAS	27.60
193	URBAN LAND IN TRANSISTION	5.04
422/427	BRAZILIAN PEPPER/LIVE OAK	8.17
743	SPOIL AREAS	.37
	TOTAL ACRES	41.18

OTHER COVER TYPES SHOWN

131	FIXED SINGLE FAMILY UNITS
134	MULTIPLE DWELLING UNITS, HIGH RISE
140	COMMERCIAL AND SERVICES
150	INDUSTRIAL
814	ROADS AND HIGHWAYS

LAND USE AND VEGETATION OF CANDIDATE SITE D-13, MIAMI-DADE COUNTY, FLORIDA

TAYLOR ENGINEERING INC.
9000 CYPRESS GREEN DRIVE, SUITE 200
JACKSONVILLE, FLORIDA 32256

Figure B-29
Land Use and Vegetation
of Candidate Site D-13
Miami-Dade County, Florida

PROJECT C1999-021
REVISION
SHEET
DATE Aug., 2000

SITE DATA SUMMARY SHEET

Name: D-13

AKA:

Site Use: Multi-Reach Inland Storage

Comment: Site is located north of the US Highway 441 and Florida Turnpike intersection

LOCATION

County:	Dade	ICWW REACH MILEAGE:	337.11
Municipality:	Unincorporated	East/West of	West
Section/Township/Range:	12/52/41	Receiving Waterbody:	N/A
		FDEP	N/A

REACH

Reach Designation:	DA-1	Projected Dredging Frequency (yr):	20
Reach Length (mi):	3.99	50-yr Dredging Requirement (cy):	15,801
ICWW Mileage:	334.24 to 338.23	50-yr Storage Requirement (cy):	33,973
Cut/Station:	DA-1/0+00 to DA-8/0+00		
Geographic: (FDEP Classification)	530 ft South of Broward/Dade County Line (III) to Haulover Beach County Park (III)		

SITE PARAMETERS

Mapped Area (ac):	41.18	Storage Capacity (cy):	191,535
Containment Area (ac):	N/A	Dike Height (ft):	N/A
Impacted Area (ac):	14.84	Excavation Depth (ft):	N/A
Buffer Area (ac):	16.64	Existing Mean Site Elevation (ft):	10
N Buffer Width (ft):	350	Dike Volume (cy):	N/A
S Buffer Width (ft):	100	Max. Pumping Distance (mi):	N/A
E Buffer Width (ft):	100	Max. Barging Distance (mi):	N/A
W Buffer Width (ft):	100	Min. Distance from Waterway (mi):	4.89
Total Site Area (ac):	31.48		

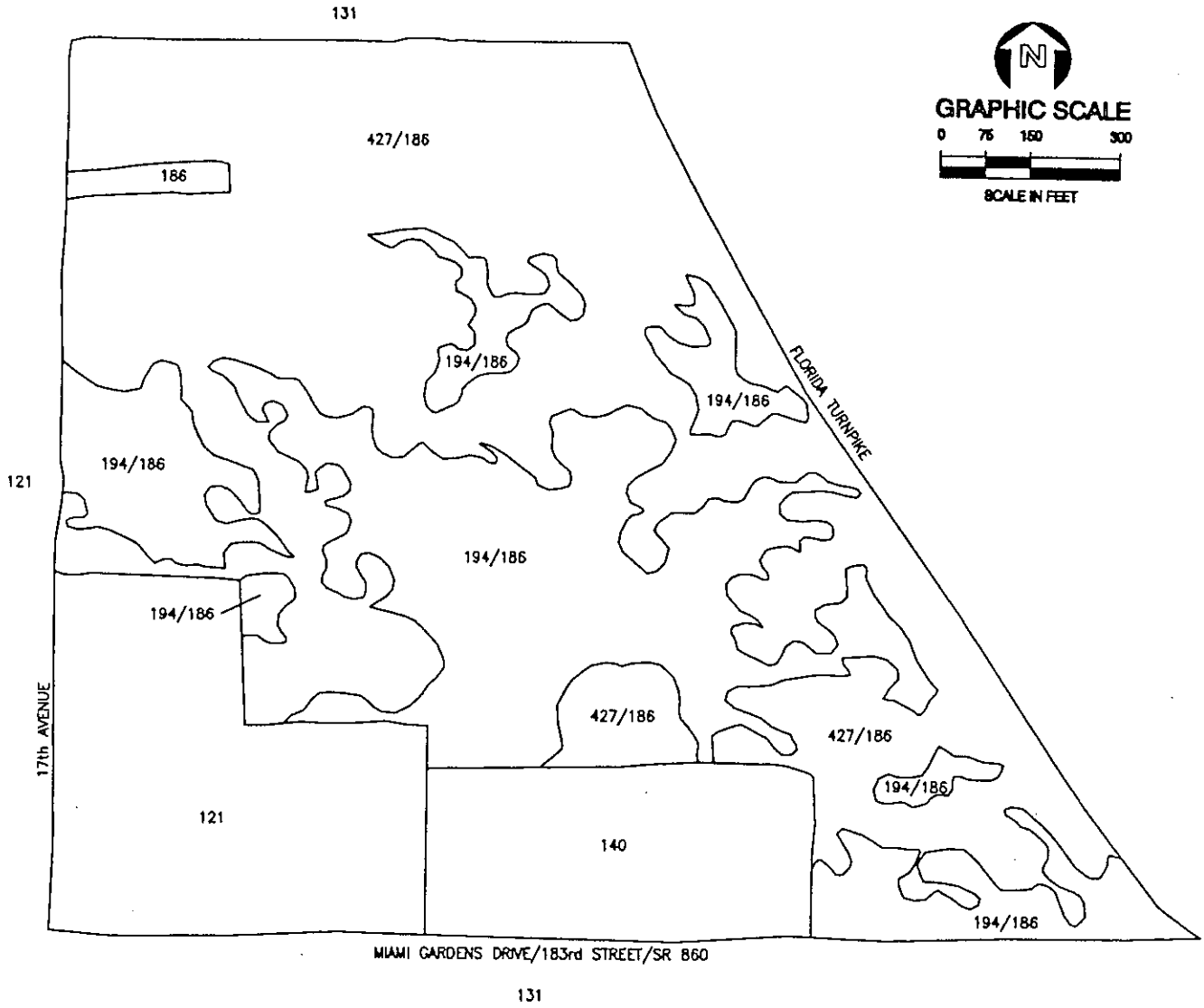
SITE

Public Access:	7th Ave, US Highway 441	Comprehensive Plan Designation:	Business and Office
		Adjacent Land Use:	
Road Easement (ft):	Not Required	Fixed single and multiple dwelling units (N); Industrial and Residential (E); US Highway 441 (SE); 7th Ave (SW)	
Pipeline Easement (ft):	N/A	Land Use of Impacted Area:	
Deep Draft Access:	N/A	Undeveloped land within urban areas (Brazilian Pepper, Live Oak)	
		Wetlands W/I Mapped Area (ac):	0.00
		Wetlands Impacted (ac):	0.00

Site Narrative:

This 41-acre site, D-13, is primarily undeveloped land within urban areas (191) with some forested areas of Brazilian pepper and live oak (422/427). The undeveloped land community type (191) contains a few small patches of slash pine (*Pinus elliottii*) surrounded by Brazilian pepper (*Schinus terebinthifolius*). This area also contains ragweed (*Ambrosia artemisiifolia*), crown-grass (*Paspalum* sp.), and muscadine grape (*Vitis rotundifolia*). Given their small size, these areas were not mapped individually. A small area of fill (743) is located in the northern portion of the property. The Brazilian pepper and live oak community (422/427) contains some very large live oaks (*Quercus virginiana*) along the southeastern corner of Site D-13. A large recently cleared area, mapped as urban land in transition without positive indicators of intended activity (193), is located along the site's southwestern edge. Most of the mapped areas contain dumped trash, such as old tires and appliances.

The site is bounded on the north by fixed single-family units (131) and residential high-density (134), on the east by residential high-density (134) and industrial (150), on the southeast by a service road (814), and on the southwest by a 7th Avenue (814).



LEGEND D-14

		ACRES
121	FIXED SINGLE FAMILY UNITS	7.12
140	COMMERCIAL AND SERVICES	4.47
186	COMMUNITY RECREATIONAL FACILITIES	.32
194/186	OTHER OPEN LAND/ COMMUNITY RECREATIONAL FACILITIES	13.24
427/186	LIVE OAK/COMMUNITY RECREATIONAL FACILITIES	24.44
	TOTAL ACRES	49.59

OTHER COVER TYPES SHOWN

131	FIXED SINGLE FAMILY UNITS
814	ROADS AND HIGHWAYS

LAND USE AND VEGETATION OF CANDIDATE SITE D-14, MIAMI-DADE COUNTY, FLORIDA

TAYLOR ENGINEERING INC.
9000 CYPRESS GREEN DRIVE, SUITE 200
JACKSONVILLE, FLORIDA 32256

Figure B-30
Land Use and Vegetation
of Candidate Site D-14
Miami-Dade County, Florida

PROJECT C1999-021
REVISION
SHEET
DATE Aug., 2000

SITE DATA SUMMARY SHEET

Name:	D-14
AKA:	Rolling Oaks Park
Site Use:	Multi-Reach Inland Storage
Comment:	Recreational Use -- Soccer fields, basketball and tennis courts, parking, and restroom facilities

LOCATION

County:	Dade	ICWW REACH MILEAGE:	336.41
Municipality:	Unincorporated	East/West of	West
Section/Township/Range:	2/52/41	Receiving Waterbody:	N/A
		FDEP	N/A

REACH

Reach Designation:	DA-1	Projected Dredging Frequency (yr):	20
Reach Length (mi):	3.99	50-yr Dredging Requirement (cy):	15,801
ICWW Mileage:	334.24 to 338.23	50-yr Storage Requirement (cy):	33,973
Cut/Station:	DA-1/0+00 to DA-8/0+00		
Geographic: (FDEP Classification)	530 ft South of Broward/Dade County Line (III) to Haulover Beach County Park (III)		

SITE PARAMETERS

Mapped Area (ac):	49.59	Storage Capacity (cy):	88,927
Containment Area (ac):	N/A	Dike Height (ft):	N/A
Impacted Area (ac):	6.89	Excavation Depth (ft):	N/A
Buffer Area (ac):	25.48	Existing Mean Site Elevation (ft):	10
N Buffer Width (ft):	350	Dike Volume (cy):	N/A
S Buffer Width (ft):	350	Max. Pumping Distance (mi):	N/A
E Buffer Width (ft):	100	Max. Barging Distance (mi):	N/A
W Buffer Width (ft):	350	Min. Distance from Waterway (mi):	6.12
Total Site Area (ac):	32.37		

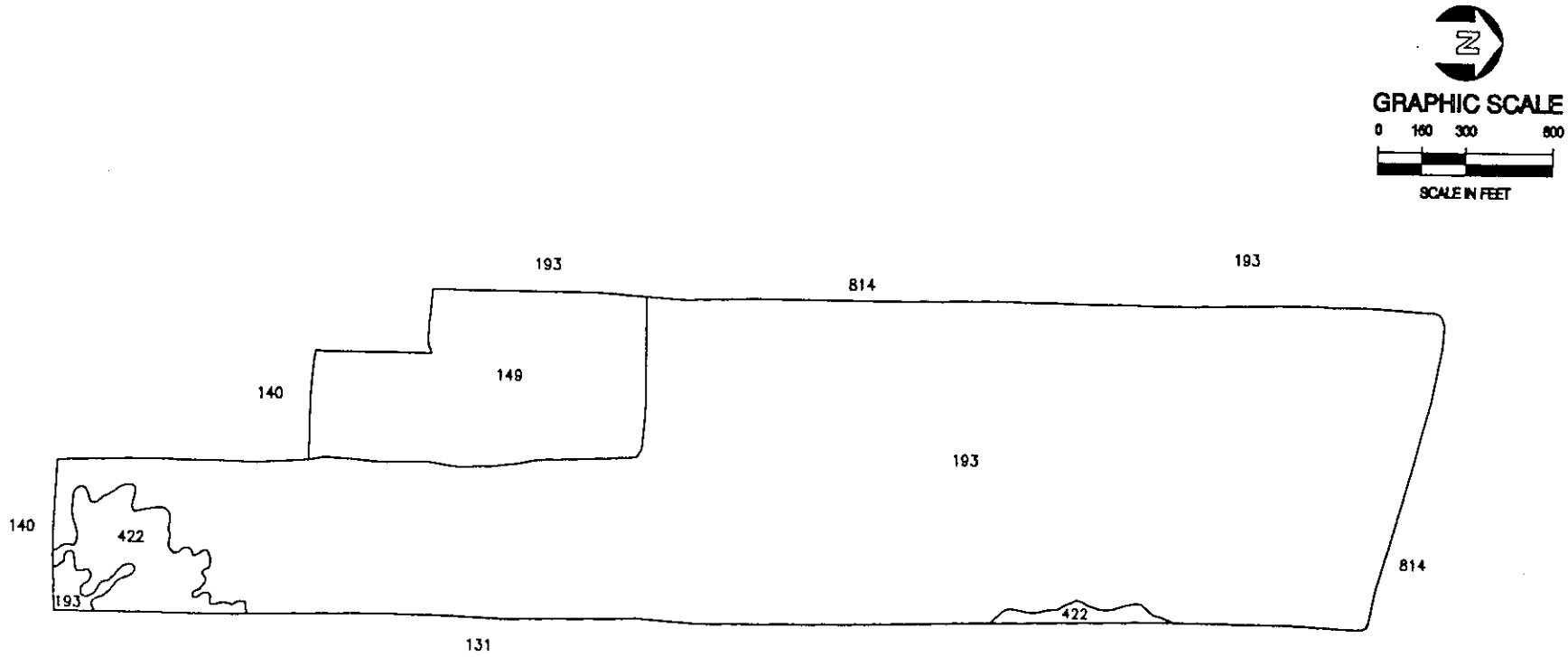
SITE

Public Access:	FL Turnpike, Miami Gardens Dr (183rd St), 17th Ave	Comprehensive Plan Designation:	Parks and Recreation
Road Easement (ft):	Not Required	Adjacent Land Use: Florida Turnpike (E); Fixed single-family units (N, W); Miami Gardens Drive (183rd Street) (S), 17th Ave (W)	
Pipeline Easement (ft):	N/A		
Deep Draft Access:	N/A	Land Use of Impacted Area: Community Recreational Facilities	
		Wetlands W/I Mapped Area (ac):	0.00
		Wetlands Impacted (ac):	0.00

Site Narrative:

This 50-acre site, D-14, is mainly Rolling Oaks Park, a small community park with various recreational facilities. The open areas are mapped as other open land/community recreational facilities (194/186). These areas contain soccer fields and open grassy fields. The wooded areas were mapped as live oak/community recreational facilities (427/186). Scattered within this map unit are basketball and tennis courts, parking, and restroom facilities. A commercial complex (140) occupies the center of the southern portion of Site D-14 and an area of fixed single-family units (121) occupies the southwestern corner.

The site is bounded on the north by fixed single-family units (131), on the east by the Florida Turnpike (814), on the south by Miami Gardens Drive (183rd Street), and on the west by 17th Avenue (814) and fixed single-family units (121).



LEGEND D-15A		ACRES
149	COMMERCIAL AND SERVICES UNDER CONSTRUCTION	13.02
193	URBAN LAND IN TRANSITION	86.44
422	BRAZILIAN PEPPER	4.13
	TOTAL ACRES	103.59

OTHER COVER TYPES SHOWN

131 FIXED SINGLE FAMILY UNITS
140 COMMERCIAL AND SERVICES
814 ROADS AND HIGHWAYS

LAND USE AND VEGETATION FOR CANDIDATE SITE D-15A, MIAMI-DADE COUNTY, FLORIDA

TAYLOR ENGINEERING INC.
9000 CYPRESS GREEN DRIVE, SUITE 200
JACKSONVILLE, FLORIDA 32256

Figure B-31
Land Use and Vegetation
of Candidate Site D-15A
Miami-Dade County, Florida

PROJECT C1999-021
REVISION
SHEET
DATE Sept., 2000

SITE DATA SUMMARY SHEET

Name:	D-15A
AKA:	
Site Use:	Multi-Reach Inland Storage
Comment:	Southeast of Ives Dairy Rd and State Road 817 intersection

LOCATION

County:	Dade	ICWW REACH MILEAGE:	335.82
Municipality:	Unincorporated	East/West of	West
Section/Township/Range:	3/52/41 & 4/52/41	Receiving Waterbody:	N/A
		FDEP	N/A

REACH

Reach Designation:	DA-1			Projected Dredging Frequency (yr):	20
Reach Length (mi):	3.99			50-yr Dredging Requirement (cy):	15,801
ICWW Mileage:	334.24	to	338.23	50-yr Storage Requirement (cy):	33,973
Cut/Station:	DA-1/0+00	to	DA-8/0+00		
Geographic: (FDEP Classification)	530 ft South of Broward/Dade County Line Haulover Beach County Park			(III) to (III)	

SITE PARAMETERS

Mapped Area (ac):	103.59	Storage Capacity (cy):	141,457
Containment Area (ac):	N/A	Dike Height (ft):	N/A
Impacted Area (ac):	10.96	Excavation Depth (ft):	N/A
Buffer Area (ac):	11.78	Existing Mean Site Elevation (ft):	10
N Buffer Width (ft):	100	Dike Volume (cy):	N/A
S Buffer Width (ft):	350	Max. Pumping Distance (mi):	N/A
E Buffer Width (ft):	100	Max. Barging Distance (mi):	N/A
W Buffer Width (ft):	100	Min. Distance from Waterway (mi):	7.33
Total Site Area (ac):	22.74		

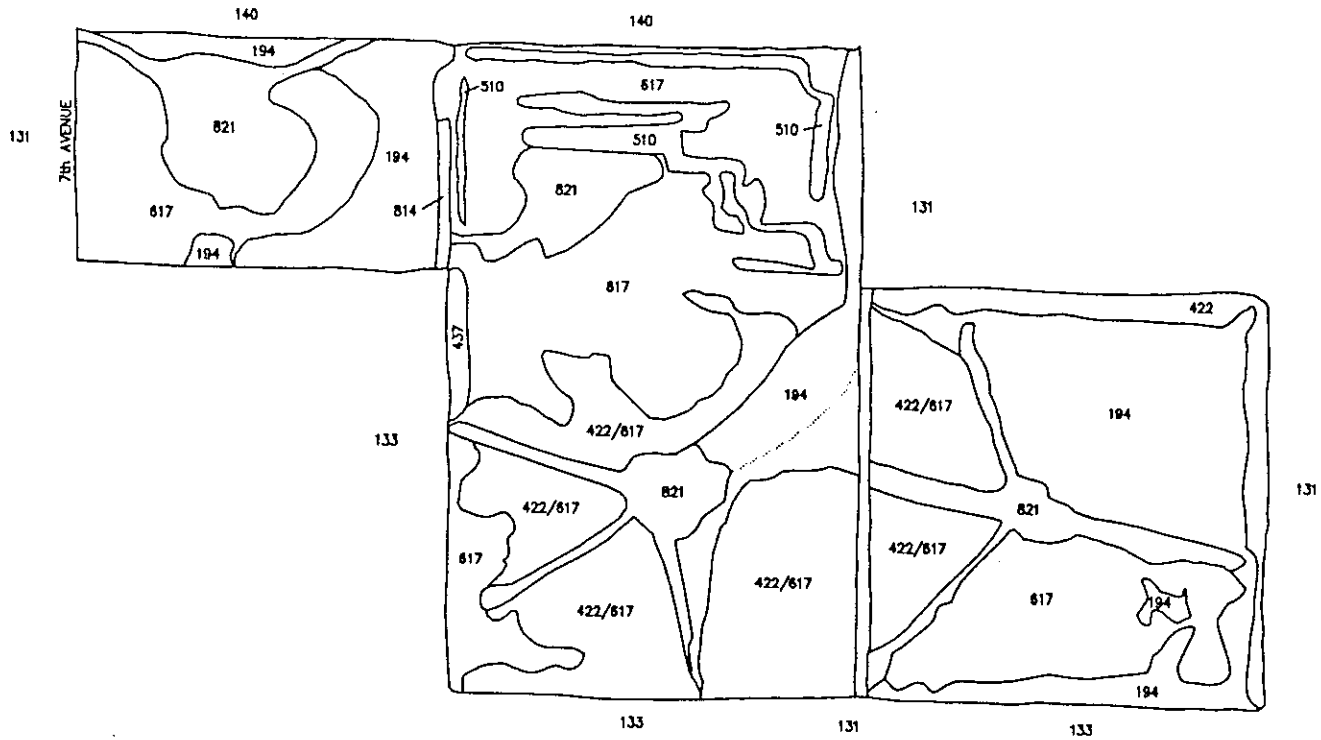
SITE

Public Access:	Ives Dairy Rd (199th St), 27th Ave (State Road 817)	Comprehensive Plan Designation:	Business & Office
Road Easement (ft):	Not Required	Adjacent Land Use:	Ives Dairy Rd (199th St) (N); Fixed single-family units (E); Commercial (S); 27th Ave (State Road 817) (W)
Pipeline Easement (ft):	N/A		
Deep Draft Access:	N/A	Land Use of Impacted Area:	Urban land in transition
		Wetlands W/I Mapped Area (ac):	0.00
		Wetlands Impacted (ac):	0.00

Site Narrative:

This 104-acre site, D-15A, is primarily urban land in transition without positive indicators of intended activity (193). The area is largely open sand with a small amount of slash pine (*Pinus elliottii*) surrounded by clumps of Brazilian pepper (*Schinus terebinthifolius*). A network of small jeep trails weaves through this community, apparently caused by off-road vehicle travel. The southern portion was mapped as Brazilian pepper (422). An area of commercial and services under construction (149) occurs in the southwestern portion of the site.

The site is bounded on the north by Ives Dairy Road (199th Street), on the east by fixed single-family units (131), the south by commercial (140), and the west by a 27th Avenue (State Road 817).



LEGEND D-16

		ACRES
194	OTHER OPEN LAND	27.01
422	BRAZILIAN PEPPER	3.59
422/617	BRAZILIAN PEPPER/MIXED, WETLAND, HARDWOODS PINE	25.24
437	AUSTRALIAN PINE	.63
510	STREAMS AND WATERWAYS	4.20
617	MIXED WETLAND HARDWOODS	38.31
814	ROADS AND HIGHWAYS	1.45
821	TRANSMISSION TOWERS	13.26
	TOTAL ACRES	113.69

OTHER COVER TYPES SHOWN

131	FIXED SINGLE FAMILY UNITS
133	MULTIPLE DWELLING UNITS, LOW RISE
140	COMMERCIAL AND SERVICES

GRAPHIC SCALE

0 300 600 1200

Scale: 1-600

LAND USE AND VEGETATION OF CANDIDATE SITE D-16, MIAMI-DADE COUNTY, FLORIDA

TAYLOR ENGINEERING INC.
9000 CYPRESS GREEN DRIVE, SUITE 200
JACKSONVILLE, FLORIDA 32256

Figure B-32
Land Use and Vegetation
of Candidate Site D-16
Miami-Dade County, Florida

PROJECT C1999-021
REVISION
SHEET
DATE Oct., 2000

SITE DATA SUMMARY SHEET

Name: D-16

AKA:

Site Use: Multi-Reach Inland Storage

Comment: Insufficient Upland Area -- Four large transmission towers surrounded by a mix of Brazilian Pepper/Mixed Wetland Hardwoods

LOCATION

County:	Dade	ICWW REACH MILEAGE:	334.74
Municipality:	Unincorporated	East/West of	West
Section/Township/Range:	36/51/41	Receiving Waterbody:	N/A
		FDEP	N/A

REACH

Reach Designation:	DA-1	Projected Dredging Frequency (yr):	20
Reach Length (mi):	3.99	50-yr Dredging Requirement (cy):	15,801
ICWW Mileage:	334.24 to 338.23	50-yr Storage Requirement (cy):	33,973
Cut/Station:	DA-1/0+00 to DA-8/0+00		
Geographic: (FDEP Classification)	530 ft South of Broward/Dade County Line (III) to Haulover Beach County Park (III)		

SITE PARAMETERS

Mapped Area (ac):	113.69	Storage Capacity (cy):	N/A
Containment Area (ac):	N/A	Dike Height (ft):	N/A
Impacted Area (ac):	Insufficient Area	Excavation Depth (ft):	N/A
Buffer Area (ac):	N/A	Existing Mean Site Elevation (ft):	5
N Buffer Width (ft):	N/A	Dike Volume (cy):	N/A
S Buffer Width (ft):	N/A	Max. Pumping Distance (mi):	N/A
E Buffer Width (ft):	N/A	Max. Barging Distance (mi):	N/A
W Buffer Width (ft):	N/A	Min. Distance from Waterway (mi):	5.60
Total Site Area (ac):	N/A		

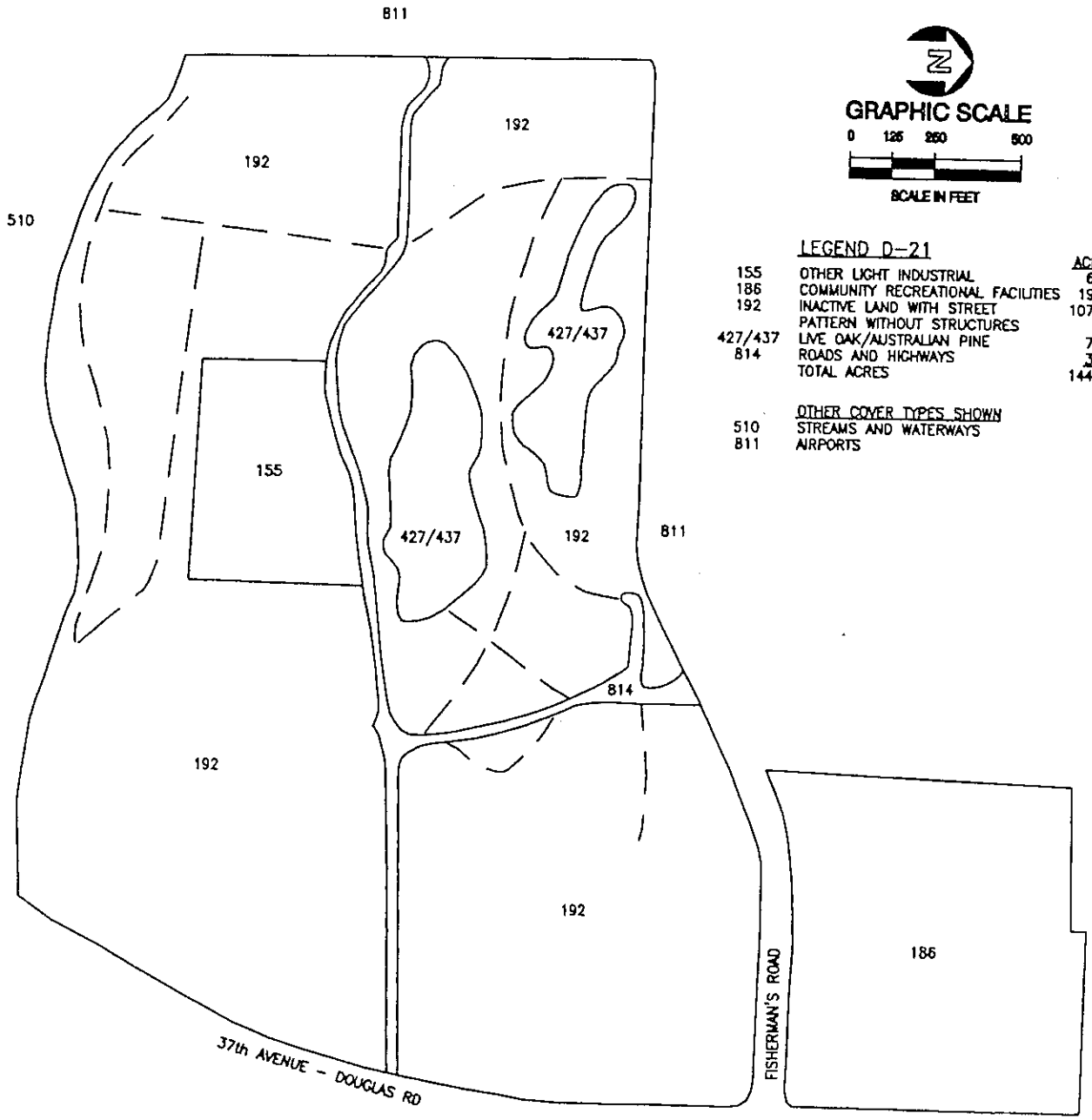
SITE

Public Access:	7th Ave	Comprehensive Plan Designation:	Residential (LD and LMD)
		Adjacent Land Use:	
Road Easement (ft):	Not Required	High-density residential (N, W); Commercial and fixed single-family units (E); Fixed single-family units (S)	
Pipeline Easement (ft):	N/A		
Deep Draft Access:	N/A	Land Use of Impacted Area:	
		N/A	
		Wetlands W/I Mapped Area (ac):	61.55
		Wetlands Impacted (ac):	0.00

Site Narrative:

This 114-acre site, D-16, is comprised of four large transmission towers (821) and the forested areas and other lands that surround them. The majority of the towers are surrounded by other open land (194), a mix of Brazilian pepper/mixed wetland hardwoods (422/617), and mixed wetland hardwoods (617). A number of the areas are primarily Brazilian pepper (*Schinus terebinthifolius*). However, due to the wetness and presence of some wetland canopy species like red maple (*Acer rubrum*), the area of mixed wetland hardwoods was combined with the Brazilian pepper. The area around one of the towers contains several ditches and canals (510). A small area of Australian pine (437) was mapped along the western edge of Site D-16.

The site is bounded on the north by residential high-density (133) and fixed single-family units (131), on the east by commercial (140) and fixed single-family units (131), on the south by fixed single-family units (131), and on the west by residential high-density (133).



LEGEND D-21

		ACRES
155	OTHER LIGHT INDUSTRIAL	6.58
186	COMMUNITY RECREATIONAL FACILITIES	19.09
192	INACTIVE LAND WITH STREET PATTERN WITHOUT STRUCTURES	107.87
427/437	LIVE OAK/AUSTRALIAN PINE	7.39
814	ROADS AND HIGHWAYS	3.42
	TOTAL ACRES	144.35

OTHER COVER TYPES SHOWN

510	STREAMS AND WATERWAYS
811	AIRPORTS

LAND USE AND VEGETATION OF CANDIDATE SITE D-21, MIAMI-DADE COUNTY, FLORIDA

TAYLOR ENGINEERING INC.
9000 CYPRESS GREEN DRIVE, SUITE 200
JACKSONVILLE, FLORIDA 32256

Figure B-33
Land Use and Vegetation
of Candidate Site D-21
Miami-Dade County, Florida

PROJECT C1999-021
REVISION
SHEET
DATE Aug., 2000

SITE DATA SUMMARY SHEET

Name: D-21

AKA:

Site Use: Multi-Reach Inland Storage

Comment: Undeveloped land adjacent to Opa-Locka Airport

LOCATION

County:	Dade	ICWW REACH MILEAGE:	339.6
Municipality:	Unincorporated	East/West of	West
Section/Township/Range:	20/52/41 & 21/52/41	Receiving Waterbody:	N/A
		FDEP	N/A

REACH

Reach Designation:	DA-2	Projected Dredging Frequency (yr):	5
Reach Length (mi):	4.53	50-yr Dredging Requirement (cy):	469,672
ICWW Mileage:	338.23 to 342.76	50-yr Storage Requirement (cy):	1,009,795
Cut/Station:	DA-8/0+00 to DA-9/178+50		
Geographic: (FDEP Classification)	Haulover Beach County Park Kennedy Causeway (NE 79th Street)	(III) to (III)	

SITE PARAMETERS

Mapped Area (ac):	144.35	Storage Capacity (cy):	652,030
Containment Area (ac):	N/A	Dike Height (ft):	N/A
Impacted Area (ac):	50.52	Excavation Depth (ft):	N/A
Buffer Area (ac):	14.23	Existing Mean Site Elevation (ft):	5
N Buffer Width (ft):	100	Dike Volume (cy):	N/A
S Buffer Width (ft):	100	Max. Pumping Distance (mi):	N/A
E Buffer Width (ft):	100	Max. Barging Distance (mi):	N/A
W Buffer Width (ft):	100	Min. Distance from Waterway (mi):	7.91
Total Site Area (ac):	64.75		

SITE

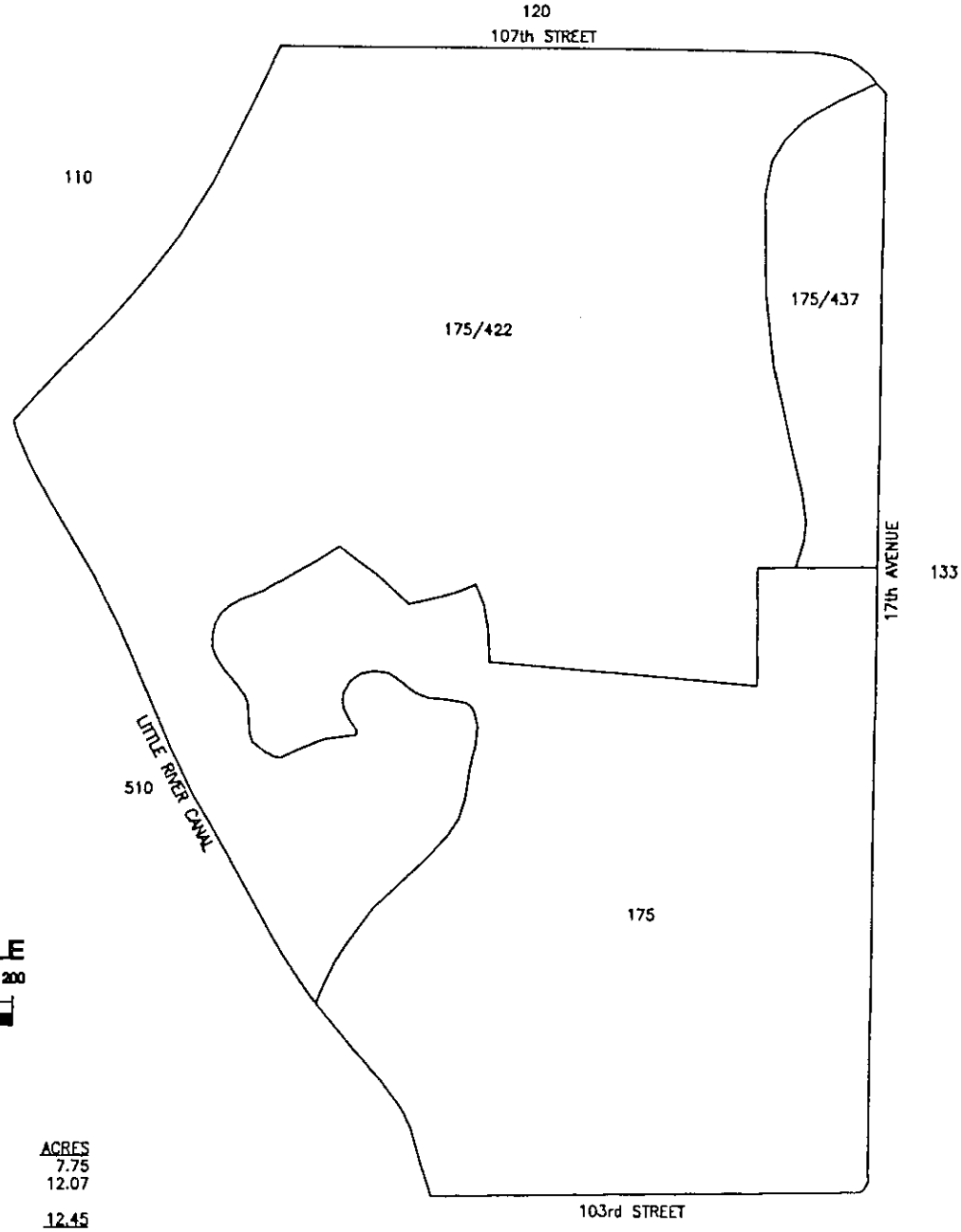
Public Access:	Fishermen's Rd, Douglas Rd (37th Ave)	Comprehensive Plan Designation:	Industrial and Office
		Adjacent Land Use:	
Road Easement (ft):	Not Required	Opa-Locka Airport (N, W); Douglas Rd (E); Opa-Locka Canal (S)	
Pipeline Easement (ft):	N/A		
Deep Draft Access:	N/A	Land Use of Impacted Area:	
		Inactive land with street pattern	
		Wetlands W/I Mapped Area (ac):	0.00
		Wetlands Impacted (ac):	0.00

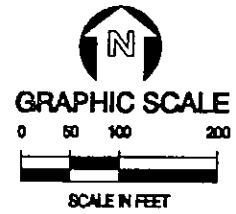
Site Narrative:

Site D-21 is a 144-acre mostly undeveloped area adjacent to the Opa–Locka Airport. Fisherman's Road bisects the site. The parcel north of Fisherman's Road is in a recreational park (186) containing basketball courts and baseball fields. Scattered trees in the area include live oak and fig trees (*Ficus* sp.). The larger southern parcel contains one existing business (155), undeveloped grassy areas, paved and unpaved roads (814), and two large stands of trees (427/437). The tree stands contain large live oaks (*Quercus virginiana*) and some Australian pine (*Casuarina equisetifolia*). The understory of this area is mowed. The majority of the remaining area within D-21 is mapped as inactive land with street pattern (192) and is maintained by mowing the low grasses and herbs that are present. A burrowing owl was observed on-site in the mowed grassy area in the eastern part of this area. The burrowing owl is listed by the State of Florida as a Species of Special Concern.

General site indications are that Site D-21 is used or there are plans to use it for light industrial development or aviation related industry. Although most of the site is currently undeveloped, old concrete pads from former uses are evident on the property. Buildings associated with the airport's military use during World War II may have once been located in this area.

Adjacent land uses include an airport to the north and west (811), Douglas Road (814) to the east, and a canal (510) to the south.





	LEGEND D-23	ACRES
175	GOVERNMENTAL	7.75
175/422	GOVERNMENTAL/ BRAZILIAN PEPPER	12.07
175/437	GOVERNMENTAL/ AUSTRALIAN PINE	12.45
	TOTAL ACRES	32.27

OTHER COVER TYPES SHOWN

100	RESIDENTIAL, LOW DENSITY
120	RESIDENTIAL, MEDIUM DENSITY
133	MULTIPLE DWELLING UNITS, LOW RISE
510	STREAMS AND WATERWAYS

LAND USE AND VEGETATION OF CANDIDATE SITE, D-23, MIAMI-DADE COUNTY, FLORIDA

TAYLOR ENGINEERING INC.
9000 CYPRESS GREEN DRIVE, SUITE 200
JACKSONVILLE, FLORIDA 32256

Figure B-34
Land Use and Vegetation
of Candidate Site D-23
Miami-Dade County, Florida

PROJECT C1999-021
REVISION
SHEET
DATE Aug., 2000

SITE DATA SUMMARY SHEET

Name:	D-23
AKA:	Miami Shores Public Works Complex
Site Use:	Multi-Reach Inland Storage
Comment:	Insufficient Undeveloped Area -- Small parcel, 32-acres, adjacent to Little River Canal

LOCATION

County:	Dade	ICWW REACH MILEAGE:	342.12
Municipality:	Unincorporated	East/West of	West
Section/Township/Range:	34/52/41	Receiving Waterbody:	N/A
		FDEP	N/A

REACH

Reach Designation:	DA-2	Projected Dredging Frequency (yr):	5
Reach Length (mi):	4.53	50-yr Dredging Requirement (cy):	469,672
ICWW Mileage:	338.23 to 342.76	50-yr Storage Requirement (cy):	1,009,795
Cut/Station:	DA-8/0+00 to DA-9/178+50		
Geographic: (FDEP Classification)	Haulover Beach County Park Kennedy Causeway (NE 79th Street)	(III) to (III)	

SITE PARAMETERS

Mapped Area (ac):	32.27	Storage Capacity (cy):	N/A
Containment Area (ac):	N/A	Dike Height (ft):	N/A
Impacted Area (ac):	Insufficient Area	Excavation Depth (ft):	N/A
Buffer Area (ac):	N/A	Existing Mean Site Elevation (ft):	5
N Buffer Width (ft):	N/A	Dike Volume (cy):	N/A
S Buffer Width (ft):	N/A	Max. Pumping Distance (mi):	N/A
E Buffer Width (ft):	N/A	Max. Barging Distance (mi):	N/A
W Buffer Width (ft):	N/A	Min. Distance from Waterway (mi):	4.45
Total Site Area (ac):	N/A		

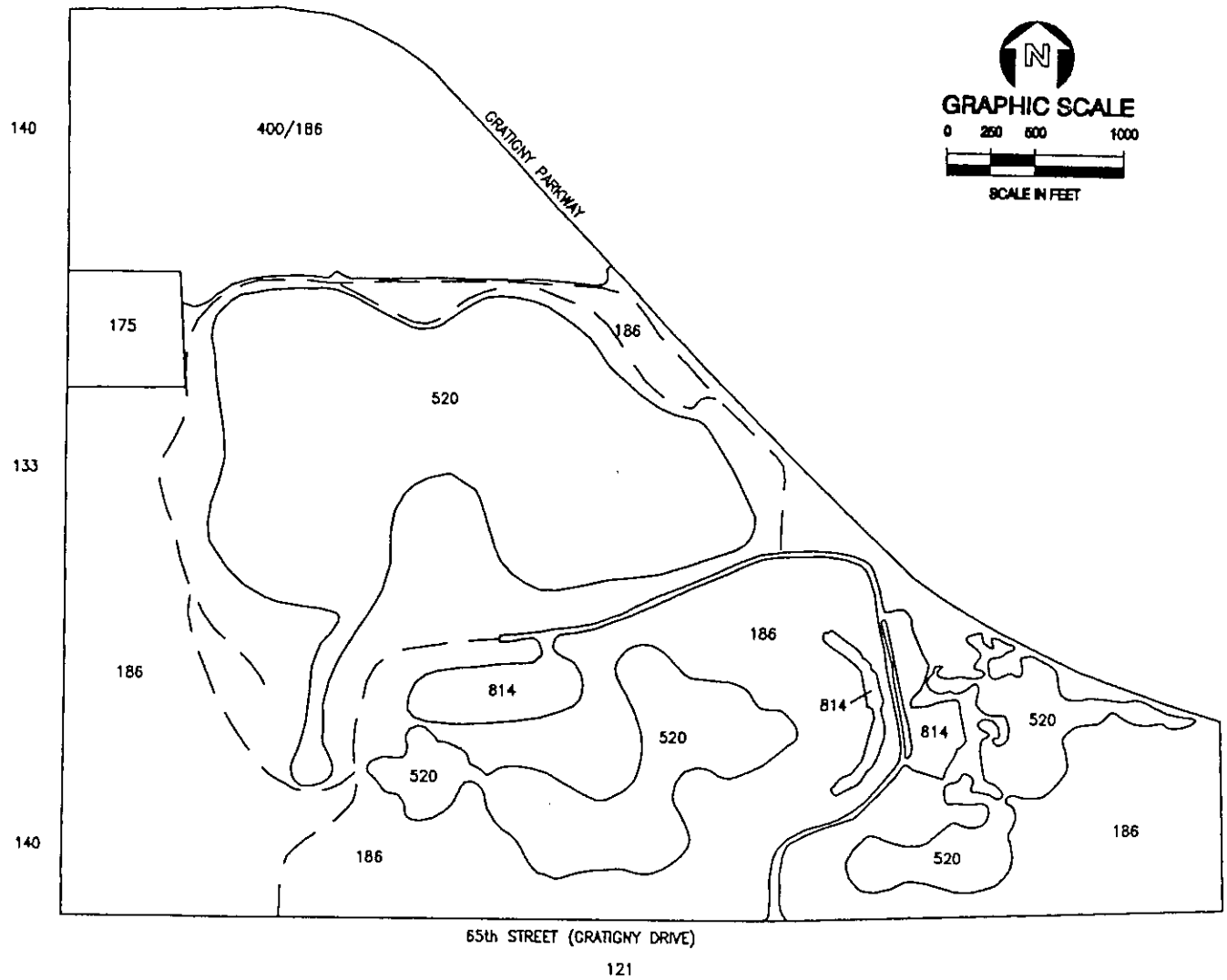
SITE

Public Access:	103rd St, 17th Ave, 107th St	Comprehensive Plan Designation:	Residential (LMD)
		Adjacent Land Use:	
Road Easement (ft):	Not Required	Single-family residential (N, NW); Multi-family residential (E); 103rd St (S); Little River Canal (W)	
Pipeline Easement (ft):	N/A		
		Land Use of Impacted Area:	
Deep Draft Access:	N/A	N/A	
		Wetlands W/I Mapped Area (ac):	0.00
		Wetlands Impacted (ac):	0.00

Site Narrative:

Site D-23 is a 32-acre parcel that contains the Miami Shores Public Works Complex. The site is fenced and appears to be owned by the municipality of Miami Shores. Currently, only the southern part of the property is developed (175). The southern potion of Site D-23 contains several buildings and areas used for truck storage. The vegetation and landscaping around the developed part of the property includes lawn grasses, bamboo, cabbage palm (*Sabal palmetto*), Australian pine (*Casuarina equisetifolia*), a variety of other palms, and slash pine (*Pinus elliottii*). Access to the undeveloped portion of the property was not possible, however observations from the nearby streets and the aerial photographs showed that Australian pines are located in the northeast corner of the property and Brazilian peppers are located over much of the remaining property. It appears that the site is used for the disposal of some type of fill material with vegetation such as grasses and Brazilian pepper (*Schinus terebinthifolius*) covering this material.

Adjacent land uses include residential (110 and 120) to the northwest and north, multi-family residential (133) to the east, 103rd Street (814) to the south, and the Little River Canal (510) to the west.



	LEGEND D-26	ACRES
175	GOVERNMENTAL	9.61
186	COMMUNITY RECREATIONAL FACILITIES	243.53
400/186	UPLAND FORESTS/ COMMUNITY RECREATIONAL FACILITIES	84.36
520	LAKES	136.72
814	ROADS AND HIGHWAYS	16.49
	TOTAL ACRES	490.71

OTHER COVER TYPES SHOWN

121	FIXED SINGLE FAMILY UNITS, MEDIUM DENSITY
133	MULTIPLE DWELLING UNITS, HIGH DENSITY
140	COMMERCIAL AND SERVICES

— — ROADS

LAND USE AND VEGETATION OF CANDIDATE SITE D-26, MIAMI-DADE COUNTY, FLORIDA

TAYLOR ENGINEERING INC.
9000 CYPRESS GREEN DRIVE, SUITE 200
JACKSONVILLE, FLORIDA 32256

Figure B-35
Land Use and Vegetation
of Candidate Site D-26
Miami-Dade County, Florida

PROJECT C1999-021
REVISION
SHEET
DATE Sept., 2000

SITE DATA SUMMARY SHEET

Name:	D-26
AKA:	Amelia Earhart Park
Site Use:	Multi-Reach Inland Storage
Comment:	Recreational Use -- Picnic areas, swimming beach, duck pond, and playgrounds

LOCATION

County:	Dade	ICWW REACH MILEAGE:	340.71
Municipality:	Unincorporated	East/West of	West
Section/Township/Range:	29/52/41 & 30/52/41	Receiving Waterbody:	N/A
		FDEP	N/A

REACH

Reach Designation:	DA-2	Projected Dredging Frequency (yr):	5
Reach Length (mi):	4.53	50-yr Dredging Requirement (cy):	469,672
ICWW Mileage:	338.23 to 342.76	50-yr Storage Requirement (cy):	1,009,795
Cut/Station:	DA-8/0+00 to DA-9/178+50		
Geographic: (FDEP Classification)	Haulover Beach County Park Kennedy Causeway (NE 79th Street)	(III) to (III)	

SITE PARAMETERS

Mapped Area (ac):	490.71	Storage Capacity (cy):	625,201
Containment Area (ac):	N/A	Dike Height (ft):	N/A
Impacted Area (ac):	48.44	Excavation Depth (ft):	N/A
Buffer Area (ac):	33.19	Existing Mean Site Elevation (ft):	5
N Buffer Width (ft):	100	Dike Volume (cy):	N/A
S Buffer Width (ft):	350	Max. Pumping Distance (mi):	N/A
E Buffer Width (ft):	100	Max. Barging Distance (mi):	N/A
W Buffer Width (ft):	100	Min. Distance from Waterway (mi):	8.65
Total Site Area (ac):	81.63		

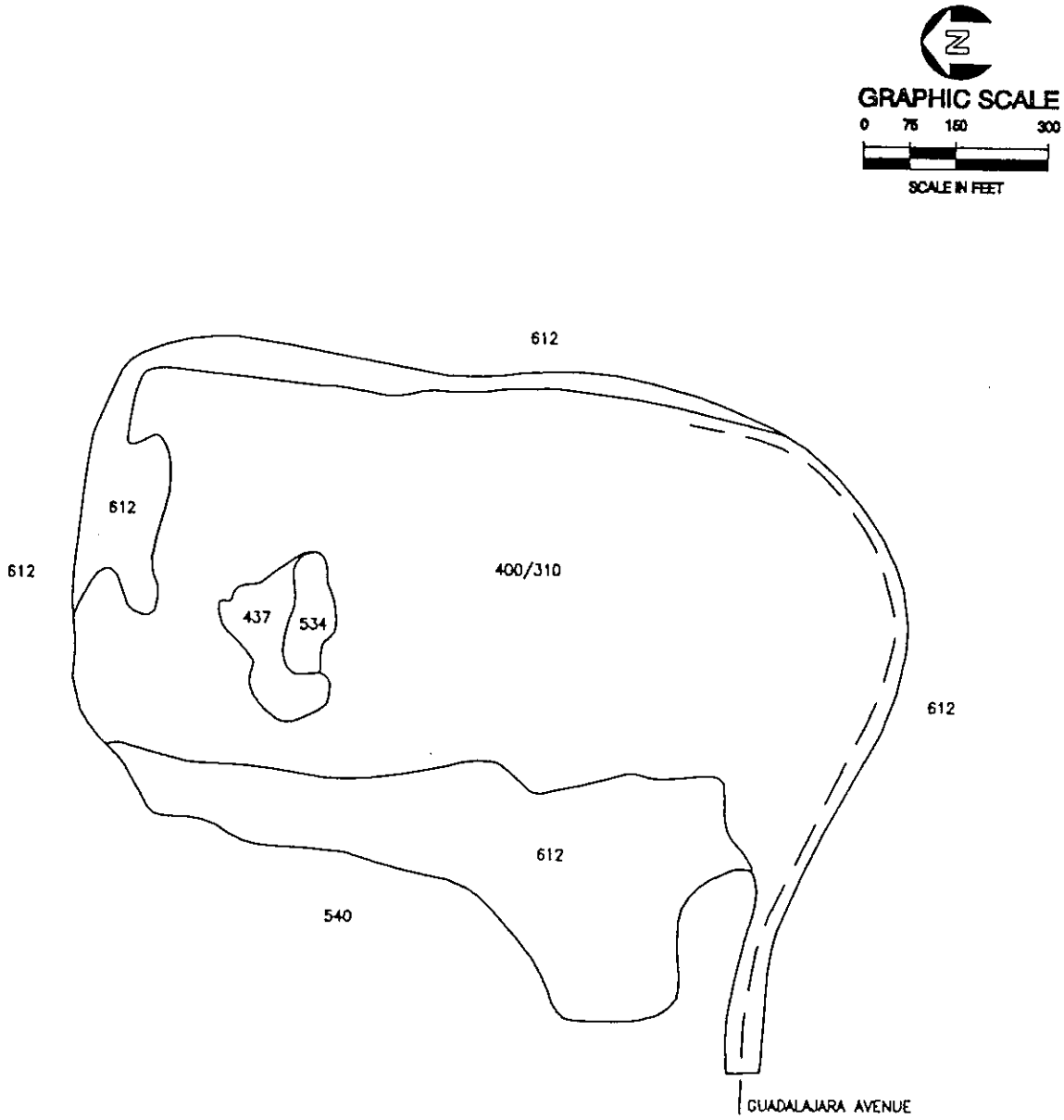
SITE

Public Access:	65th St (Gratigny Dr), Gratigny Pkwy	Comprehensive Plan Designation:	Parks and Recreation
		Adjacent Land Use:	
Road Easement (ft):	Not Required	Gratigny Pkwy (N, E); 65th St and Single-family units (S); Commercial and Services and Multi-family homes (W)	
Pipeline Easement (ft):	N/A		
		Land Use of Impacted Area:	
Deep Draft Access:	N/A	Upland forests/Community recreational facilities	
		Wetlands W/I Mapped Area (ac):	0.00
		Wetlands Impacted (ac):	0.00

Site Narrative:

Site D-26 is a 490-acre regional park known as Amelia Earhart Park. It contains a variety of recreational facilities including picnic areas, a swimming beach, a duck pond, a farm, and playgrounds (186). Access to the western part of the park was blocked, however construction of roads and lakes appeared to be nearing completion. Numerous lakes (520) dotted the park landscape. Vegetation in the park was mostly restricted to lawn grasses and scattered trees and shrubs including live oak (*Quercus virginiana*), coconut palm (*Cocos nucifera*), gumbo-limbo (*Bursera simaruba*), Australian pine (*Casuarina equisetifolia*), and several other flowering ornamental trees.

Adjacent land uses include Gratigny Parkway (814) to the north, 65th Street (Gratigny Drive) and fixed single-family units (121) to the south, commercial and services (140) and multi-family homes (133) to the west.



	LEGEND D-27	ACRES
400/310	UPLAND FORESTS/HERBACEOUS	18.24
437	AUSTRALIAN PINE	.54
534	RESERVOIRS LESS THAN 10 ACRES WHICH ARE DOMINANT FEATURES	.29
612	MANGROVE SWAMPS	6.68
	TOTAL ACRES	25.75

OTHER COVER TYPES SHOWN

540 BAYS AND ESTUARIES

— — ROADS

LAND USE AND VEGETATION FOR CANDIDATE SITE D-27, MIAMI-DADE COUNTY, FLORIDA

TAYLOR ENGINEERING INC.
9000 CYPRESS GREEN DRIVE, SUITE 200
JACKSONVILLE, FLORIDA 32256

Figure B-36
Land Use and Vegetation
of Candidate Site D-27
Miami-Dade County, Florida

PROJECT C1999-021
REVISION
SHEET
DATE Aug., 2000

SITE DATA SUMMARY SHEET

Name:	D-27
AKA:	Chapman Field Park
Site Use:	Dewatering & Short-Term Storage (Single Operation)
Comment:	26-acre island, possibly a previous dredged material management area, connected to the mainland via an unpaved limerock road

LOCATION

County:	Dade	ICWW REACH MILEAGE:	358.16
Municipality:	Coral Gables	East/West of	West
Section/Township/Range:	19/55/41	Receiving Waterbody:	Biscayne Bay
		FDEP	III

REACH

Reach Designation:	DA-4	Projected Dredging Frequency (yr):	20
Reach Length (mi):	15.75	50-yr Dredging Requirement (cy):	0
ICWW Mileage:	351.12 to 366.87	50-yr Storage Requirement (cy):	0
Cut/Station:	D-3/57+80 to D-5/0+00		
Geographic: (FDEP Classification)	Rickenbacker Causeway Black Point	(III) to (III)	

SITE PARAMETERS

Mapped Area (ac):	25.75	Storage Capacity (cy):	17,159
Containment Area (ac):	3.55	Dike Height (ft):	6
Impacted Area (ac):	5.68	Excavation Depth (ft):	4.24
Buffer Area (ac):	5.61	Existing Mean Site Elevation (ft):	5
N Buffer Width (ft):	150	Dike Volume (cy):	11,317
S Buffer Width (ft):	150	Max. Pumping Distance (mi):	12.95
E Buffer Width (ft):	150	Max. Barging Distance (mi):	N/A
W Buffer Width (ft):	150	Min. Distance from Waterway (mi):	4.09
Total Site Area (ac):	11.29		

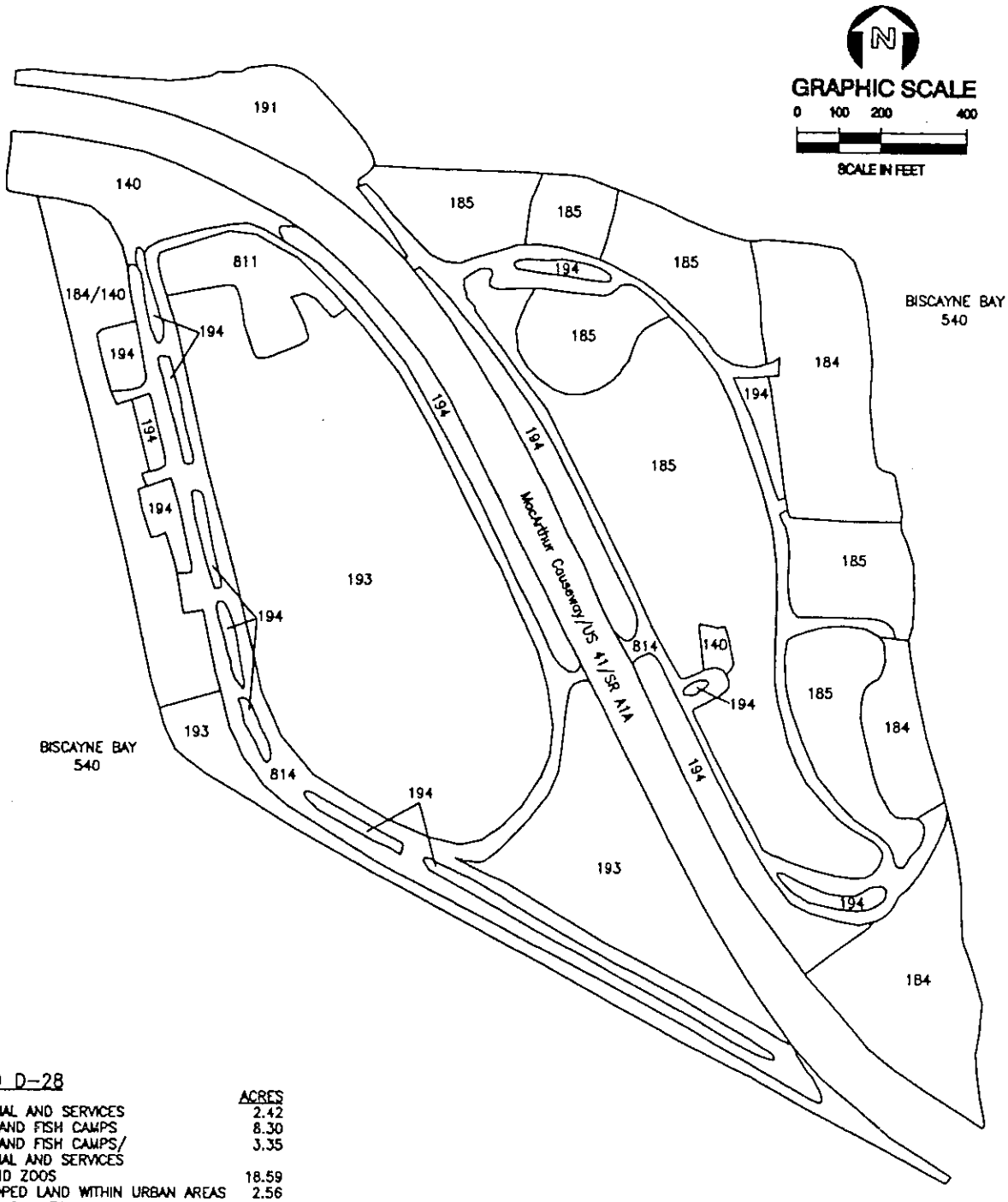
SITE

Public Access:	Guadalajara Ave	Comprehensive Plan Designation:	Parks and Recreation
		Adjacent Land Use:	
Road Easement (ft):	Not Required	Mangrove swamp (N, E, S); Bars and Estuaries (W)	
Pipeline Easement (ft):	650		
		Land Use of Impacted Area:	
Deep Draft Access:	No	Upland forests/Herbaceous	
		Wetlands W/I Mapped Area (ac):	6.68
		Wetlands Impacted (ac):	0.00

Site Narrative:

Site D-27 is a 26-acre island connected to the mainland via an unpaved limerock causeway. The island itself may be the product of dredging in view of the fact that early aerial photos show the property as barren. The main portion of the property is covered with an undefined mixture of early successional trees and groundcovers (400/310) including vegetation such as Brazilian pepper (*Schinus terebinthifolius*), Australian pine (*Casuarina equisetifolia*), beggar-ticks (*Bidens* sp.), extensive areas of vines, castor bean (*Ricinus communis*), ragweed (*Ambrosia artemisiifolia*), earleaf acacia (*Acacia auriculiformis*), and sedge (*Cyperus* sp.). In some locations, the ground was very spongy. In the northern half of the island, a steep-sided pit (534) had been dug and was bordered by a stand of Australian pine on the northern side of the pit (437).

Except for the narrow causeway that leads to the island, Site D-27 is completely surrounded by mangrove swamp (612) or bays and estuaries (540).



LEGEND D-28

		ACRES
140	COMMERCIAL AND SERVICES	2.42
184	MARINAS AND FISH CAMPS	8.30
184/140	MARINAS AND FISH CAMPS/ COMMERCIAL AND SERVICES	3.35
185	PARKS AND ZOOS	18.59
191	UNDEVELOPED LAND WITHIN URBAN AREAS	2.56
193	URBAN LAND IN TRANSITION	25.11
194	OPEN OTHER LAND	7.11
811	AIRPORTS	1.50
814	ROADS AND HIGHWAYS	10.29
	TOTAL ACRES	79.23

OTHER COVER TYPES SHOWN

540	BAYS AND ESTUARIES

LAND USE AND VEGETATION FOR CANDIDATE SITE D-28, MIAMI-DADE COUNTY, FLORIDA

TAYLOR ENGINEERING INC.
9000 CYPRESS GREEN DRIVE, SUITE 200
JACKSONVILLE, FLORIDA 32256

Figure B-37
Land Use and Vegetation
of Candidate Site D-28
Miami-Dade County, Florida

PROJECT C1999-021
REVISION
SHEET
DATE Aug., 2000

SITE DATA SUMMARY SHEET

Name:	D-28
AKA:	Watson Island Park
Site Use:	Dewatering & Short-Term Storage (Single Operation)
Comment:	Recreational Use -- Marinas, Ichimura Miami Japan Gardens, and Airport

LOCATION

County:	Dade	ICWW REACH MILEAGE:	348.43
Municipality:	Miami	East/West of	East
Section/Township/Range:	32/53/42 & 36/54/42	Receiving Waterbody:	N/A
		FDEP	N/A

REACH

Reach Designation:	DA-3	Projected Dredging Frequency (yr):	20
Reach Length (mi):	8.36	50-yr Dredging Requirement (cy):	17,524
ICWW Mileage:	342.76 to 351.12	50-yr Storage Requirement (cy):	37,677
Cut/Station:	DA-9/178+50 to D-3/57+80		
Geographic: (FDEP Classification)	Kennedy Causeway (NE 79th Street) Rickenbacker Causeway	(III) to (III)	

SITE PARAMETERS

Mapped Area (ac):	79.23	Storage Capacity (cy):	46,044
Containment Area (ac):	7.38	Dike Height (ft):	7.0
Impacted Area (ac):	11.16	Excavation Depth (ft):	4.94
Buffer Area (ac):	9.58	Existing Mean Site Elevation (ft):	5
N Buffer Width (ft):	150	Dike Volume (cy):	26,591
S Buffer Width (ft):	150	Max. Pumping Distance (mi):	4.77
E Buffer Width (ft):	150	Max. Barging Distance (mi):	N/A
W Buffer Width (ft):	150	Min. Distance from Waterway (mi):	0.25
Total Site Area (ac):	20.74		

SITE

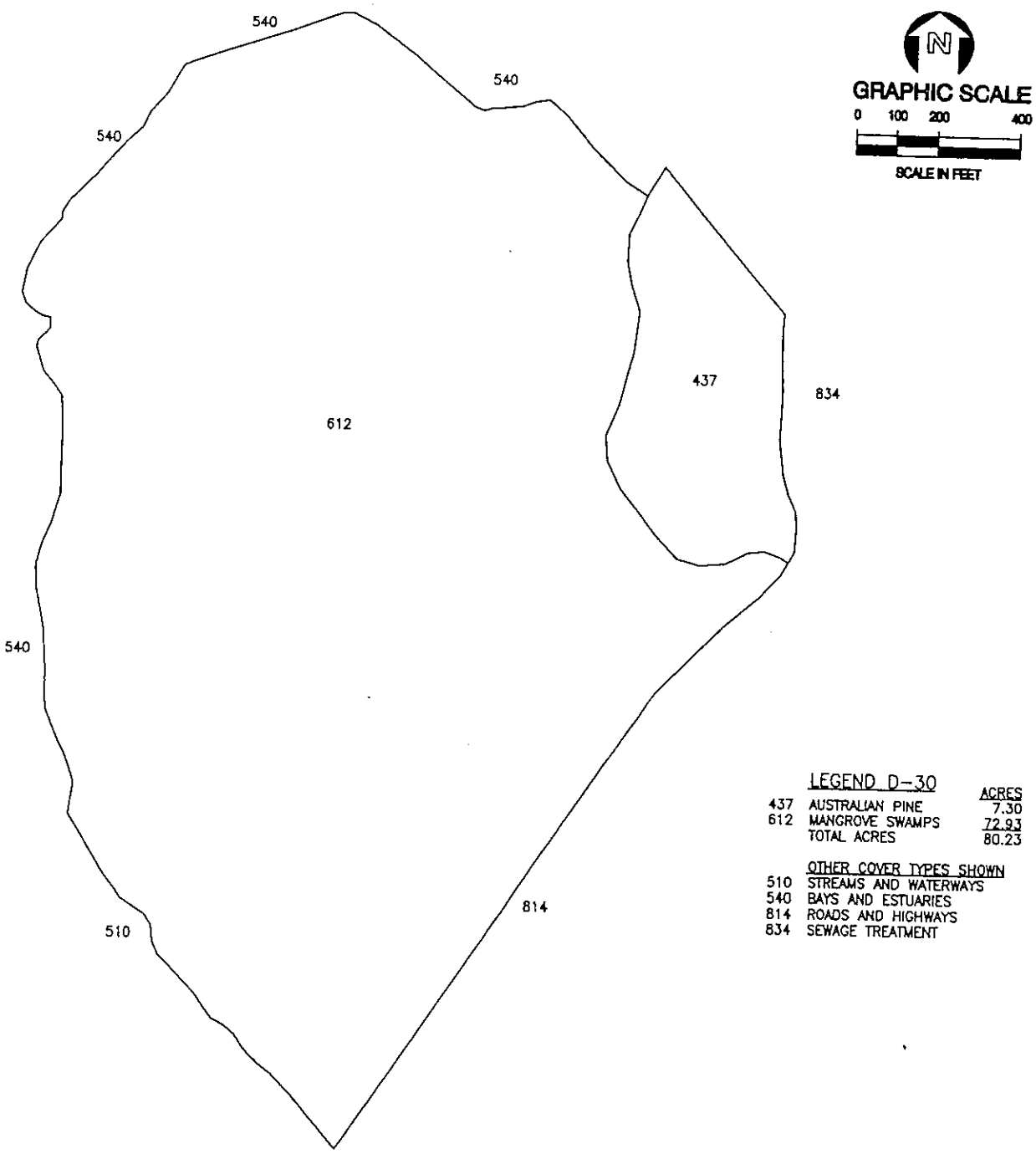
Public Access:	MacArthur Causeway (US Highway 41/State Road A1A)	Comprehensive Plan Designation:	Parks and Recreation
		Adjacent Land Use:	
Road Easement (ft):	Not Required	Biscayne Bay (N, E, S, W)	
Pipeline Easement (ft):	150		
		Land Use of Impacted Area:	
Deep Draft Access:	N/A	Urban land in transition	
		Wetlands W/I Mapped Area (ac):	0.00
		Wetlands Impacted (ac):	0.00

Site Narrative:

MacArthur Causeway bisects Site D-28. The eastern side of this 79-acre site is Watson Park (185). The park is relatively undeveloped with lots of open space, an internal road system (814), and several marinas (184). A small garden, Ichimura Miami Japan Gardens (185), is located on the northern end of the island. Undeveloped areas of open other land (194) are located within the road medians and other small areas. Additionally, on the northwest end of the site there is a larger, undeveloped area (191).

The western portion of Site D-28 is principally composed of large sections of open land mapped as urban land in transition without positive indicators of intended activity (193). The portion of the site along the water is primarily marinas and commercial (185/140), and there is a large road network (814) accessing the entire site, but concentrated along the waterfront. The road medians and other small open areas are mapped as other open lands (194).

The entire site is located on a constructed dredged material island and is surrounded by Biscayne Bay (540).



LEGEND D-30

		ACRES
437	AUSTRALIAN PINE	7.30
612	MANGROVE SWAMPS	72.93
	TOTAL ACRES	80.23

OTHER COVER TYPES SHOWN

510	STREAMS AND WATERWAYS
540	BAYS AND ESTUARIES
814	ROADS AND HIGHWAYS
834	SEWAGE TREATMENT

LAND USE AND VEGETATION OF CANDIDATE SITE D-30, MIAMI-DADE COUNTY, FLORIDA

TAYLOR ENGINEERING INC.
9000 CYPRESS GREEN DRIVE, SUITE 200
JACKSONVILLE, FLORIDA 32256

Figure B-38
Land Use and Vegetation
of Candidate Site D-30
Miami-Dade County, Florida

PROJECT C1999-021
REVISION
SHEET
DATE Aug., 2000

SITE DATA SUMMARY SHEET

Name: D-30

AKA: Western Virginia Key

Site Use: Dewatering & Long-Term Storage (Multiple Operation)

Comment: Insufficient Upland Area -- Site consists of mostly mangrove swamp, 72.93 acres, bordering Biscayne Bay

LOCATION

County:	Dade	ICWW REACH MILEAGE:	351.25
Municipality:	Miami	East/West of	East
Section/Township/Range:	16/54/42 & 17/54/42	Receiving Waterbody:	N/A
		FDEP	N/A

REACH

Reach Designation:	DA-4	Projected Dredging Frequency (yr):	20
Reach Length (mi):	15.75	50-yr Dredging Requirement (cy):	0
ICWW Mileage:	351.12 to 366.87	50-yr Storage Requirement (cy):	0
Cut/Station:	D-3/57+80 to D-5/0+00		
Geographic: (FDEP Classification)	Rickenbacker Causeway Black Point	(III) to (III)	

SITE PARAMETERS

Mapped Area (ac):	80.23	Storage Capacity (cy):	N/A
Containment Area (ac):	Insufficient Area	Dike Height (ft):	N/A
Impacted Area (ac):	N/A	Excavation Depth (ft):	N/A
Buffer Area (ac):	N/A	Existing Mean Site Elevation (ft):	5
N Buffer Width (ft):	N/A	Dike Volume (cy):	N/A
S Buffer Width (ft):	N/A	Max. Pumping Distance (mi):	19.02
E Buffer Width (ft):	N/A	Max. Barging Distance (mi):	N/A
W Buffer Width (ft):	N/A	Min. Distance from Waterway (mi):	1.59
Total Site Area (ac):	N/A		

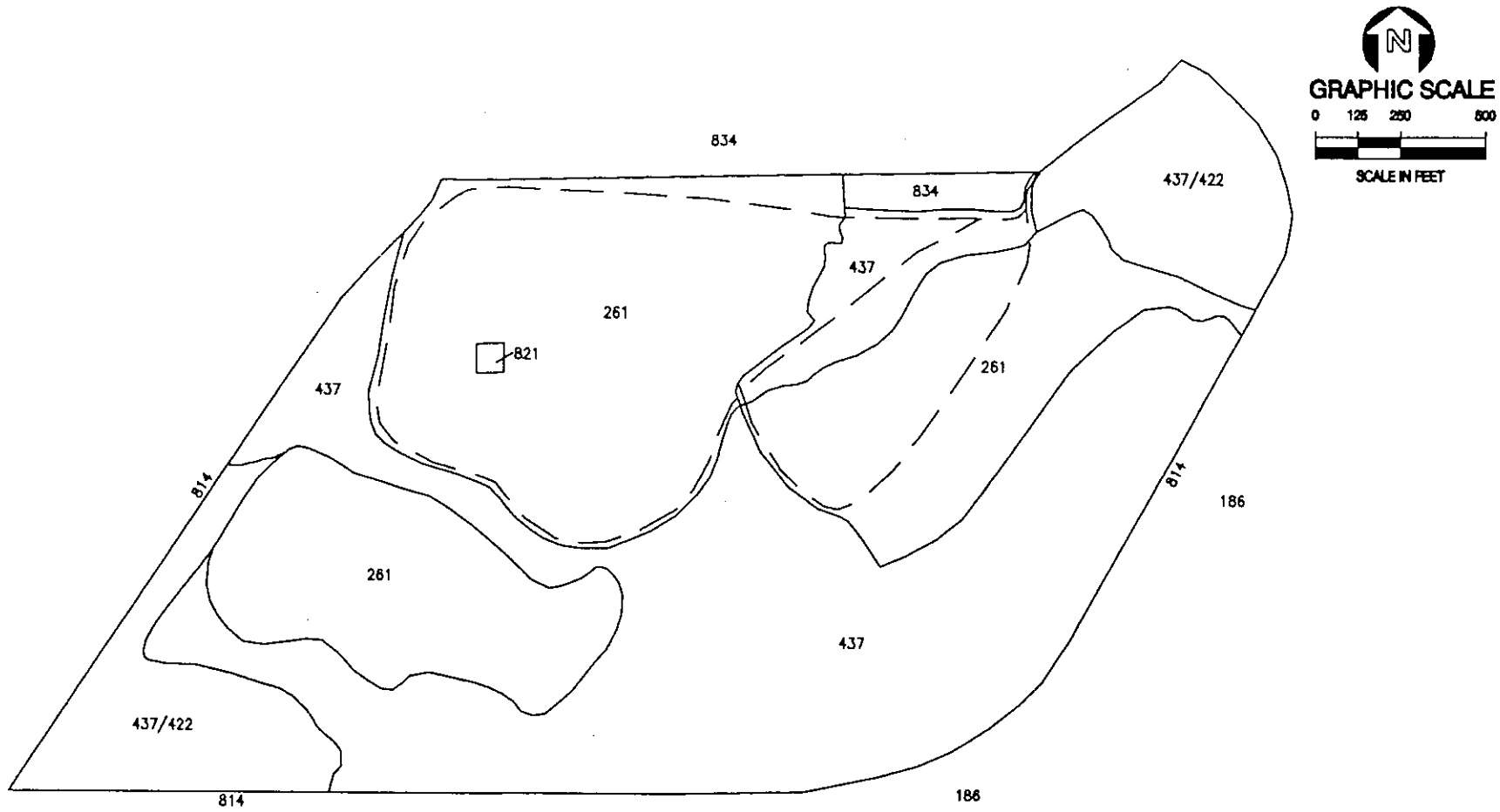
SITE

Public Access:	Rickenbacker Causeway	Comprehensive Plan Designation:	Environmentally Protected Parks
		Adjacent Land Use:	
Road Easement (ft):	Not Required	Bays and Estuaries (N, W, SW); Sewage treatment facilities (NE); Roads (E); Streams and Waterways (S)	
Pipeline Easement (ft):	Not Required	Land Use of Impacted Area:	
Deep Draft Access:	N/A	N/A	
		Wetlands W/I Mapped Area (ac):	72.93
		Wetlands Impacted (ac):	0.00

Site Narrative:

Site D-30 is an 80-acre site located along the west central section of Virginia Key. The site is part of a Miami-Dade County park and is accessed along a paved roadway within the park. The site consists of mostly mangrove swamp (612) bordering Biscayne Bay. The site was not readily accessible due to tidal ditches along the road. The mangrove swamp along its eastern boundary was composed of mostly black mangrove (*Avicennia germinans*) with areas of white mangrove (*Laguncularia racemosa*). Scattered red mangrove (*Rhizophora mangle*) was observed along the margins of tidal ditches. It is likely that red mangrove is more prevalent closer to Biscayne Bay. A few scattered trees and shrubs are located along the roadway embankment including castor bean (*Ricinus communis*), strangler fig (*Ficus aurea*), Australian pine (*Casuarina equisetifolia*), and an unidentified tree (legume). In the northeast corner of the site is a stand of Australian pine (437). This area was adjacent to a municipal sewage treatment facility (834).

Land use adjacent to the property includes bays and estuaries (540) to the north, west, and southwest, sewage treatment facilities (834) to the northeast, roads and highway (814) to the east, and streams and waterways (510) to the south.



LEGEND D-31

		ACRES
261	FALLOW CROP LAND	51.66
437	AUSTRALIAN PINE	47.49
437/422	AUSTRALIAN PINE/BRAZILIAN PEPPER	15.55
821	TRANSMISSION TOWERS	.16
834	SEWAGE TREATMENT	1.32
	TOTAL ACRES	116.18

OTHER COVER TYPES SHOWN

186	COMMUNITY RECREATIONAL FACILITIES
814	ROADS AND HIGHWAYS

LAND USE AND VEGETATION FOR CANDIDATE SITE D-31, MIAMI-DADE COUNTY, FLORIDA

TAYLOR ENGINEERING INC.
9000 CYPRESS GREEN DRIVE, SUITE 200
JACKSONVILLE, FLORIDA 32256

Figure B-39
Land Use and Vegetation
of Candidate Site D-31
Miami-Dade County, Florida

PROJECT C1999-021
REVISION
SHEET
DATE Sept., 2000

SITE DATA SUMMARY SHEET

Name:	D-31
AKA:	Eastern Virginia Key
Site Use:	Dewatering & Long-Term Storage (Multiple Operation)
Comment:	Fallow agricultural land located south of the Sewage Treatment Plant

LOCATION

County:	Dade	ICWW REACH MILEAGE:	351.38
Municipality:	Miami	East/West of	East
Section/Township/Range:	20/54/42 & 21/54/42	Receiving Waterbody:	Biscayne Bay
		FDEP	III

REACH

Reach Designation:	DA-4	Projected Dredging Frequency (yr):	20
Reach Length (mi):	15.75	50-yr Dredging Requirement (cy):	0
ICWW Mileage:	351.12 to 366.87	50-yr Storage Requirement (cy):	0
Cut/Station:	D-3/57+80 to D-5/0+00		
Geographic: (FDEP Classification)	Rickenbacker Causeway Black Point	(III) to (III)	

SITE PARAMETERS

Mapped Area (ac):	116.18	Storage Capacity (cy):	156,242
Containment Area (ac):	12.04	Dike Height (ft):	12
Impacted Area (ac):	15.59	Excavation Depth (ft):	5.25
Buffer Area (ac):	30.97	Existing Mean Site Elevation (ft):	5
N Buffer Width (ft):	350	Dike Volume (cy):	56,576
S Buffer Width (ft):	350	Max. Pumping Distance (mi):	17.63
E Buffer Width (ft):	350	Max. Barging Distance (mi):	N/A
W Buffer Width (ft):	350	Min. Distance from Waterway (mi):	2.14
Total Site Area (ac):	46.56		

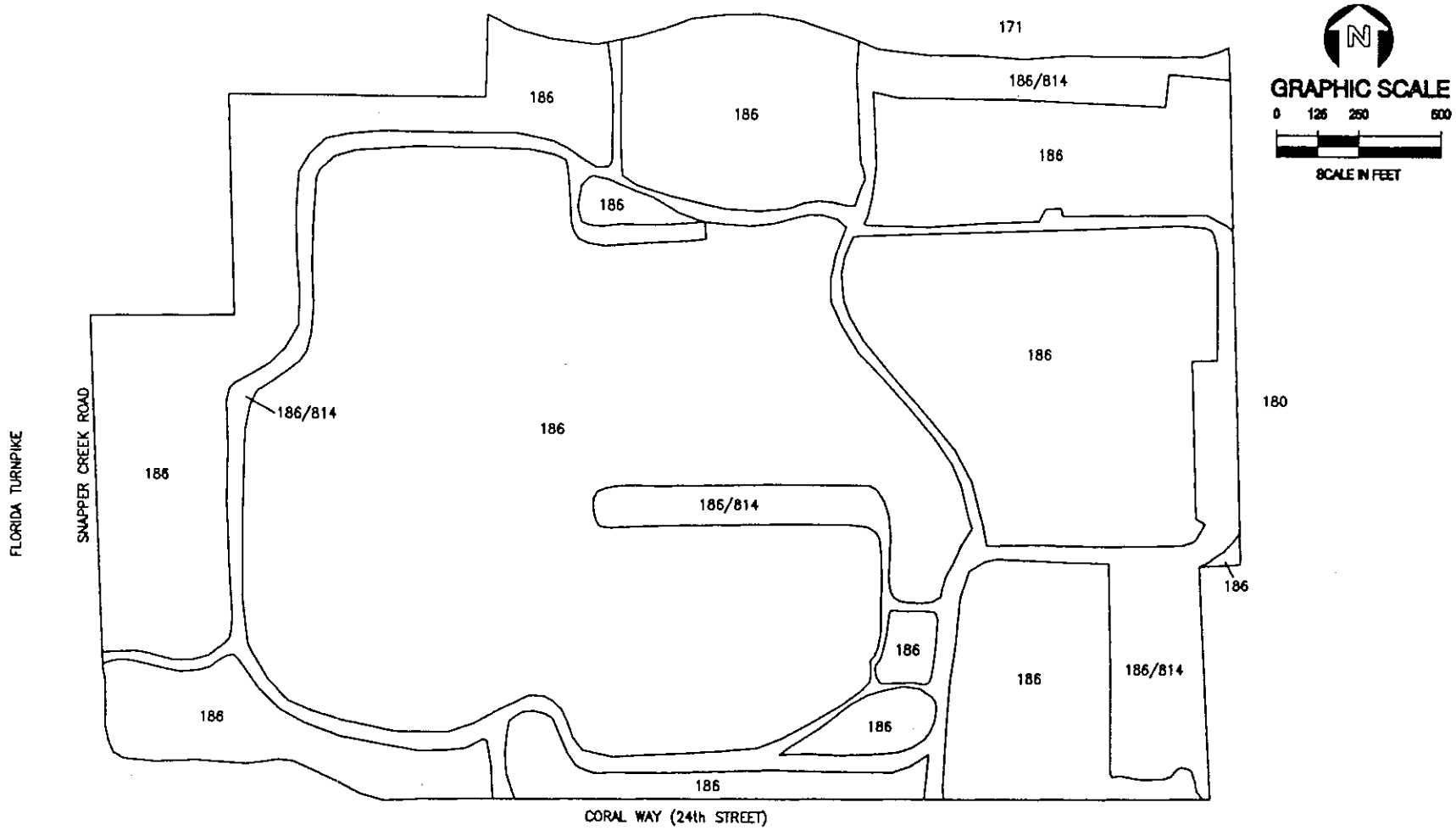
SITE

Public Access:	Rickenbacker Causeway	Comprehensive Plan Designation:	Parks & Recreation
		Adjacent Land Use:	
Road Easement (ft):	Not Required	Sewage treatment facilities (N); Recreational lands (E); Roads and Mangrove swamp (W), Bays & Estuaries (S)	
Pipeline Easement (ft):	500		
		Land Use of Impacted Area:	
Deep Draft Access:	No	Fallow agricultural land, Australian pine	
		Wetlands W/I Mapped Area (ac):	0.00
		Wetlands Impacted (ac):	0.00

Site Narrative:

Site D-31 is a 116-acre parcel located on Virginia Key. The property's main cover types are fallow agricultural field (261) and Australian pine forests (437). In the southwest and northeast corners of the site, the Australian pine community mixes with Brazilian pepper (437/422). Several dirt roads weave throughout the fallow field areas. One fallow field on the western part of the site contains a communications tower and a small dilapidated building, which appears to be associated with the communications tower.

Adjacent land uses include sewage treatment (834) to the north, recreational lands (186) to the east, and roads and highways (814) and mangrove swamp (612) to the west of the site.



LEGEND D-32

		ACRES
186	COMMUNITY RECREATIONAL FACILITIES	143.66
186/814	COMMUNITY RECREATIONAL FACILITIES/ ROADS AND HIGHWAYS	24.43
	TOTAL ACRES	168.09

OTHER COVER TYPES SHOWN

171	EDUCATIONAL FACILITIES
180	RECREATIONAL

LAND USE AND VEGETATION OF CANDIDATE SITE D-32, MIAMI-DADE COUNTY, FLORIDA

TAYLOR ENGINEERING INC.
9000 CYPRESS GREEN DRIVE, SUITE 200
JACKSONVILLE, FLORIDA 32256

Figure B-40
Land Use and Vegetation
of Candidate Site D-32
Miami-Dade County, Florida

PROJECT C1999-021
REVISION
SHEET
DATE Aug., 2000

SITE DATA SUMMARY SHEET

Name: D-32

AKA: Tamiami Park, adjacent to Florida International University's North Miami campus

Site Use: Multi-Reach Inland Storage

Comment: Recreational Use -- Baseball fields, Football stadium, Swimming pool, Tennis complex, and Picnic facilities

LOCATION

County:	Dade	ICWW REACH MILEAGE:	350.98
Municipality:	Unincorporated	East/West of	West
Section/Township/Range:	7/54/40	Receiving Waterbody:	N/A
		FDEP	N/A

REACH

Reach Designation:	DA-3	Projected Dredging Frequency (yr):	20
Reach Length (mi):	8.36	50-yr Dredging Requirement (cy):	17,524
ICWW Mileage:	342.76 to 351.12	50-yr Storage Requirement (cy):	37,677
Cut/Station:	DA-9/178+50 to D-3/57+80		
Geographic: (FDEP Classification)	Kennedy Causeway (NE 79th Street) Rickenbacker Causeway	(III) to (III)	

SITE PARAMETERS

Mapped Area (ac):	168.09	Storage Capacity (cy):	151,137
Containment Area (ac):	N/A	Dike Height (ft):	N/A
Impacted Area (ac):	11.71	Excavation Depth (ft):	N/A
Buffer Area (ac):	8.05	Existing Mean Site Elevation (ft):	10
N Buffer Width (ft):	100	Dike Volume (cy):	N/A
S Buffer Width (ft):	100	Max. Pumping Distance (mi):	N/A
E Buffer Width (ft):	100	Max. Barging Distance (mi):	N/A
W Buffer Width (ft):	100	Min. Distance from Waterway (mi):	12.29
Total Site Area (ac):	19.76		

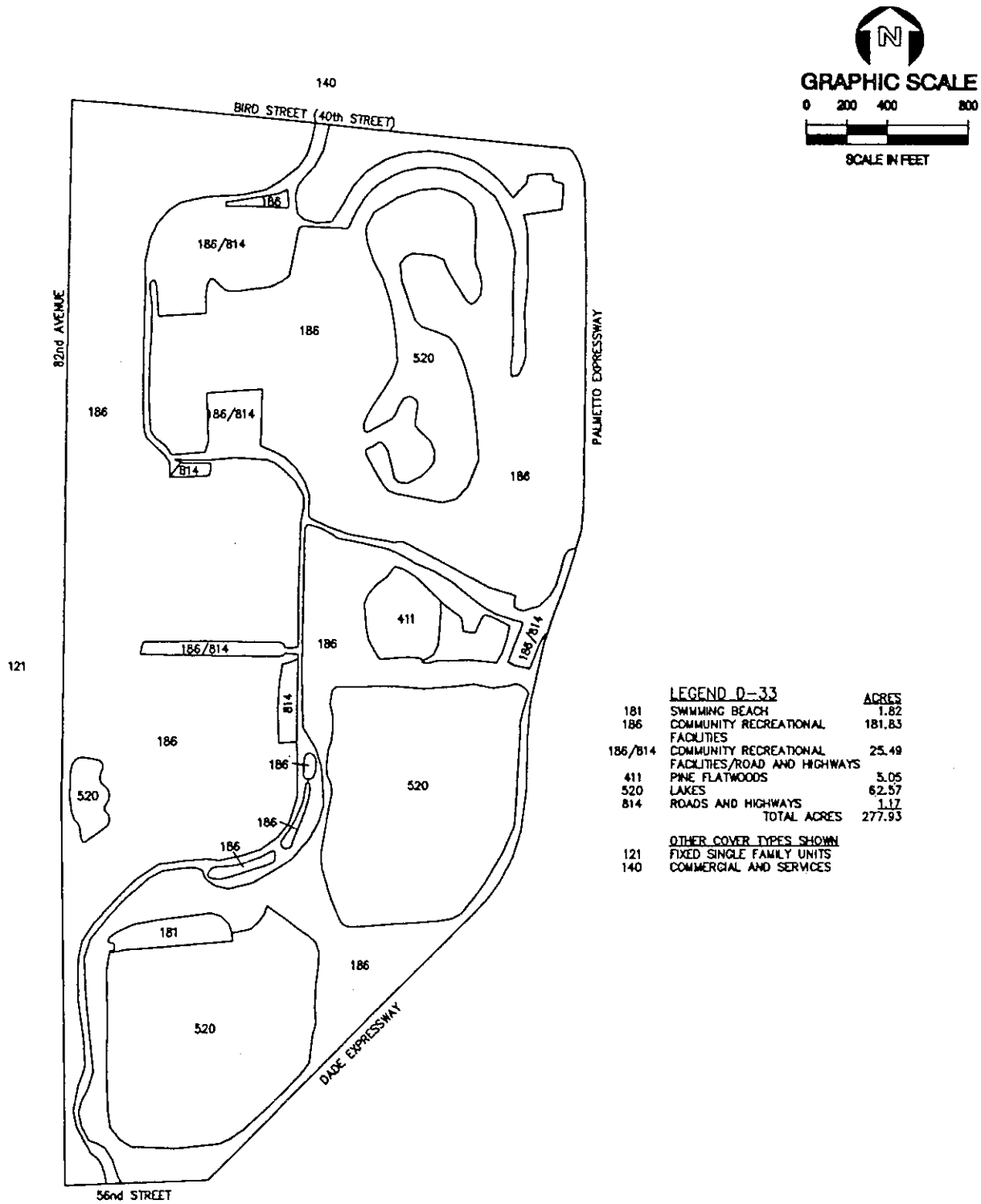
SITE

Public Access:	FL Turnpike, Coral Way (24th St), Snapper Creek Rd	Comprehensive Plan Designation:	Parks and Recreation
		Adjacent Land Use:	
Road Easement (ft):	Not Required	FIU campus (N); Fairground complex (E); Coral Way (S); Snapper Creek Canal and FL Turnpike (W)	
Pipeline Easement (ft):	N/A	Land Use of Impacted Area:	
Deep Draft Access:	N/A	Community recreational facilities	
		Wetlands W/I Mapped Area (ac):	0.00
		Wetlands Impacted (ac):	0.00

Site Narrative:

Site D-32, Tamiami Park is 168-acre county facility adjacent to the Florida International University (FIU). Amenities within the community park (186) include baseball fields, a football stadium, swimming pool, tennis complex, picnic areas, and grassed and paved parking. Numerous internal roads and paved parking areas are depicted as community park/roads and highways (186/814). Internal roads allow access to the adjacent college campus (171) and fairgrounds (180). Dominant vegetation at the park includes mowed lawns with a variety of grasses and low growing herbs. Scattered trees are located throughout the park including mimosa (*Albizzia* sp.), coconut palm (*Cocos nucifera*), cabbage palm (*Sabal palmetto*), fig (*Ficus* sp.), and bottlebrush tree (*Callistemon rigidus*).

Adjacent land uses include educational facilities (FIU, 171) to the north, roads (814) to the south and west, and recreational lands associated with the fairground complex (180) to the east. Snapper Creek Canal (510) and the Florida Turnpike (814) are located to the west of the park and Coral Way (814) is located to the south.



LAND USE AND VEGETATION FOR CANDIDATE SITE D-33, MIAMI-DADE COUNTY, FLORIDA

TAYLOR ENGINEERING INC. 9000 CYPRESS GREEN DRIVE, SUITE 200 JACKSONVILLE, FLORIDA 32256	Figure B-41 Land Use and Vegetation of Candidate Site D-33 Miami-Dade County, Florida	PROJECT C1999-021 REVISION SHEET DATE Aug., 2000

SITE DATA SUMMARY SHEET

Name: D-33

AKA: Tropical Park

Site Use: Multi-Reach Inland Storage

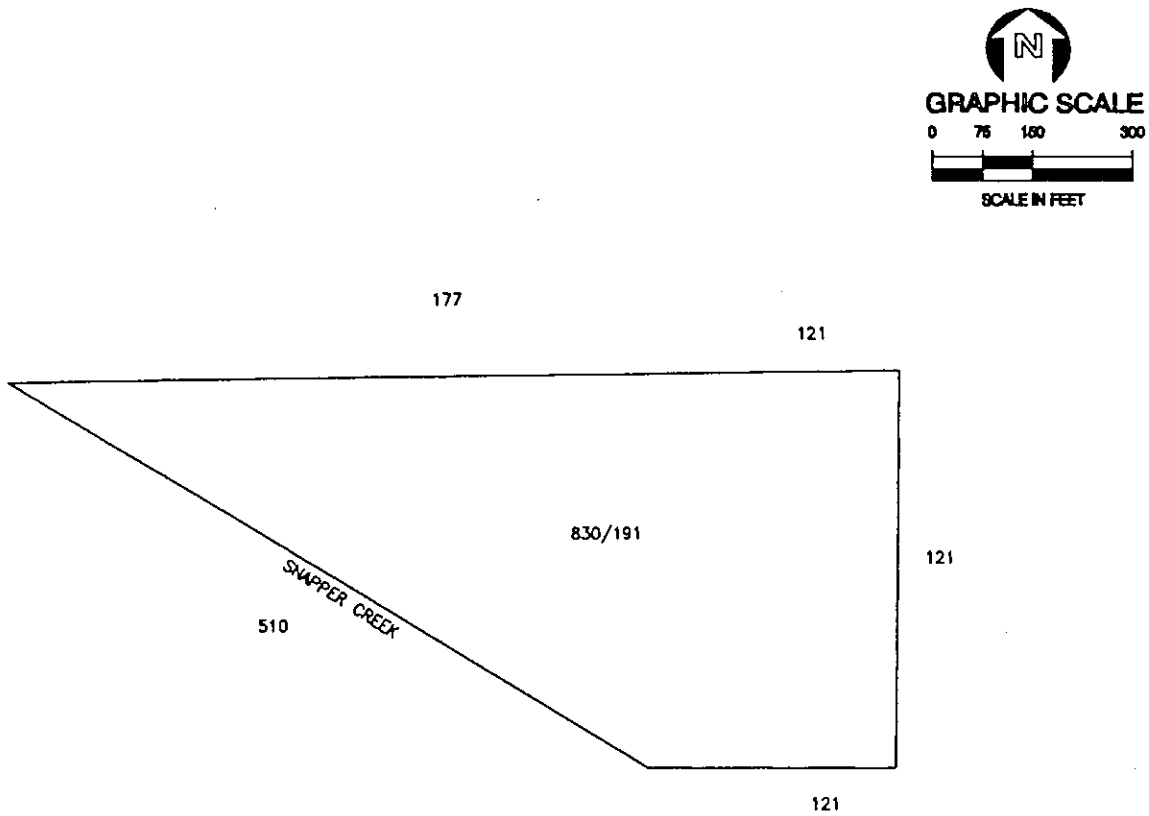
Comment: Recreational Use -- Trails, Baseball fields, Tennis Courts, Camp/Cottage complex, Duck pond, and Football stadium

LOCATION			
County:	Dade	ICWW REACH MILEAGE:	352.71
Municipality:	Unincorporated	East/West of	West
Section/Township/Range:	22/54/40	Receiving Waterbody:	N/A
		FDEP	N/A
REACH			
Reach Designation:	DA-4	Projected Dredging Frequency (yr):	20
Reach Length (mi):	15.75	50-yr Dredging Requirement (cy):	0
ICWW Mileage:	351.12 to 366.87	50-yr Storage Requirement (cy):	0
Cut/Station:	D-3/57+80 to D-5/0+00		
Geographic: (FDEP Classification)	Rickenbacker Causeway Black Point	(III) to (III)	
SITE PARAMETERS			
Mapped Area (ac):	277.93	Storage Capacity (cy):	N/A
Containment Area (ac):	N/A	Dike Height (ft):	N/A
Impacted Area (ac):	Insufficient Area	Excavation Depth (ft):	N/A
Buffer Area (ac):	N/A	Existing Mean Site Elevation (ft):	10
N Buffer Width (ft):	N/A	Dike Volume (cy):	N/A
S Buffer Width (ft):	N/A	Max. Pumping Distance (mi):	N/A
E Buffer Width (ft):	N/A	Max. Barging Distance (mi):	N/A
W Buffer Width (ft):	N/A	Min. Distance from Waterway (mi):	8.51
Total Site Area (ac):	N/A		
SITE			
Public Access:	56th St, 82nd Ave, 40th St, Dade & Palmetto Expressway	Comprehensive Plan Designation:	Parks and Recreation
		Adjacent Land Use:	Commercial and Services (N); Access highways (E, SE); Single-family residential (W)
Road Easement (ft):	Not Required		
Pipeline Easement (ft):	N/A	Land Use of Impacted Area:	N/A
Deep Draft Access:	N/A		
		Wetlands W/I Mapped Area (ac):	0.00
		Wetlands Impacted (ac):	0.00

Site Narrative:

Site D-33, Tropical Park, is a Miami-Dade County regional facility. The 278-acre park is a former horse racetrack with a portion of the original track and facilities still located on the property. Recreational amenities (186) at the park include trails, baseball fields, tennis courts, a group camp/cottage complex, a duck pond, and a football stadium. Several large lakes (520) are located in the southeast part of the park and one of the lakes has a swimming beach (181). A road network and paved parking are located throughout the park (186/814). One area of natural vegetation, located in the eastern part of the park, appears to be a remnant pine flatwood community (411). This natural area was not visited due to ongoing construction in the vicinity. Lawn grasses are the dominant vegetation cover throughout the park. Scattered trees include fig (*Ficus* sp.), laurel oak (*Quercus laurifolia*), cabbage palm (*Sabal palmetto*), coconut palm (*Cocos nucifera*), gumbo-limbo (*Bursera simaruba*), and Washington palms (Washingtonia robusta).

Adjacent land uses include limited access highways (814) to the east and southeast, single family residential (121) to the west, and commercial and services (140) to the north.



LEGEND D-34

		ACRES
830/191	UTILITIES/UNDEVELOPED LAND WITHIN URBAN AREAS	12.30

OTHER COVER TYPES SHOWN

121	FIXED SINGLE FAMILY UNITS
177	OTHER INSTITUTIONAL
510	STREAMS AND WATERWAYS

LAND USE AND VEGETATION OF CANDIDATE SITE D-34, MIAMI-DADE COUNTY, FLORIDA

TAYLOR ENGINEERING INC.
9000 CYPRESS GREEN DRIVE, SUITE 200
JACKSONVILLE, FLORIDA 32256

Figure B-42
Land Use and Vegetation
of Candidate Site D-34
Miami-Dade County, Florida

PROJECT C1999-021
REVISION
SHEET
DATE Aug., 2000

SITE DATA SUMMARY SHEET

Name: D-34

AKA:

Site Use: Multi-Reach Inland Storage

Comment: Adjacent to Snapper Creek, completely fenced and contains two structures which appear to be associated with pumping

LOCATION			
County:	Dade	ICWW REACH MILEAGE:	354.38
Municipality:	Unincorporated	East/West of	West
Section/Township/Range:	29/54/40 & 32/54/40	Receiving Waterbody:	N/A
		FDEP	N/A

REACH			
Reach Designation:	DA-4	Projected Dredging Frequency (yr):	20
Reach Length (mi):	15.75	50-yr Dredging Requirement (cy):	0
ICWW Mileage:	351.12 to 366.87	50-yr Storage Requirement (cy):	0
Cut/Station:	D-3/57+80 to D-5/0+00		
Geographic: (FDEP Classification)	Rickenbacker Causeway Black Point	(III) to (III)	

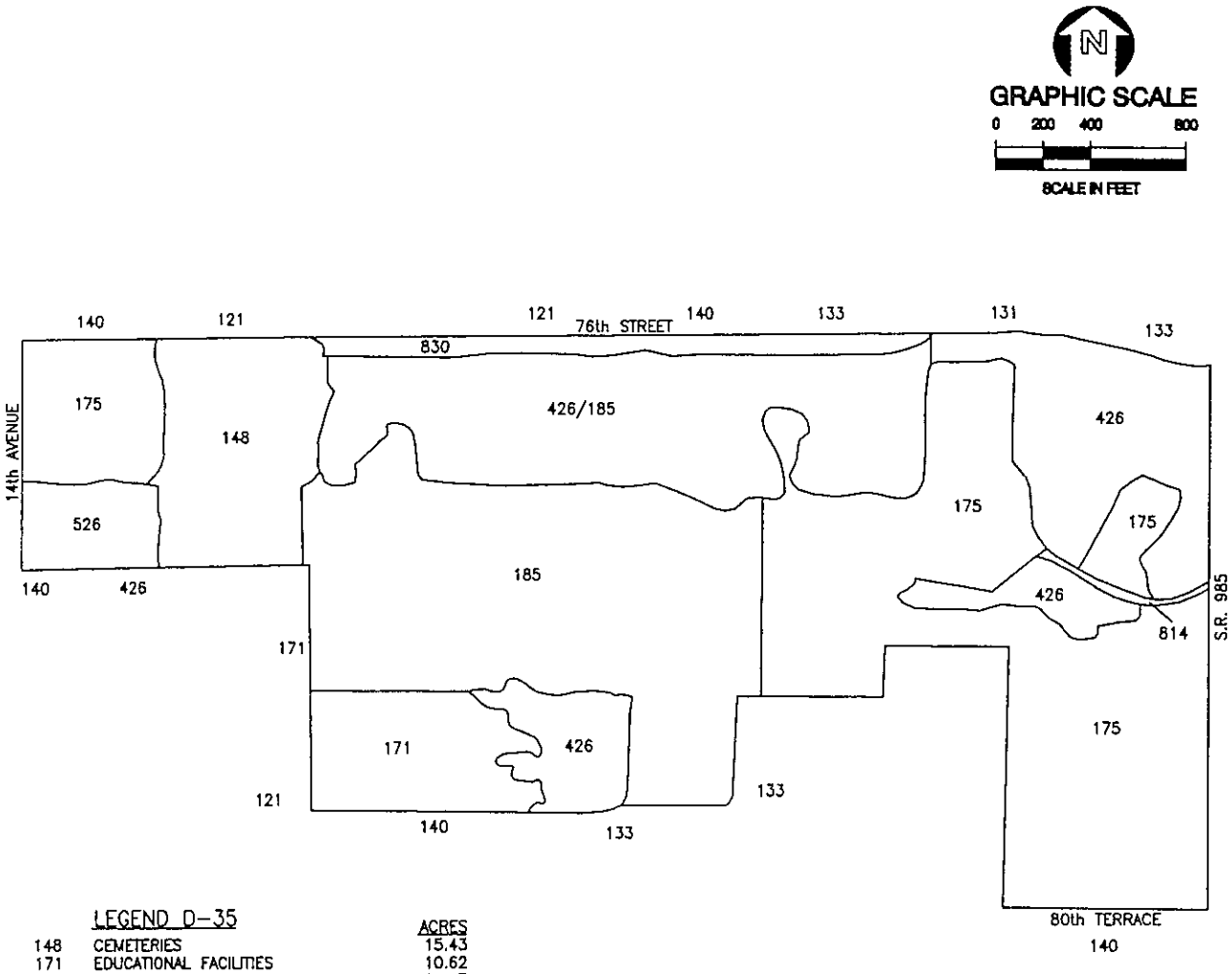
SITE PARAMETERS			
Mapped Area (ac):	12.3	Storage Capacity (cy):	N/A
Containment Area (ac):	N/A	Dike Height (ft):	N/A
Impacted Area (ac):	Insufficient Area	Excavation Depth (ft):	N/A
Buffer Area (ac):	N/A	Existing Mean Site Elevation (ft):	10
N Buffer Width (ft):	N/A	Dike Volume (cy):	N/A
S Buffer Width (ft):	N/A	Max. Pumping Distance (mi):	N/A
E Buffer Width (ft):	N/A	Max. Barging Distance (mi):	N/A
W Buffer Width (ft):	N/A	Min. Distance from Waterway (mi):	10.31
Total Site Area (ac):	N/A		

SITE			
Public Access:	SW 102nd Ave, Sunset Dr	Comprehensive Plan Designation:	Institutional and Public Facility
		Adjacent Land Use:	
Road Easement (ft):	Not Required	Institutional building (N); Fixed single-family units (E, S); Snapper Creek (SW)	
Pipeline Easement (ft):	N/A	Land Use of Impacted Area:	
Deep Draft Access:	N/A	N/A	
		Wetlands W/I Mapped Area (ac):	0.00
		Wetlands Impacted (ac):	0.00

Site Narrative:

Site D-34 is a 34-acre parcel located along Snapper Creek. The property is completely fenced in by a six-foot high chain link fence. The property is mostly vegetated with grasses and low-growing herbs. A few scattered trees are located on the site including Australian pine (*Casuarina equisetifolia*) and cabbage palm (*Sabal palmetto*). Two structures are located on the property and appear to be associated with pumping as indicated by large pipes that are located near the buildings. The exact nature and use of the site was not determined and no signs were posted, therefore Site D-34 was mapped as utilities/undeveloped land within urban areas (830/191).

Adjacent land uses include single-family residential (121) to the south and east, Snapper Creek (510) to the southwest, and a large unidentified institutional-type building (177) and single-family residential (121) to the north.



	LEGEND D-35	ACRES
148	CEMETERIES	15.43
171	EDUCATIONAL FACILITIES	10.62
175	GOVERNMENTAL	61.17
185	PARKS AND ZOOS	46.55
426	TROPICAL HARDWOODS	31.14
426/185	TROPICAL HARDWOODS/PARKS AND ZOOS	33.21
814	ROADS AND HIGHWAYS	.55
830	UTILITIES	4.98
	TOTAL ACRES	203.65

OTHER COVER TYPES SHOWN

121	FIXED SINGLE FAMILY UNITS
131	FIXED SINGLE FAMILY UNITS
133	MULTIPLE DWELLING UNITS, LOW RISE
140	COMMERCIAL AND SERVICES

LAND USE AND VEGETATION OF CANDIDATE SITE D-35, MIAMI-DADE COUNTY, FLORIDA

TAYLOR ENGINEERING INC.
9000 CYPRESS GREEN DRIVE, SUITE 200
JACKSONVILLE, FLORIDA 32256

Figure B-43
Land Use and Vegetation
of Candidate Site D-35
Miami-Dade County, Florida

PROJECT C1999-021
REVISION
SHEET
DATE Sept., 2000

SITE DATA SUMMARY SHEET

Name: D-35

AKA: Kendall Indian Hammocks Park

Site Use: Multi-Reach Inland Storage

Comment: Government Facilities -- Police/Fire Station complex, Municipal Cemetery, and Solid Waste Management

LOCATION

County:	Dade	**ICWW REACH MILEAGE:**	354.71
Municipality:	Unincorporated	**East/West of**	West
Section/Township/Range:	31/54/40	**Receiving Waterbody:**	N/A
		FDEP	N/A

REACH

Reach Designation:	DA-4	**Projected Dredging Frequency (yr):**	20
Reach Length (mi):	15.75	**50-yr Dredging Requirement (cy):**	0
ICWW Mileage:	351.12 to 366.87	**50-yr Storage Requirement (cy):**	0
Cut/Station:	D-3/57+80 to D-5/0+00		
Geographic: (FDEP Classification)	Rickenbacker Causeway Black Point	(III) to (III)	

SITE PARAMETERS

Mapped Area (ac):	203.65	**Storage Capacity (cy):**	212,186
Containment Area (ac):	N/A	**Dike Height (ft):**	N/A
Impacted Area (ac):	16.44	**Excavation Depth (ft):**	N/A
Buffer Area (ac):	11.34	**Existing Mean Site Elevation (ft):**	10
N Buffer Width (ft):	100	**Dike Volume (cy):**	N/A
S Buffer Width (ft):	100	**Max. Pumping Distance (mi):**	N/A
E Buffer Width (ft):	100	**Max. Barging Distance (mi):**	N/A
W Buffer Width (ft):	100	**Min. Distance from Waterway (mi):**	10.75
Total Site Area (ac):	27.78		

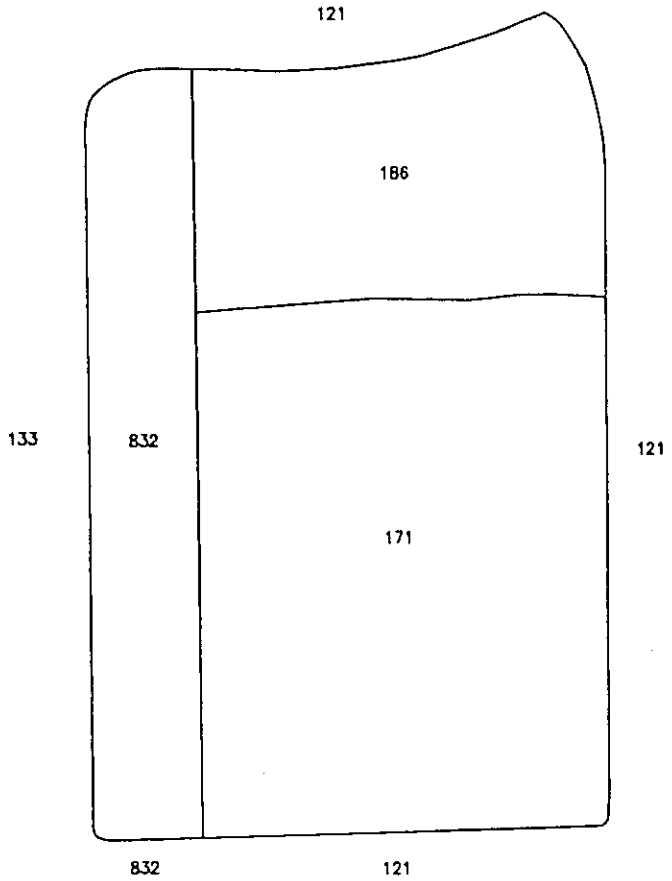
SITE

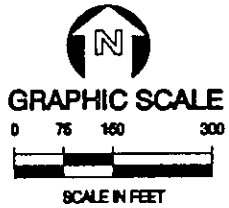
Public Access:	State Road 985, 14th Ave, 76th St, 80th Terrace	**Comprehensive Plan Designation:**	Parks and Recreation
Road Easement (ft):	90	**Adjacent Land Use:** Commercial and Services, Single and Multi-family residential (N, S); State Road 985 (E); 14th Ave (W)	
Pipeline Easement (ft):	N/A	**Land Use of Impacted Area:** Tropical Hardwoods	
Deep Draft Access:	N/A		
		Wetlands W/I Mapped Area (ac):	0.00
		Wetlands Impacted (ac):	0.00

Site Narrative:

Site D-35 is a 204-acre parcel of land devoted to a variety of governmental uses including recreation, education, and governmental services. The northwest corner of the property consists of a police and fire station complex (175) adjacent to an area of undeveloped tropical hardwood hammock (426). An open mowed area with a sparse tree canopy, identified by posted sign as the Miami-Dade County Municipal Cemetery (148), lies to the east. Much of the central part of the site was identified as a municipal park called Kendall Indian Hammocks (185). The recreation area was a combination of active recreational facilities (ball fields) and passive use natural area with trails (426/185). The tropical hardwood hammock and remnant hammock areas in the vicinity contained a variety of vegetation including live oak (*Quercus virginiana*), strangler fig (*Ficus aurea*), acacia (*Acacia* sp.), and cabbage palm (*Sabal palmetto*). Other common shrub and groundcover include wild coffee (*Psychotria nervosa*), beautybush (*Callicarpa americana*), and sword fern (*Nephrolepsis* sp.). A portion of the southern side of the site is devoted to some type of residential educational facility (171). The eastern side of the property contains Miami-Dade County Solid Waste Management Department (175), a waste disposal facility, and a police rescue dog training facility (175). Other lands in the eastern part of the site include remnant portions of the tropical hammock (426).

Adjacent land uses include commercial and services (140), fixed single-family residential (121), and multi-family residential (131) to the north and south, State Road 985 (814) to the east, and 14th Avenue (814) to the west.





LEGEND D-36

		ACRES
171	EDUCATIONAL FACILITIES	11.91
186	COMMUNITY RECREATIONAL FACILITIES	5.54
832	ELECTRICAL POWER TRANSMISSION LINES	4.53
	TOTAL ACRES	22.98

OTHER COVER TYPES SHOWN

121	FIXED SINGLE FAMILY UNITS
133	MULTIPLE DWELLING UNITS, LOW RISE

LAND USE AND VEGETATION OF CANDIDATE SITE D-36, MIAMI-DADE COUNTY, FLORIDA

TAYLOR ENGINEERING INC.
9000 CYPRESS GREEN DRIVE, SUITE 200
JACKSONVILLE, FLORIDA 32256

Figure B-44
Land Use and Vegetation
of Candidate Site D-36
Miami-Dade County, Florida

PROJECT C1999-021
REVISION
SHEET
DATE Aug., 2000

SITE DATA SUMMARY SHEET

Name:	D-36
AKA:	Sunset Park Elementary
Site Use:	Multi-Reach Inland Storage
Comment:	Educational and Recreational Use -- Undeveloped fields associated with elementary school, a small community park, and Electrical Power Transmission lines

LOCATION

County:	Dade	ICWW REACH MILEAGE:	354.91
Municipality:	Unincorporated	East/West of	West
Section/Township/Range:	32/54/40	Receiving Waterbody:	N/A
		FDEP	N/A

REACH

Reach Designation:	DA-4	Projected Dredging Frequency (yr):	20
Reach Length (mi):	15.75	50-yr Dredging Requirement (cy):	0
ICWW Mileage:	351.12 to 366.87	50-yr Storage Requirement (cy):	0
Cut/Station:	D-3/57+80 to D-5/0+00		
Geographic: (FDEP Classification)	Rickenbacker Causeway Black Point	(III) to (III)	

SITE PARAMETERS

Mapped Area (ac):	22.98	Storage Capacity (cy):	N/A
Containment Area (ac):	N/A	Dike Height (ft):	N/A
Impacted Area (ac):	Insufficient Area	Excavation Depth (ft):	N/A
Buffer Area (ac):	N/A	Existing Mean Site Elevation (ft):	10
N Buffer Width (ft):	N/A	Dike Volume (cy):	N/A
S Buffer Width (ft):	N/A	Max. Pumping Distance (mi):	N/A
E Buffer Width (ft):	N/A	Max. Barging Distance (mi):	N/A
W Buffer Width (ft):	N/A	Min. Distance from Waterway (mi):	10.21
Total Site Area (ac):	N/A		

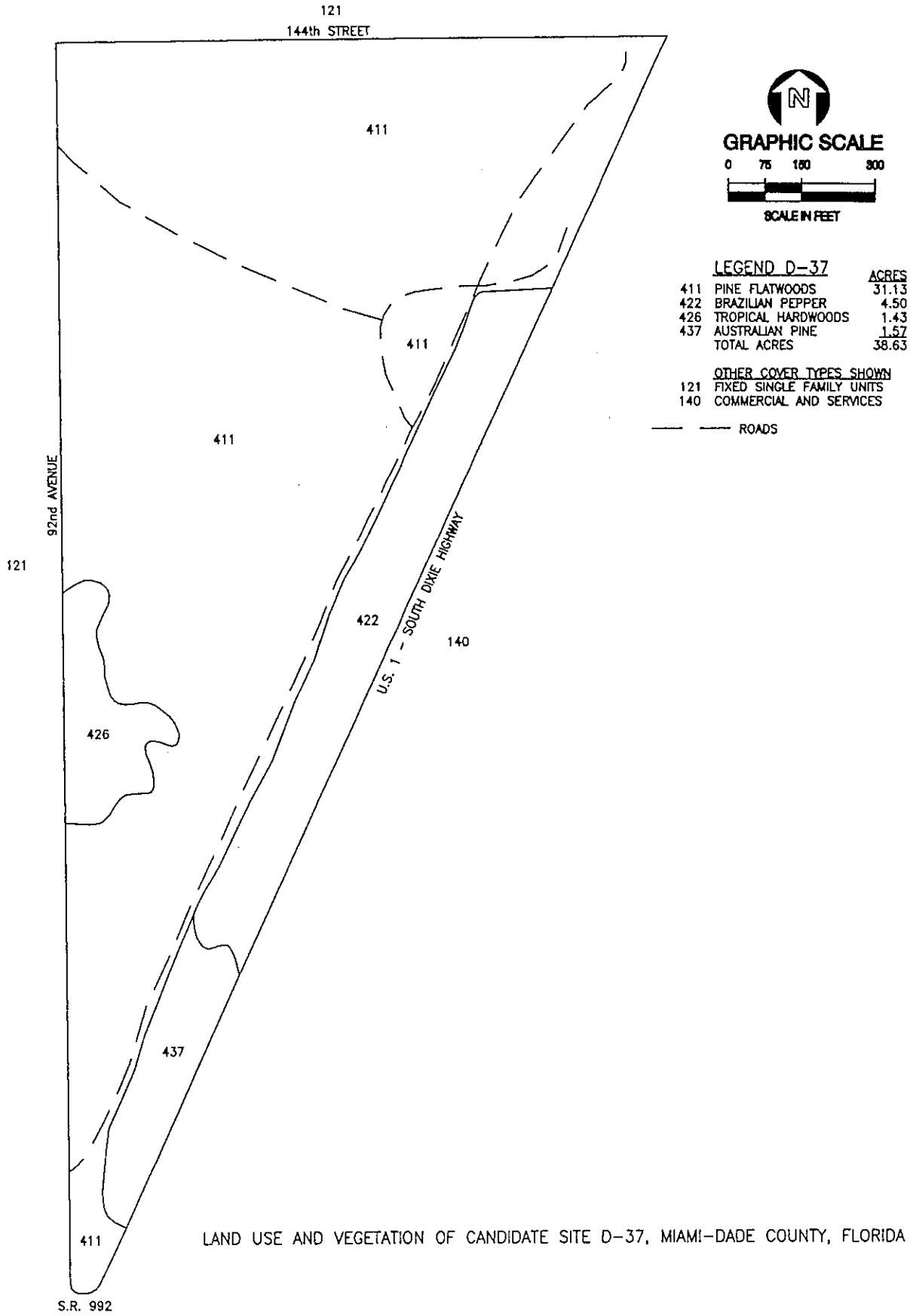
SITE

Public Access:	SW 84th St	Comprehensive Plan Designation:	Residential (LD)
		Adjacent Land Use:	
Road Easement (ft):	Not Required	Single-family residential (N, E, S); Multiple-family residential (N, W)	
Pipeline Easement (ft):	N/A		
		Land Use of Impacted Area:	
Deep Draft Access:	N/A	N/A	
		Wetlands W/I Mapped Area (ac):	0.00
		Wetlands Impacted (ac):	0.00

Site Narrative:

Site D-36 is a partially developed complex consisting of a school and associated fields in the southeastern portion (171), electrical transmission lines along the western edge (832), and a community park in the northern part of the site (186). The site covers 23 acres with over half of the property associated with Sunset Park Elementary (11.91 acres). Most of the site is open fields vegetated with a variety of lawn grasses and associated low-growing herbs. All of the undeveloped areas are maintained by mowing. Scattered trees include mature and newly planted laurel oak (*Quercus laurifolia*) and cabbage palm (*Sabal palmetto*).

Adjacent land uses include single-family residential (121) to the north, east, and south and multiple-family residential (133) to the north and west.



LAND USE AND VEGETATION OF CANDIDATE SITE D-37, MIAMI-DADE COUNTY, FLORIDA

TAYLOR ENGINEERING INC.
9000 CYPRESS GREEN DRIVE, SUITE 200
JACKSONVILLE, FLORIDA 32256

Figure B-45
Land Use and Vegetation
of Candidate Site D-37
Miami-Dade County, Florida

PROJECT C1999-021
REVISION
SHEET
DATE Aug., 2000

SITE DATA SUMMARY SHEET

Name: D-37

AKA: Miami-Dade Protected Natural Area

Site Use: Multi-Reach Inland Storage

Comment:

LOCATION

County:	Dade	ICWW REACH MILEAGE:	359.08
Municipality:	Unincorporated	East/West of	West
Section/Township/Range:	21/55/40	Receiving Waterbody:	N/A
		FDEP	N/A

REACH

Reach Designation:	DA-4			Projected Dredging Frequency (yr):	20
Reach Length (mi):	15.75			50-yr Dredging Requirement (cy):	0
ICWW Mileage:	351.12	to	366.87	50-yr Storage Requirement (cy):	0
Cut/Station:	D-3/57+80	to	D-5/0+00		
Geographic: (FDEP Classification)	Rickenbacker Causeway Black Point			(III) to (III)	

SITE PARAMETERS

Mapped Area (ac):	38.63	Storage Capacity (cy):	125,324
Containment Area (ac):	N/A	Dike Height (ft):	N/A
Impacted Area (ac):	9.71	Excavation Depth (ft):	N/A
Buffer Area (ac):	28.92	Existing Mean Site Elevation (ft):	10
N Buffer Width (ft):	350	Dike Volume (cy):	N/A
S Buffer Width (ft):	100	Max. Pumping Distance (mi):	N/A
E Buffer Width (ft):	100	Max. Barging Distance (mi):	N/A
W Buffer Width (ft):	350	Min. Distance from Waterway (mi):	8.06
Total Site Area (ac):	38.63		

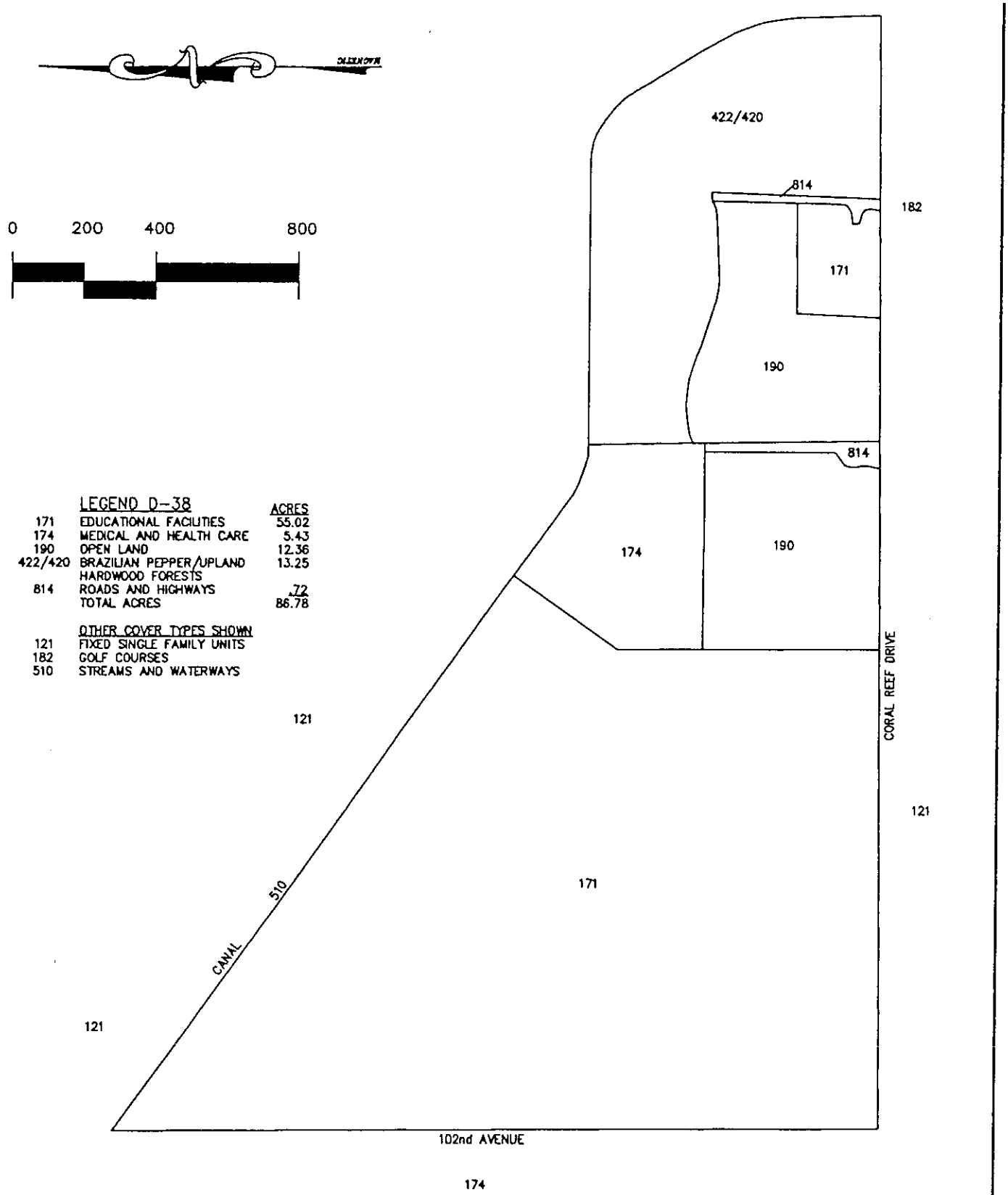
SITE

Public Access:	US Highway 1 (South Dixie Hwy), 144th St, 92nd Ave, State Road 992	Comprehensive Plan Designation:	Environmentally Protected Parks
Road Easement (ft):	Not Required	Adjacent Land Use: Single-family residential (N, W); US Highway 1 (South Dixie Hwy) (E, S)	
Pipeline Easement (ft):	N/A	Land Use of Impacted Area:	
Deep Draft Access:	N/A	Protected Natural Area -- Pine Flatwoods, Brazilian Pepper	
		Wetlands W/I Mapped Area (ac):	0.00
		Wetlands Impacted (ac):	0.00

Site Narrative:

D-37 is a 39-acre undeveloped site designated as a Miami-Dade Protected Natural Area. The site consists mostly of pine rocklands, a unique vegetation community related to pine flatwoods, found only in south Florida. Dominant vegetation in the pine rocklands (411) includes south Florida slash pine (*Pinus elliottii* var. *densa*), saw palmetto (*Serenoa repens*), wild sage (*Lantana involucrata*), winged sumac (*Rhus copallina*), coontie (*Zamia* sp.), and pineland croton (*Croton linearis*). A small area of young tropical hammock (426) is developing along the site's western edge. Typical vegetation species within this region include gumbo-limbo (*Bursera simaruba*), strangler fig (*Ficus aurea*), stopper (*Eugenia* sp), wild coffee (*Psychotria nervosa*), and cabbage palm (*Sabal palmetto*). A narrow band along the site's eastern edge is vegetated by the exotic plant communities of Australian pine (437) and Brazilian pepper (422). The site is fenced and has limited vehicle access through a locked gate. Several rock roads traverse the site.

Adjacent land uses include US Highway 1 (South Dixie Highway) to the east and south and single family residential (121) to the north and west.



LEGEND D-38		ACRES
171	EDUCATIONAL FACILITIES	55.02
174	MEDICAL AND HEALTH CARE	5.43
190	OPEN LAND	12.36
422/420	BRAZILIAN PEPPER/UPLAND HARDWOOD FORESTS	13.25
814	ROADS AND HIGHWAYS	.72
	TOTAL ACRES	86.78

OTHER COVER TYPES SHOWN	
121	FIXED SINGLE FAMILY UNITS
182	GOLF COURSES
510	STREAMS AND WATERWAYS

LAND USE AND VEGETATION FOR CANDIDATE SITE D-38, MIAMI-DADE COUNTY, FLORIDA

TAYLOR ENGINEERING INC.
9000 CYPRESS GREEN DRIVE, SUITE 200
JACKSONVILLE, FLORIDA 32256

Figure B-46
Land Use and Vegetation
of Candidate Site D-38
Miami-Dade County, Florida

PROJECT C1999-021
REVISION
SHEET
DATE Oct., 2000

SITE DATA SUMMARY SHEET

Name: D-38

AKA:

Site Use: Multi-Reach Inland Storage

Comment: Educational and Medical Facility Use -- Public high school, Small Fry Infant Nursery, and Coral Reef Rehabilitation Center

LOCATION			
County:	Dade	ICWW REACH MILEAGE:	359.29
Municipality:	Unincorporated	East/West of	West
Section/Township/Range:	21/55/40	Receiving Waterbody:	N/A
		FDEP	N/A

REACH			
Reach Designation:	DA-4	Projected Dredging Frequency (yr):	20
Reach Length (mi):	15.75	50-yr Dredging Requirement (cy):	0
ICWW Mileage:	351.12 to 366.87	50-yr Storage Requirement (cy):	0
Cut/Station:	D-3/57+80 to D-5/0+00		
Geographic: (FDEP Classification)	Rickenbacker Causeway Black Point	(III) to (III)	

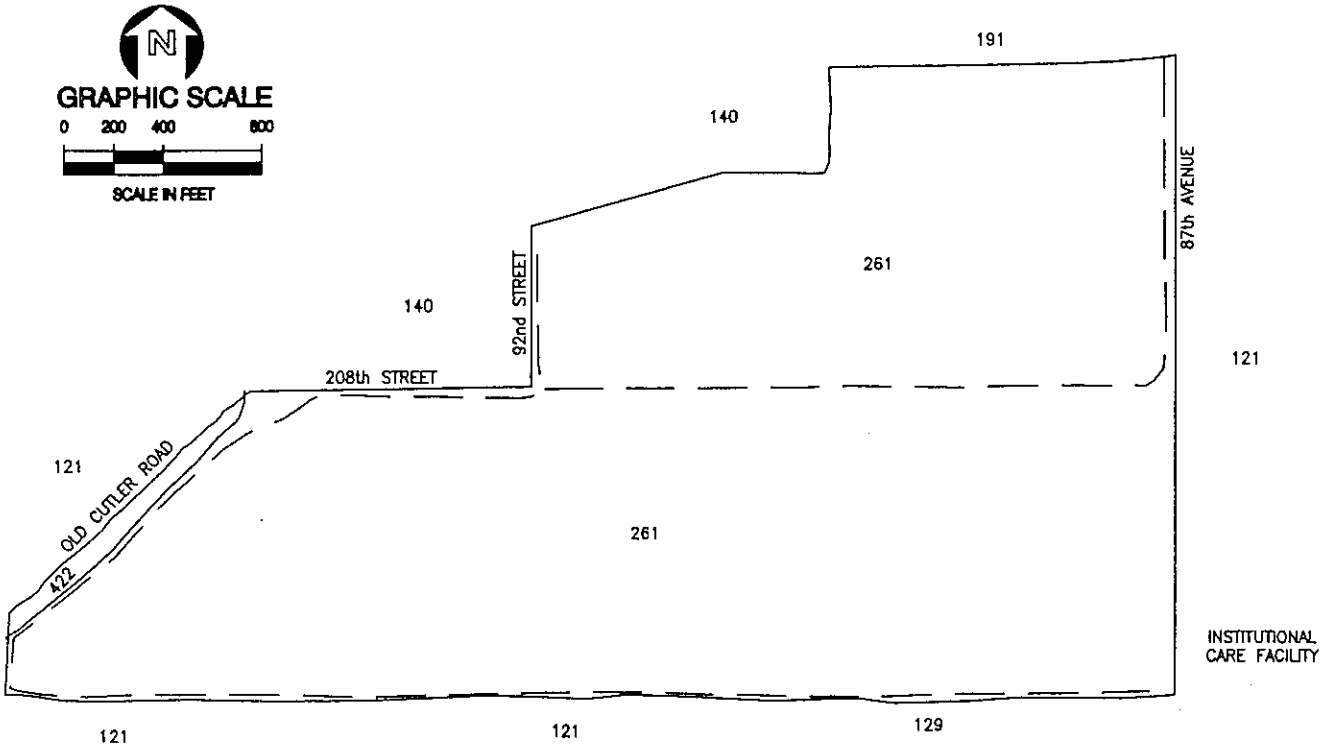
SITE PARAMETERS			
Mapped Area (ac):	86.78	Storage Capacity (cy):	68,276
Containment Area (ac):	N/A	Dike Height (ft):	N/A
Impacted Area (ac):	5.29	Excavation Depth (ft):	N/A
Buffer Area (ac):	7.96	Existing Mean Site Elevation (ft):	10
N Buffer Width (ft):	100	Dike Volume (cy):	N/A
S Buffer Width (ft):	100	Max. Pumping Distance (mi):	N/A
E Buffer Width (ft):	100	Max. Barging Distance (mi):	N/A
W Buffer Width (ft):	100	Min. Distance from Waterway (mi):	8.95
Total Site Area (ac):	13.25		

SITE			
Public Access:	Coral Reef Dr, 102nd Ave	Comprehensive Plan Designation:	Residential (LD)
		Adjacent Land Use:	
Road Easement (ft):	Not Required	Canal (N); Fixed single-family homes (N, E, S); Golf course (S); Medical Facilities (W)	
Pipeline Easement (ft):	N/A	Land Use of Impacted Area:	
Deep Draft Access:	N/A	Brazilian Pepper/Upland Hardwood Forests	
		Wetlands W/I Mapped Area (ac):	0.00
		Wetlands Impacted (ac):	0.00

Site Narrative:

Site D-38 is composed of mostly developed property located between a canal to the north and Coral Reef Drive to the south. A recently built public high school (171) occupies the western portion of the 87-acre property. The facility consists of a cluster of buildings surrounded by a parking lot and open grassy athletic fields. The central part of Site D-38 is also an open grassy field (190) adjacent to Coral Reef Drive and to the north, Coral Reef Rehabilitation Center (174). A paved road leading from Coral Reef Drive to the medical facility bisects the open land. A preschool (171), Small Fry Infant Nursery, occupies a small portion of the site along Coral Reef Drive. The southern end of the site is undeveloped and densely vegetated with Brazilian pepper (*Schinus terebinthifolius*), plume grass (*Erianthus* sp.), giant foxtail (*Setaria magna*), umbrella tree (*Scheffelera actinophylla*) and scattered other trees. This area is classified as Brazilian pepper/upland hardwood forest (422/420). A narrow band of mowed grass is located along the canal. The canal bank drops off steeply to the edge of the canal.

Land uses surrounding the site to the north and east include a canal (510) and fixed single-family homes (121) along the opposite shoreline. To the south of the site is a golf course (182) and fixed single-family homes (121) and to the west are medical and health care facilities (174).



LEGEND D-39		ACRES
261	FALLOW CROP LAND	197.61
422	BRAZILIAN PEPPER	2.32
	TOTAL ACRES	199.93

OTHER COVER TYPES SHOWN

121 FIXED SINGLE FAMILY UNITS
129 MEDIUM DENSITY UNDER CONSTRUCTION
140 COMMERCIAL AND SERVICES
191 UNDEVELOPED LAND WITHIN URBAN AREAS

—— —— ROADS

LAND USE AND VEGETATION OF CANDIDATE SITE D-39, MIAMI-DADE COUNTY, FLORIDA

TAYLOR ENGINEERING INC. 9000 CYPRESS GREEN DRIVE, SUITE 200 JACKSONVILLE, FLORIDA 32256	Figure B-47 Land Use and Vegetation of Candidate Site D-39 Miami-Dade County, Florida	PROJECT C1999-021 REVISION SHEET DATE Aug., 2000

SITE DATA SUMMARY SHEET

Name: D-39

AKA:

Site Use: Multi-Reach Inland Storage

Comment: 200-acre fallow agricultural field

LOCATION

County:	Dade	**ICWW REACH MILEAGE:**	363.39
Municipality:	Unincorporated	**East/West of**	West
Section/Township/Range:	9/56/40	**Receiving Waterbody:**	N/A
		FDEP	N/A

REACH

Reach Designation:	DA-4	**Projected Dredging Frequency (yr):**	20
Reach Length (mi):	15.75	**50-yr Dredging Requirement (cy):**	0
ICWW Mileage:	351.12 to 366.87	**50-yr Storage Requirement (cy):**	0
Cut/Station:	D-3/57+80 to D-5/0+00		
Geographic:	Rickenbacker Causeway	(III) to	
(FDEP Classification)	Black Point	(III)	

SITE PARAMETERS

Mapped Area (ac):	199.93	**Storage Capacity (cy):**	1,549,580
Containment Area (ac):	N/A	**Dike Height (ft):**	N/A
Impacted Area (ac):	120.06	**Excavation Depth (ft):**	N/A
Buffer Area (ac):	79.87	**Existing Mean Site Elevation (ft):**	5
N Buffer Width (ft):	100	**Dike Volume (cy):**	N/A
S Buffer Width (ft):	350	**Max. Pumping Distance (mi):**	N/A
E Buffer Width (ft):	350	**Max. Barging Distance (mi):**	N/A
W Buffer Width (ft):	100	**Min. Distance from Waterway (mi):**	7.16
Total Site Area (ac):	199.93		

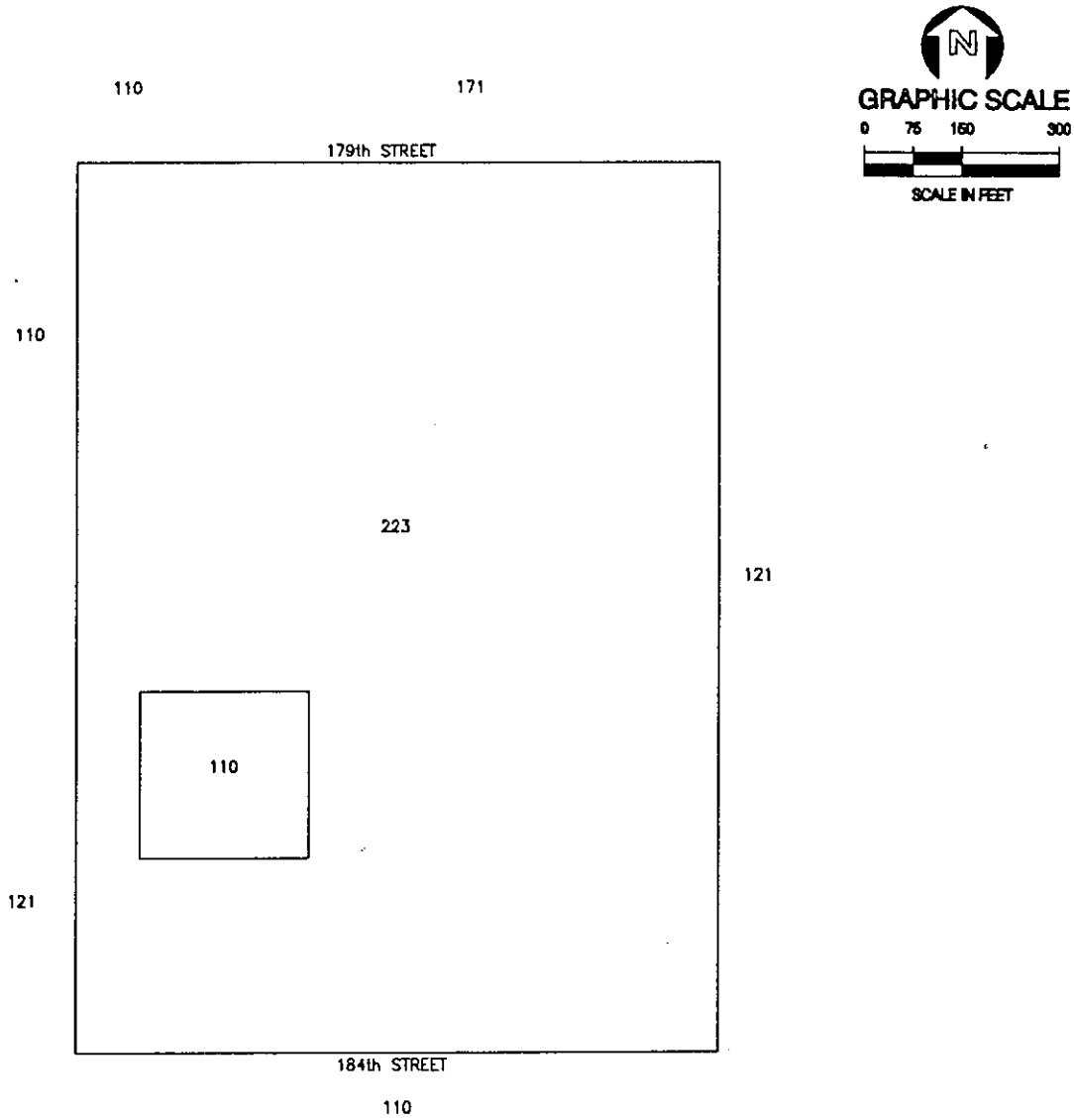
SITE

Public Access:	Old Cutler Rd, 87th Ave, 208th St, 92nd St	**Comprehensive Plan Designation:**	Residential (LD)
Road Easement (ft):	Not Required	**Adjacent Land Use:** Commercial and Services and undeveloped land (N); Single-family residential (E, S, W)	
Pipeline Easement (ft):	N/A	**Land Use of Impacted Area:** Fallow cropland, Brazilian Pepper	
Deep Draft Access:	N/A		
		Wetlands W/I Mapped Area (ac):	0.00
		Wetlands Impacted (ac):	0.00

Site Narrative:

Site D-39 is a 200-acre fallow agricultural field. At the time of the site visit the northern field had been recently tilled, in preparation for planting of crops. The southern portion of the field was covered in a mixture of herbs and grasses, but tilling appeared to be imminent.

Adjacent land uses include commercial and services (140) and undeveloped land (191) to the north, single-family residential (121) to the east, and either single-family residential (121) or single-family homes under construction (129) to the south, and Old Cutler Road (814) and single-family residential (121) to the west.



LEGEND D-40

		ACRES
110	RESIDENTIAL, LOW DENSITY	1.57
223	OTHER GROVES	30.34
	TOTAL ACRES	31.91

OTHER COVER TYPES SHOWN

121 FIXED SINGLE FAMILY UNITS
171 EDUCATIONAL FACILITIES

LAND USE AND VEGETATION OF CANDIDATE SITE D-40, MIAMI-DADE COUNTY, FLORIDA

TAYLOR ENGINEERING INC. 9000 CYPRESS GREEN DRIVE, SUITE 200 JACKSONVILLE, FLORIDA 32256	Figure B-48 Land Use and Vegetation of Candidate Site D-40 Miami-Dade County, Florida	PROJECT C1999-021 REVISION SHEET DATE Aug., 2000

SITE DATA SUMMARY SHEET

Name: D-40

AKA:

Site Use: Multi-Reach Inland Storage

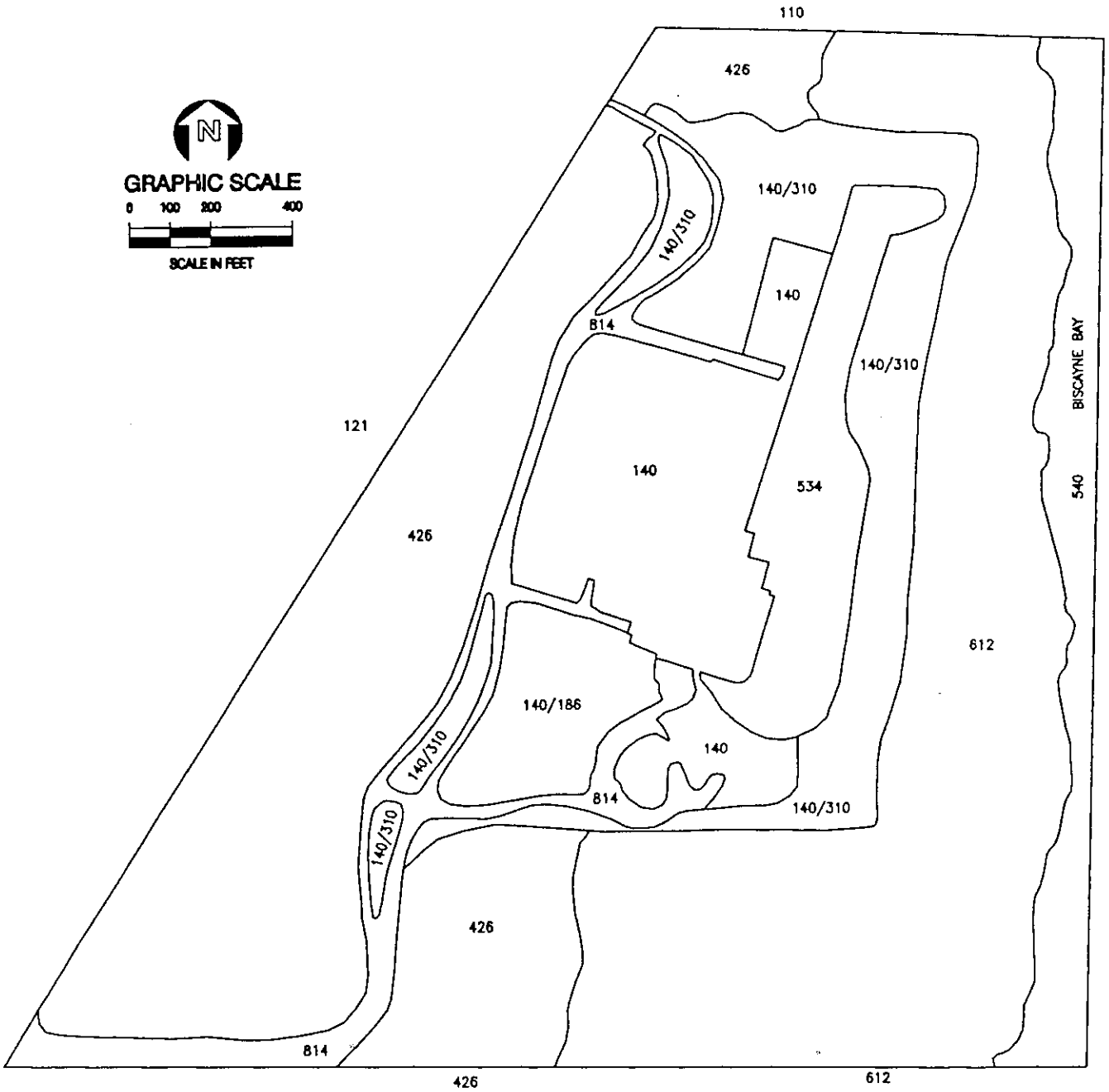
Comment: Agricultural Use -- Mango grove with a single-family home site

LOCATION			
County:	Dade	ICWW REACH MILEAGE:	361.33
Municipality:	Unincorporated	East/West of	West
Section/Township/Range:	34/55/40	Receiving Waterbody:	N/A
		FDEP	N/A
REACH			
Reach Designation:	DA-4	Projected Dredging Frequency (yr):	20
Reach Length (mi):	15.75	50-yr Dredging Requirement (cy):	0
ICWW Mileage:	351.12 to 366.87	50-yr Storage Requirement (cy):	0
Cut/Station:	D-3/57+80 to D-5/0+00		
Geographic: (FDEP Classification)	Rickenbacker Causeway Black Point	(III) to (III)	
SITE PARAMETERS			
Mapped Area (ac):	31.91	Storage Capacity (cy):	N/A
Containment Area (ac):	N/A	Dike Height (ft):	N/A
Impacted Area (ac):	Insufficient Area	Excavation Depth (ft):	N/A
Buffer Area (ac):	N/A	Existing Mean Site Elevation (ft):	10
N Buffer Width (ft):	N/A	Dike Volume (cy):	N/A
S Buffer Width (ft):	N/A	Max. Pumping Distance (mi):	N/A
E Buffer Width (ft):	N/A	Max. Barging Distance (mi):	N/A
W Buffer Width (ft):	N/A	Min. Distance from Waterway (mi):	6.46
Total Site Area (ac):	N/A		
SITE			
Public Access:	179th St, 184th St	Comprehensive Plan Designation:	Residential (ED)
		Adjacent Land Use:	
Road Easement (ft):	Not Required	Private School (N); Single-family residential (E, S, W)	
Pipeline Easement (ft):	N/A	Land Use of Impacted Area:	
Deep Draft Access:	N/A	N/A	
		Wetlands W/I Mapped Area (ac):	0.00
		Wetlands Impacted (ac):	0.00

Site Narrative:

Site D-40 is a 32-acre site containing a mature mango grove (223) and a single-family home site (110), presumably the owner or caretaker. The understory of the grove was grassy and mowed between the mango trees. The site appears to be a producing grove in good condition. Other scattered vegetation along the southern part of the property included cabbage palm (*Sabal palmetto*), live oak (*Quercus virginiana*), and hibiscus (*Hibiscus* sp.). Peacocks were observed on the property.

The site is located along 184th Street (814). Adjacent land uses include a private school (171) to the north and single-family residential homes (121) to the east, south, and west of Site D-40.



	LEGEND D-41	ACRES
140	COMMERCIAL AND SERVICES	12.35
140/186	COMMERCIAL AND SERVICES/COMMUNITY RECREATIONAL FACILITIES	3.86
140/310	COMMERCIAL AND SERVICES/HERBACEOUS	13.53
426	TROPICAL HARDWOODS	31.12
534	RESERVOIRS LESS THAN 10 ACRES WHICH ARE DOMINANT FEATURES	6.36
540	BAYS AND ESTUARIES	6.61
612	MANGROVE SWAMPS	31.87
814	ROADS AND HIGHWAYS	6.69
	TOTAL ACRES	112.39

OTHER COVER TYPES SHOWN

110	RESIDENTIAL, LOW DENSITY
121	FIXED SINGLE FAMILY UNITS

LAND USE AND VEGETATION OF CANDIDATE SITE D-41, MIAMI-DADE COUNTY, FLORIDA

TAYLOR ENGINEERING INC.
9000 CYPRESS GREEN DRIVE, SUITE 200
JACKSONVILLE, FLORIDA 32256

Figure B-49
Land Use and Vegetation
of Candidate Site D-41
Miami-Dade County, Florida

PROJECT C1999-021
REVISION
SHEET
DATE Sept., 2000

SITE DATA SUMMARY SHEET

Name: D-41

AKA: Burger King Corporate Headquarters

Site Use: Multi-Reach Inland Storage

Comment: Incompatible Existing Land Use -- Corporate office buildings, landscaped grounds, and recreation area

LOCATION			
County:	Dade	ICWW REACH MILEAGE:	361.25
Municipality:	Unincorporated	East/West of	West
Section/Township/Range:	35/55/40	Receiving Waterbody:	N/A
		FDEP	N/A

REACH			
Reach Designation:	DA-4	Projected Dredging Frequency (yr):	20
Reach Length (mi):	15.75	50-yr Dredging Requirement (cy):	0
ICWW Mileage:	351.12 to 366.87	50-yr Storage Requirement (cy):	0
Cut/Station:	D-3/57+80 to D-5/0+00		
Geographic: (FDEP Classification)	Rickenbacker Causeway Black Point	(III) to (III)	

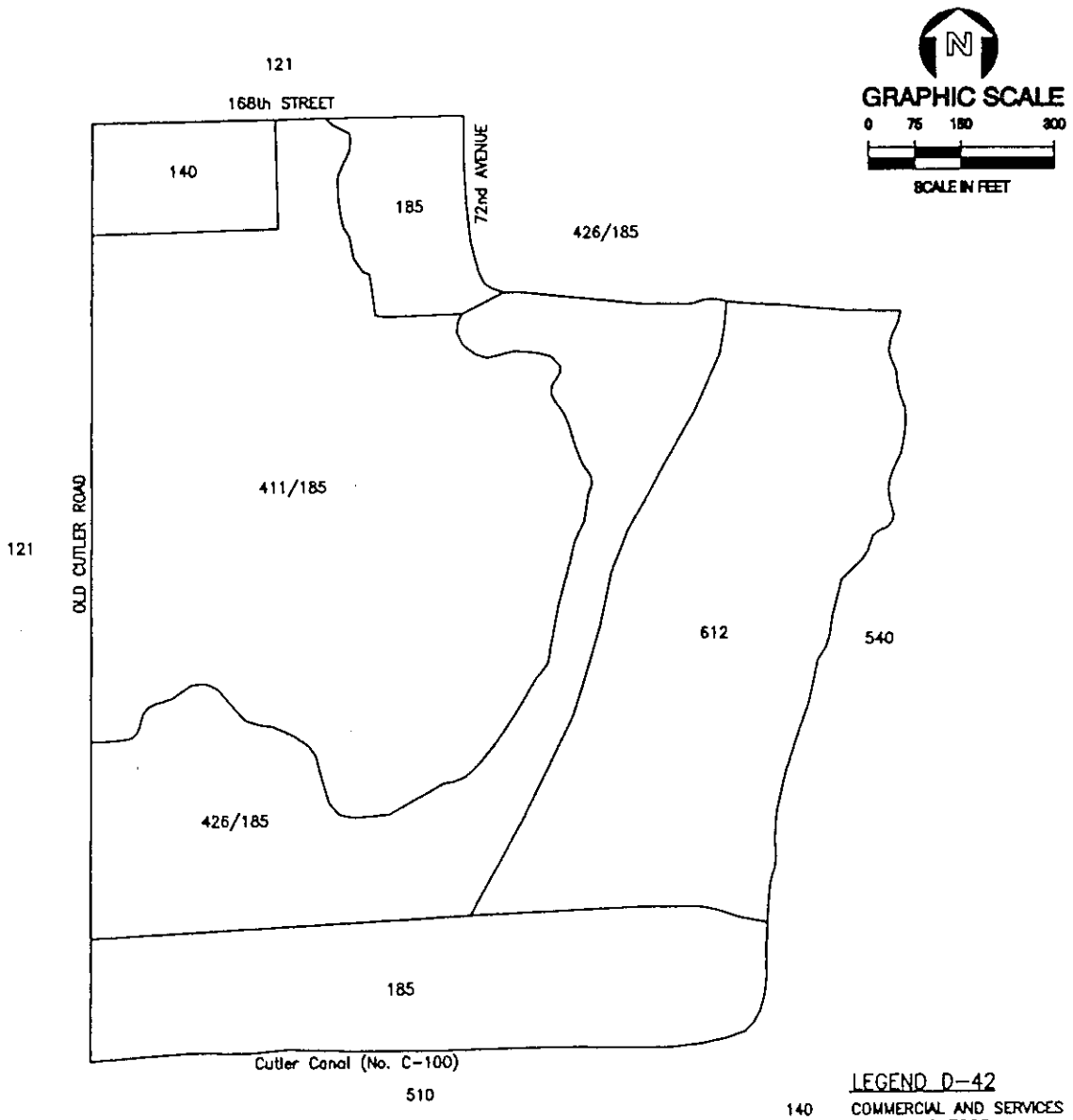
SITE PARAMETERS			
Mapped Area (ac):	112.39	Storage Capacity (cy):	N/A
Containment Area (ac):	N/A	Dike Height (ft):	N/A
Impacted Area (ac):	Insufficient Area	Excavation Depth (ft):	N/A
Buffer Area (ac):	N/A	Existing Mean Site Elevation (ft):	5
N Buffer Width (ft):	N/A	Dike Volume (cy):	N/A
S Buffer Width (ft):	N/A	Max. Pumping Distance (mi):	N/A
E Buffer Width (ft):	N/A	Max. Barging Distance (mi):	N/A
W Buffer Width (ft):	N/A	Min. Distance from Waterway (mi):	5.91
Total Site Area (ac):	N/A		

SITE			
Public Access:	Old Cutler Rd	Comprehensive Plan Designation:	Industrial and Office, Environmentally Protected Parks
		Adjacent Land Use:	
Road Easement (ft):	Not Required	Single-family residential (N, W); Biscayne Bay (E); Undeveloped land (S)	
Pipeline Easement (ft):	N/A	Land Use of Impacted Area:	
Deep Draft Access:	N/A	N/A	
		Wetlands W/I Mapped Area (ac):	31.87
		Wetlands Impacted (ac):	0.00

Site Narrative:

Site D-41 is a 112-acre partially developed parcel that serves as the corporate headquarters for Burger King. Access to the site was controlled. As a result, the site was inspected from adjacent public roads. The western portion of the property along Old Cutler Road was an undeveloped young tropical hardwood hammock (426). Vegetation in this community included live oak (*Quercus virginiana*), gumbo-limbo (*Bursera simaruba*), wax myrtle (*Myrica cerifera*), and Brazilian pepper (*Schinus terebinthifolius*). The site is accessed via a paved road entering the site from the southwest along Old Cutler Road (814). The central portion of the site consists of corporate office buildings (140), well-landscaped grounds (140/310), and a water-filled stormwater reservoir (534). There is a recreational area and ball field within the compound (140/186). The property sits adjacent to Biscayne Bay (540). Between the bay and the developed portion of the site is a wide band of mangrove swamp (612).

Adjacent land uses include fixed single-family residential (121) to the north, Biscayne Bay (540) to the east, tropical hardwoods (426) to the south, and Old Cutler Road (814) and single-family residences (121) to the west.



	LEGEND D-42	ACRES
140	COMMERCIAL AND SERVICES	1.25
185	PARKS AND ZOOS	6.76
411/185	PINE FLATWOODS/PARKS AND ZOOS	14.01
426/185	TROPICAL HARDWOODS/PARKS AND ZOOS	7.19
612	MANGROVE SWAMPS	8.71
	TOTAL ACRES	37.92

	OTHER COVER TYPES SHOWN
121	FIXED SINGLE FAMILY UNITS
510	STREAMS AND WATERWAYS
540	BAYS AND ESTUARIES

LAND USE AND VEGETATION FOR CANDIDATE SITE D-42, MIAMI-DADE COUNTY, FLORIDA

TAYLOR ENGINEERING INC.
9000 CYPRESS GREEN DRIVE, SUITE 200
JACKSONVILLE, FLORIDA 32256

Figure B-50
Land Use and Vegetation
of Candidate Site D-42
Miami-Dade County, Florida

PROJECT C1999-021
REVISION
SHEET
DATE Aug., 2000

SITE DATA SUMMARY SHEET

Name: D-42

AKA: Coral Bay Park

Site Use: Dewatering & Short-Term Storage (Single Operation)

Comment: Incompatible Existing Land Use -- Coral Bay Park, Environmental education facility, and Mangrove swamp

LOCATION			
County:	Dade	ICWW REACH MILEAGE:	360.76
Municipality:	Unincorporated	East/West of	West
Section/Township/Range:	35/55/40	Receiving Waterbody:	Biscayne Bay
		FDEP	III

REACH			
Reach Designation:	DA-4	Projected Dredging Frequency (yr):	20
Reach Length (mi):	15.75	50-yr Dredging Requirement (cy):	0
ICWW Mileage:	351.12 to 366.87	50-yr Storage Requirement (cy):	0
Cut/Station:	D-3/57+80 to D-5/0+00		
Geographic: (FDEP Classification)	Rickenbacker Causeway Black Point	(III) to (III)	

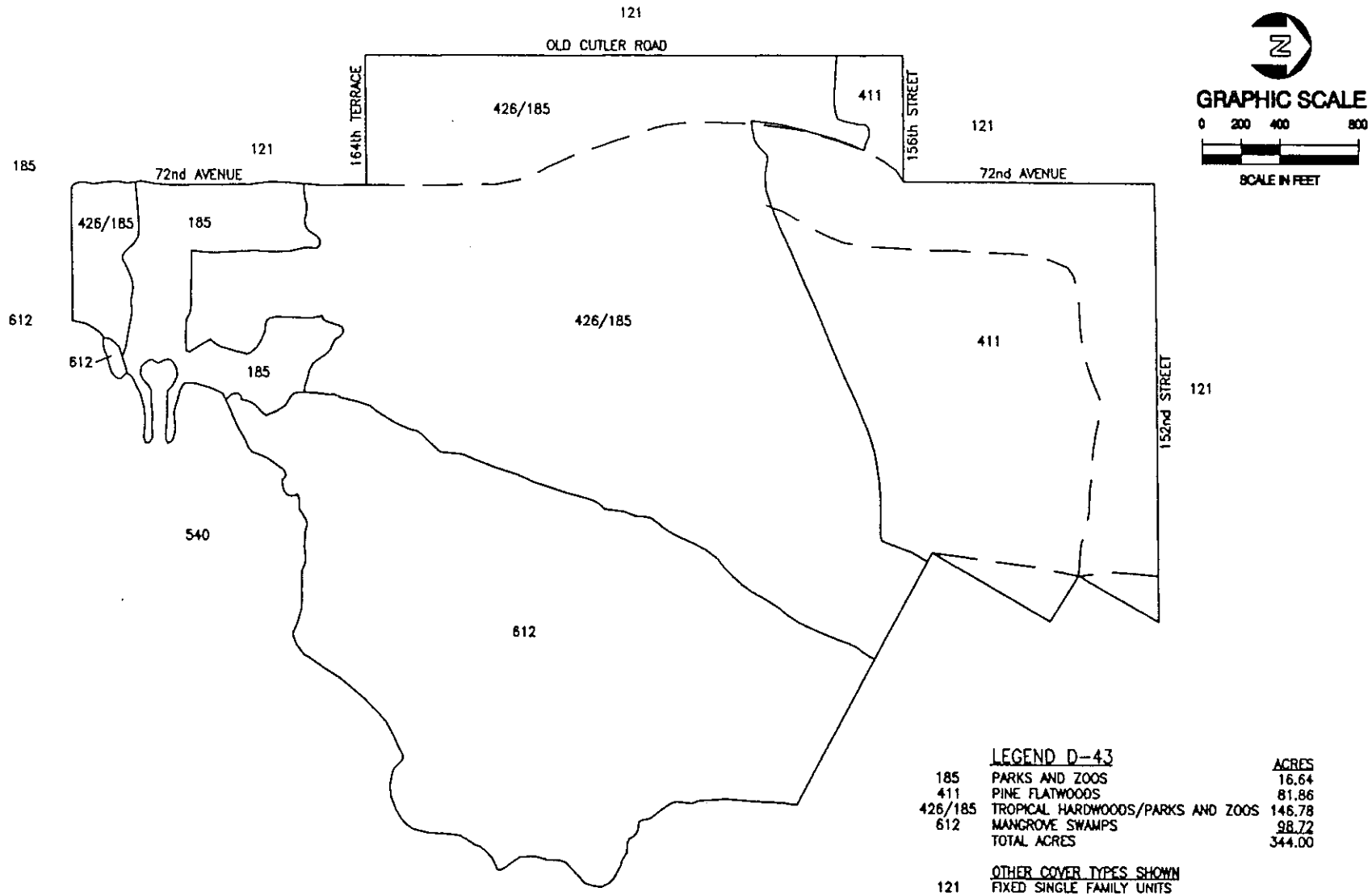
SITE PARAMETERS			
Mapped Area (ac):	37.92	Storage Capacity (cy):	27,021
Containment Area (ac):	4.87	Dike Height (ft):	6.5
Impacted Area (ac):	7.46	Excavation Depth (ft):	4.29
Buffer Area (ac):	11.33	Existing Mean Site Elevation (ft):	5
N Buffer Width (ft):	150	Dike Volume (cy):	16,101
S Buffer Width (ft):	150	Max. Pumping Distance (mi):	15.36
E Buffer Width (ft):	150	Max. Barging Distance (mi):	N/A
W Buffer Width (ft):	350	Min. Distance from Waterway (mi):	5.70
Total Site Area (ac):	18.79		

SITE			
Public Access:	168th St, 72nd Ave, 73rd St, Old Cutler Rd	Comprehensive Plan Designation:	Parks and Recreation
Road Easement (ft):	Not Required	Adjacent Land Use: Charles Dearing Estate Park (N); Biscayne Bay (E); Canal (S); Single-family residential (W)	
Pipeline Easement (ft):	300	Land Use of Impacted Area: Community recreational areas, Pine Flatwoods, Tropical Hardwoods	
Deep Draft Access:	Yes		
		Wetlands W/I Mapped Area (ac):	8.71
		Wetlands Impacted (ac):	0.00

Site Narrative:

Site D-42 is a 38-acre site that consists of a small recreational area, a natural area, an environmental education facility, a mangrove swamp, and a commercial parcel. The park on the southern end of the site, Coral Bay Park (185), provides visitors with small boat access to the adjacent waters of Biscayne Bay (540). Few developed facilities are located at the park site except for unpaved parking areas. The adjacent area to the north is a Miami-Dade Protected Natural Area and provides examples of pine flatwoods (411/185) and tropical hardwood communities (426/185). Vegetation in the pine flatwoods includes south Florida slash pine (*Pinus elliottii* var. *densa*, saw palmetto (*Serenoa repens*), wild sage (*Lantana involucrata*), winged sumac (*Rhus copallina*), and a variety of oaks (*Quercus* sp.). In the tropical hardwoods community (426), the prevalent vegetation is live oak (*Quercus virginiana*), gumbo-limbo (*Bursera simaruba*), strangler fig (*Ficus aurea*), stopper (*Eugenia* sp), wild coffee (*Psychotria nervosa*), and cabbage palm (*Sabal palmetto*). An environmental education center (426/185) sits adjacent to the site, providing public access and interpretative education programs about the neighboring vegetation communities. A mangrove swamp is located adjacent to the site along Biscayne Bay (540).

Adjacent land uses include fixed single-family residential (121) to the west and north, tropical hardwoods/parks and zoos (426/185) to the north, Biscayne Bay (540) to the east, and Cutler Canal (C-100, 510) to the south.



LAND USE AND VEGETATION OF CANDIDATE SITE D-43, MIAMI-DADE COUNTY, FLORIDA

TAYLOR ENGINEERING INC.
9000 CYPRESS GREEN DRIVE, SUITE 200
JACKSONVILLE, FLORIDA 32256

Figure B-51
Land Use and Vegetation
of Candidate Site D-43
Miami-Dade County, Florida

PROJECT C1999-021
REVISION
SHEET
DATE Aug., 2000

SITE DATA SUMMARY SHEET

Name: D-43

AKA: Charles Deering Estate Park

Site Use: Dewatering & Long-Term Storage (Multiple Operation)

Comment: Incompatible Existing Land Use -- Environmental, Archeological, Historical, and Architectural preserve

LOCATION

County:	Dade	ICWW REACH MILEAGE:	359.8
Municipality:	Unincorporated	East/West of	West
Section/Township/Range:	25/55/40 & 26/55/40	Receiving Waterbody:	Biscayne Bay
		FDEP	III

REACH

Reach Designation:	DA-4			Projected Dredging Frequency (yr):	20
Reach Length (mi):	15.75			50-yr Dredging Requirement (cy):	0
ICWW Mileage:	351.12	to	366.87	50-yr Storage Requirement (cy):	0
Cut/Station:	D-3/57+80	to	D-5/0+00		
Geographic: (FDEP Classification)	Rickenbacker Causeway Black Point			(III) to (III)	

SITE PARAMETERS

Mapped Area (ac):	344	Storage Capacity (cy):	5,207,424
Containment Area (ac):	119.54	Dike Height (ft):	22
Impacted Area (ac):	131.53	Excavation Depth (ft):	4.67
Buffer Area (ac):	68.56	Existing Mean Site Elevation (ft):	5
N Buffer Width (ft):	350	Dike Volume (cy):	643,103
S Buffer Width (ft):	350	Max. Pumping Distance (mi):	14.50
E Buffer Width (ft):	100	Max. Barging Distance (mi):	N/A
W Buffer Width (ft):	350	Min. Distance from Waterway (mi):	5.75
Total Site Area (ac):	200.09		

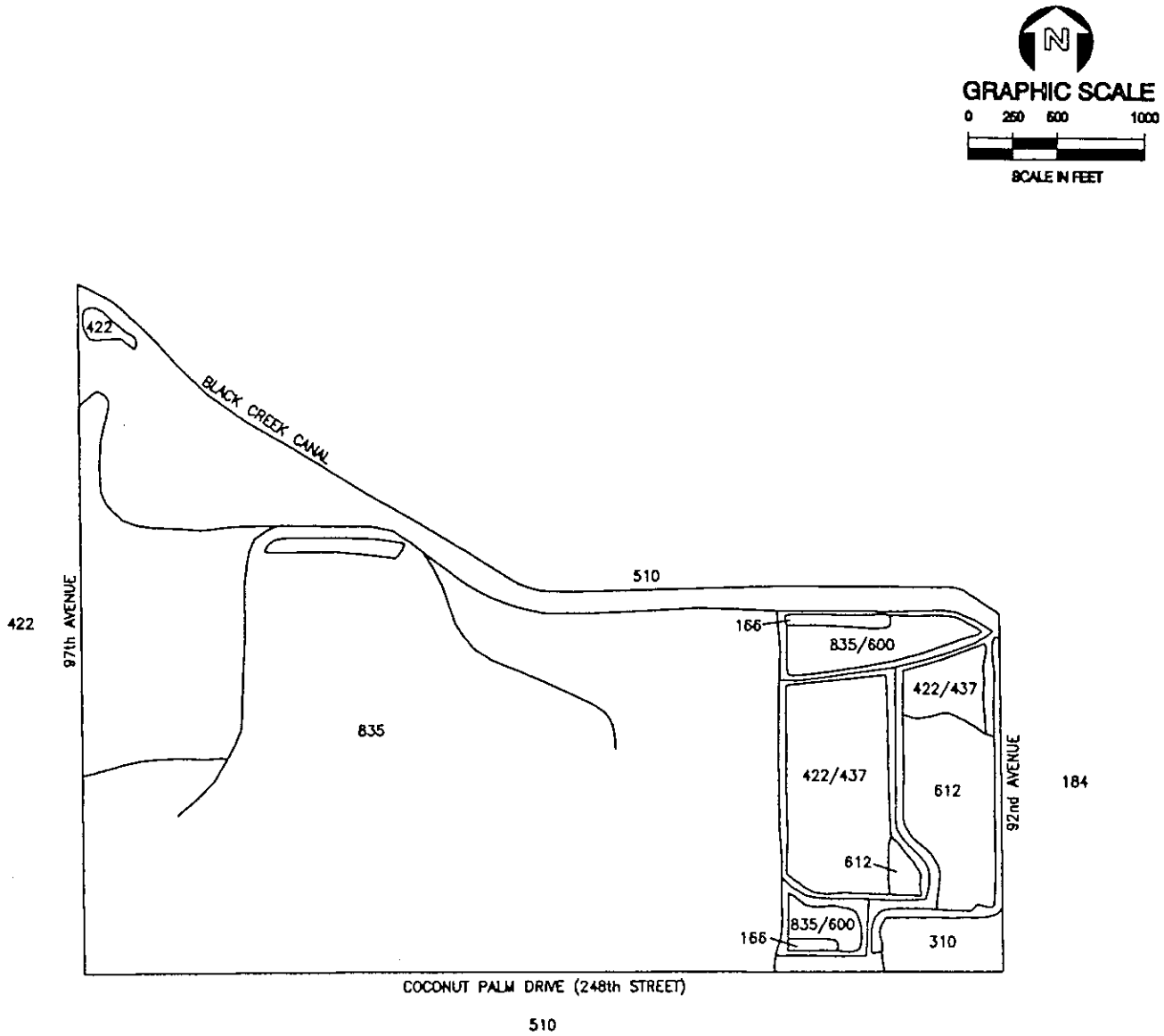
SITE

Public Access:	Old Cutler Rd, 152nd St, & 72nd Ave	Comprehensive Plan Designation:	Environmentally Protected Parks
Road Easement (ft):	Not Required	Adjacent Land Use: Single-family residential (N, W); Biscayne Bay (E); Recreational park, Site D-42 (S)	
Pipeline Easement (ft):	Not Required		
Deep Draft Access:	No	Land Use of Impacted Area: Community Recreation, Tropical Hardwoods, and Pine Flatwoods	
		Wetlands W/I Mapped Area (ac):	98.72
		Wetlands Impacted (ac):	0.00

Site Narrative:

Site D-43 is a 344-acre site located east of Old Cutler Road, known as the Charles Deering Estate. Miami-Dade Parks and Recreation Department and the State of Florida own the property. The county operates the site as an environmental, archeological, historical, and architectural preserve. Overall, the site was classified as parks and zoos (185). The parks and zoos designation (185) was use for buildings, developed areas of the site, and in combination with the appropriate natural vegetation community classification for the less developed areas of the site. The site is only open to the public by guided tours. The property was accessed along a recreational trail on or near the northern border of the site. The site consists of three natural communities including tropical hammock (185/426) covering much of the main grounds of the estate, a pine flatwoods community (185/411) located in the northern part of the property, and a broad band of mangrove swamp (612) along Biscayne Bay. Vegetation in the tropical hardwoods consists of natural diverse flora supplemented by estate plantings. Common vegetation in this community included live oak (*Quercus virginiana*), gumbo-limbo (*Bursera simaruba*), myrisine (*Rapanea punctata*), royal palm (*Roystonea elata*), guava (*Psidium guajava*), sapodilla (*Manikara* sp.), strangler fig (*Ficus aurea*), and wild coffee (*Psychotria nervosa*). The pine rocklands, found only in south Florida, are a unique vegetation community related to pine flatwoods. This unique ecosystem typically contains south Florida slash pine (*Pinus elliottii* var. *densa*), wild sage (*Lantana involucrata*), saw palmetto (*Serenoa repens*), a variety of oak species (*Quercus* sp.), and other species including many endemic plants.

Adjacent land uses include a passive recreational park (part of D-42, 185) to the south, single-family residential (121) to the west and north, and Biscayne Bay (540) to the east.



	LEGEND D-44	ACRES
166	HOLDING PONDS	1.37
310	HERBACEOUS	4.87
422	BRAZILIAN PEPPER	.83
422/437	BRAZILIAN PEPPER/AUSTRALIAN PINE	19.96
510	STREAMS AND WATERWAYS	2.25
612	MANGROVE SWAMPS	12.26
835	SOLID WASTE DISPOSAL	266.27
835/600	SOLID WASTE DISPOSAL/WETLANDS	7.46
	TOTAL ACRES	315.27

	OTHER COVER TYPES SHOWN
184	MARINAS AND FISH CAMPS
———	ROADS

LAND USE AND VEGETATION FOR CANDIDATE SITE D-51, MIAMI-DADE COUNTY, FLORIDA

TAYLOR ENGINEERING INC.
9000 CYPRESS GREEN DRIVE, SUITE 200
JACKSONVILLE, FLORIDA 32256

Figure B-52
Land Use and Vegetation
of Candidate Site D-44
Miami-Dade County, Florida

PROJECT C1999-021
REVISION
SHEET
DATE Sept., 2000

SITE DATA SUMMARY SHEET

Name: D-44

AKA: South Dade Solid Waste Disposal Facility

Site Use: Dewatering & Long-Term Storage (Multiple Operation)

Comment:

LOCATION			
County:	Dade	ICWW REACH MILEAGE:	365.66
Municipality:	Unincorporated	East/West of	West
Section/Township/Range:	21/56/40	Receiving Waterbody:	N/A
		FDEP	N/A

REACH			
Reach Designation:	DA-4	Projected Dredging Frequency (yr):	20
Reach Length (mi):	15.75	50-yr Dredging Requirement (cy):	0
ICWW Mileage:	351.12 to 366.87	50-yr Storage Requirement (cy):	0
Cut/Station:	D-3/57+80 to D-5/0+00		
Geographic: (FDEP Classification)	Rickenbacker Causeway Black Point	(III) to (III)	

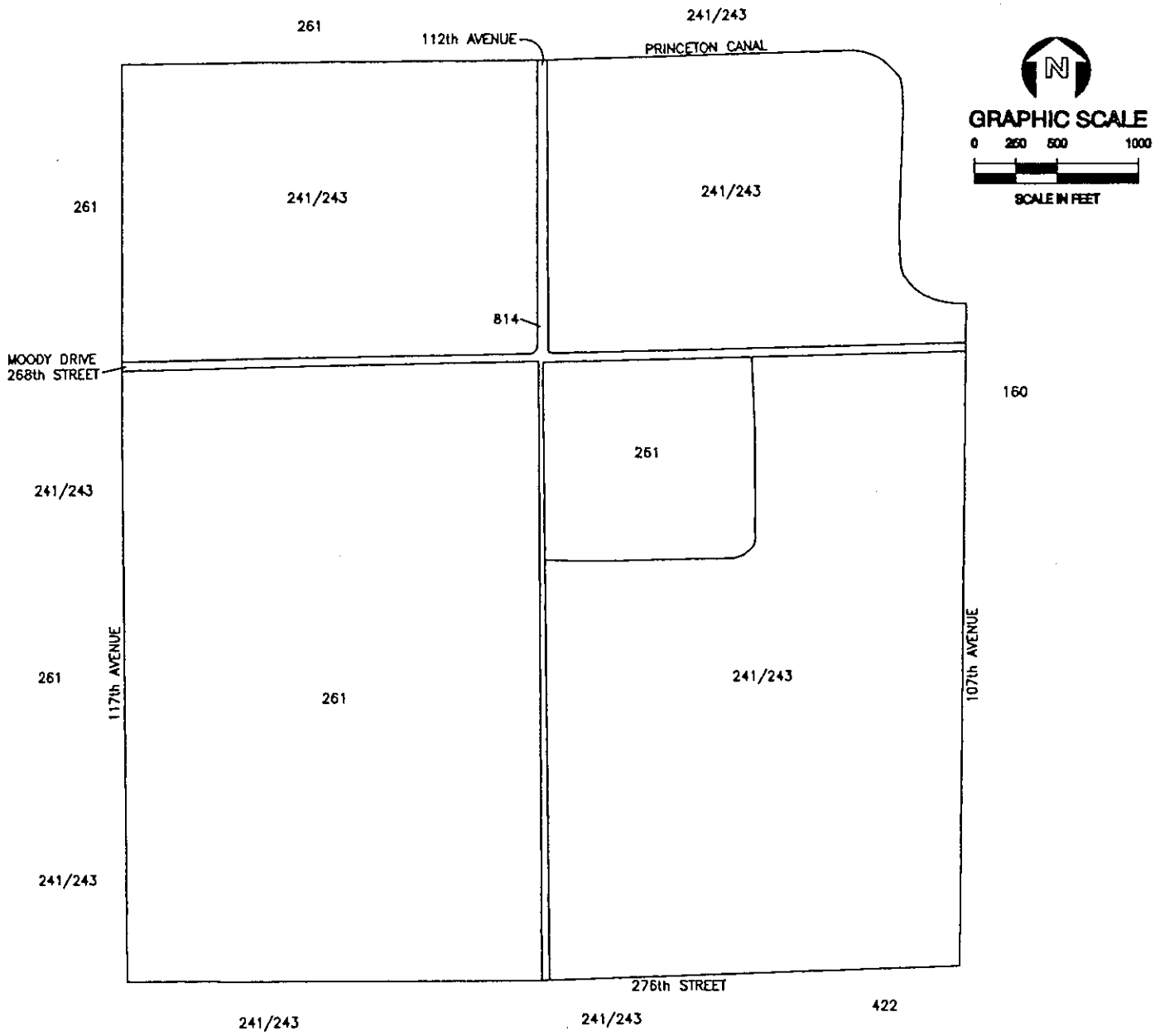
SITE PARAMETERS			
Mapped Area (ac):	315.27	Storage Capacity (cy):	30,669
Containment Area (ac):	5.50	Dike Height (ft):	6.5
Impacted Area (ac):	8.44	Excavation Depth (ft):	4.53
Buffer Area (ac):	7.19	Existing Mean Site Elevation (ft):	5
N Buffer Width (ft):	100	Dike Volume (cy):	18,256
S Buffer Width (ft):	100	Max. Pumping Distance (mi):	23.51
E Buffer Width (ft):	100	Max. Barging Distance (mi):	N/A
W Buffer Width (ft):	100	Min. Distance from Waterway (mi):	7.01
Total Site Area (ac):	15.63		

SITE			
Public Access:	97th Ave, 92nd Ave, Coconut Palm Dr (SW 248th St)	Comprehensive Plan Designation:	Institutional and Public Facilities
		Adjacent Land Use:	Black Creek Canal (N); Black Point Marina, D-59 (E); 248th St and Goulds Canal (S); Brazilian Pepper, Site D-45 (W)
Road Easement (ft):	700		
Pipeline Easement (ft):	550	Land Use of Impacted Area:	Brazilian Pepper, Australian pine
Deep Draft Access:	N/A		
		Wetlands W/I Mapped Area (ac):	19.72
		Wetlands Impacted (ac):	0.00

Site Narrative:

Site D-44, South Dade Solid Waste Disposal Facility, is a 315-acre public landfill (835). The site is encircled by low grassy berms, landscaped grounds with attractive stands of Washington and royal palms (*Washingtonia* sp. and *Roystonea elata*), and other landscape plants. Site inspection was conducted from adjacent public roads as a result of limited site access. The grounds consisted of mowed lawn grasses and palms surrounding the facility. The site is accessed from a paved road that enters the site from the west along 97th Avenue (814). The paved road leads to several buildings providing support operations associated with landfill operation. West of the main landfill area are several rectangular cells that are separated by limerock roads/berms and contain a mostly mangrove cover (612) or a Brazilian pepper/Australian pine cover type (422/437).

Adjacent land uses include Coconut Palm Drive (SW 248th St) and a small canal (510) to the south, Black Creek canal (510) to the north, a marina (Site D-59, Black Point Marina) to the east, and 97th Avenue (814) and undeveloped land with Brazilian pepper cover to the west (Site D-45, 422).



	LEGEND D-46	ACRES
241/243	TREE NURSERIES/ORNAMENTALS	389.69
261	FALLOW CROP LAND	262.74
814	ROADS AND HIGHWAYS	12.34
	TOTAL ACRES	664.77

	OTHER COVER TYPES SHOWN
160	EXTRACTIVE
422	BRAZILIAN PEPPER

LAND USE AND VEGETATION OF CANDIDATE SITE, D-46, MIAMI-DADE COUNTY, FLORIDA

TAYLOR ENGINEERING INC.
9000 CYPRESS GREEN DRIVE, SUITE 200
JACKSONVILLE, FLORIDA 32256

Figure B-53
Land Use and Vegetation
of Candidate Site D-46
Miami-Dade County, Florida

PROJECT C1999-021
REVISION
SHEET
DATE Aug., 2000

SITE DATA SUMMARY SHEET

Name: D-46

AKA:

Site Use: Multi-Reach Inland Storage

Comment: Agricultural land adjacent to Princeton Canal

LOCATION			
County:	Dade	ICWW REACH MILEAGE:	367.36
Municipality:	Unincorporated	East/West of	West
Section/Township/Range:	31/56/40 & 30/56/40	Receiving Waterbody:	N/A
		FDEP	N/A

REACH					
Reach Designation:	DA-5			Projected Dredging Frequency (yr):	20
Reach Length (mi):	15.29			50-yr Dredging Requirement (cy):	71,295
ICWW Mileage:	366.87	to	382.16	50-yr Storage Requirement (cy):	153,284
Cut/Station:	D-5/0+00	to	D-9/201+74.60		
Geographic: (FDEP Classification)	Black Point Dade/Monroe County line			(III) to (III)	

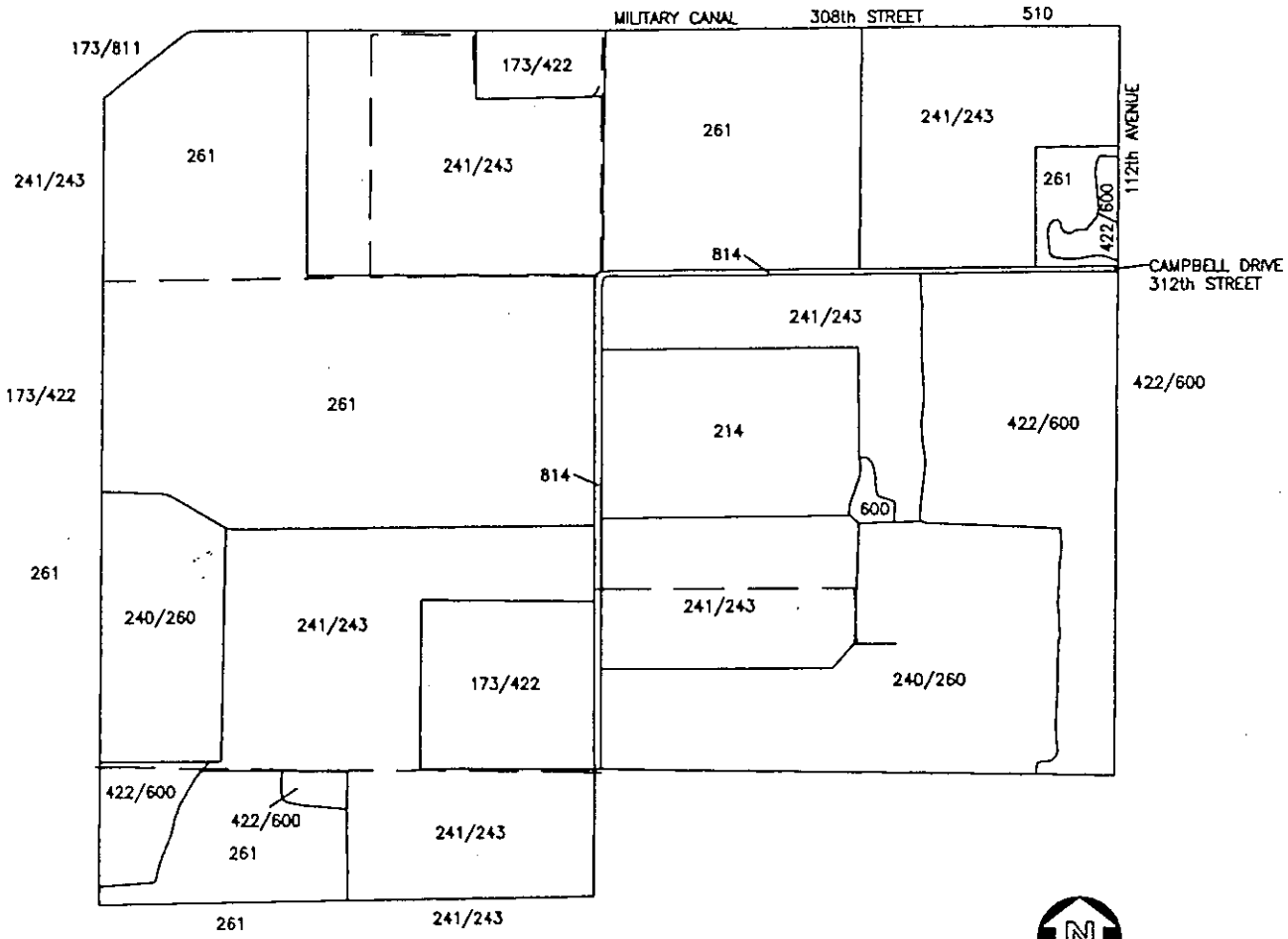
SITE PARAMETERS			
Mapped Area (ac):	664.77	Storage Capacity (cy):	153,000
Containment Area (ac):	N/A	Dike Height (ft):	N/A
Impacted Area (ac):	11.86	Excavation Depth (ft):	N/A
Buffer Area (ac):	7.52	Existing Mean Site Elevation (ft):	5
N Buffer Width (ft):	100	Dike Volume (cy):	N/A
S Buffer Width (ft):	100	Max. Pumping Distance (mi):	N/A
E Buffer Width (ft):	100	Max. Barging Distance (mi):	N/A
W Buffer Width (ft):	100	Min. Distance from Waterway (mi):	8.39
Total Site Area (ac):	19.38		

SITE			
Public Access:	276th St, 107th Ave, & 117th Ave	Comprehensive Plan Designation:	Agriculture
		Adjacent Land Use:	
Road Easement (ft):	Not Required	Fallow fields and Ornamental tree nurseries (N); Limerock mine (E); Nurseries (S); Fallow fields (W)	
Pipeline Easement (ft):	N/A	Land Use of Impacted Area:	
Deep Draft Access:	N/A	Tree nurseries/Ornamentals	
		Wetlands W/I Mapped Area (ac):	0.00
		Wetlands Impacted (ac):	0.00

Site Narrative:

Site D-46 is a 665-acre agriculture area south of the Princeton Canal (510). Moody Drive (268th Street) and 112th Avenue intersect near the middle of Site D-46 dividing it into quadrants. The site consists mostly of tree nurseries or ornamental plants under cultivation (241/243). A variety of small trees, palms, and ornamental plants were under cultivation in open fields at the time of inspection. The southwest quadrant of the property and a small area in the southeast quadrant contain large fallow fields (261).

Adjacent land uses include fallow fields (261) and tree nurseries/ornamentals (214/243) to the north, a limerock mine (160) to the east, more nurseries (214/243) and Brazilian pepper (422) to the south, and fallow fields to the west (261).



GRAPHIC SCALE

0 250 500 1000

SCALE IN FEET

LEGEND D-47

		ACRES
173/422	MILITARY/BRAZILIAN PEPPER	23.64
214	ROW CROPS	26.33
240/260	NURSERIES AND VINEYARDS/OTHER OPEN LANDS	66.65
241/243	TREE NURSERIES/ORNAMENTALS	172.90
261	FALLOW CROP LAND	159.61
422/600	BRAZILIAN PEPPER/WETLANDS	48.08
600	WETLANDS	1.06
814	ROADS AND HIGHWAYS	3.93
	TOTAL ACRES	502.20

OTHER COVER TYPES SHOWN

173/811	MILITARY/AIRPORTS
510	STREAMS AND WATERWAYS

— — ROADS

LAND USE AND VEGETATION OF CANDIDATE SITE D-47, MIAMI-DADE COUNTY, FLORIDA

TAYLOR ENGINEERING INC.
9000 CYPRESS GREEN DRIVE, SUITE 200
JACKSONVILLE, FLORIDA 32256

Figure B-54
Land Use and Vegetation
of Candidate Site D-47
Miami-Dade County, Florida

PROJECT C1999-021
REVISION
SHEET
DATE Sept., 2000

SITE DATA SUMMARY SHEET

Name: D-47

AKA:

Site Use: Multi-Reach Inland Storage

Comment: Agricultural land adjacent to the former Homestead Air Force Base

LOCATION			
County:	Dade	ICWW REACH MILEAGE:	369.89
Municipality:	Unincorporated	East/West of	West
Section/Township/Range:	7/57/40	Receiving Waterbody:	N/A
		FDEP	N/A

REACH			
Reach Designation:	DA-5	Projected Dredging Frequency (yr):	20
Reach Length (mi):	15.29	50-yr Dredging Requirement (cy):	71,295
ICWW Mileage:	366.87 to 382.16	50-yr Storage Requirement (cy):	153,284
Cut/Station:	D-5/0+00 to D-9/201+74.60		
Geographic: (FDEP Classification)	Black Point Dade/Monroe County line	(III) to (III)	

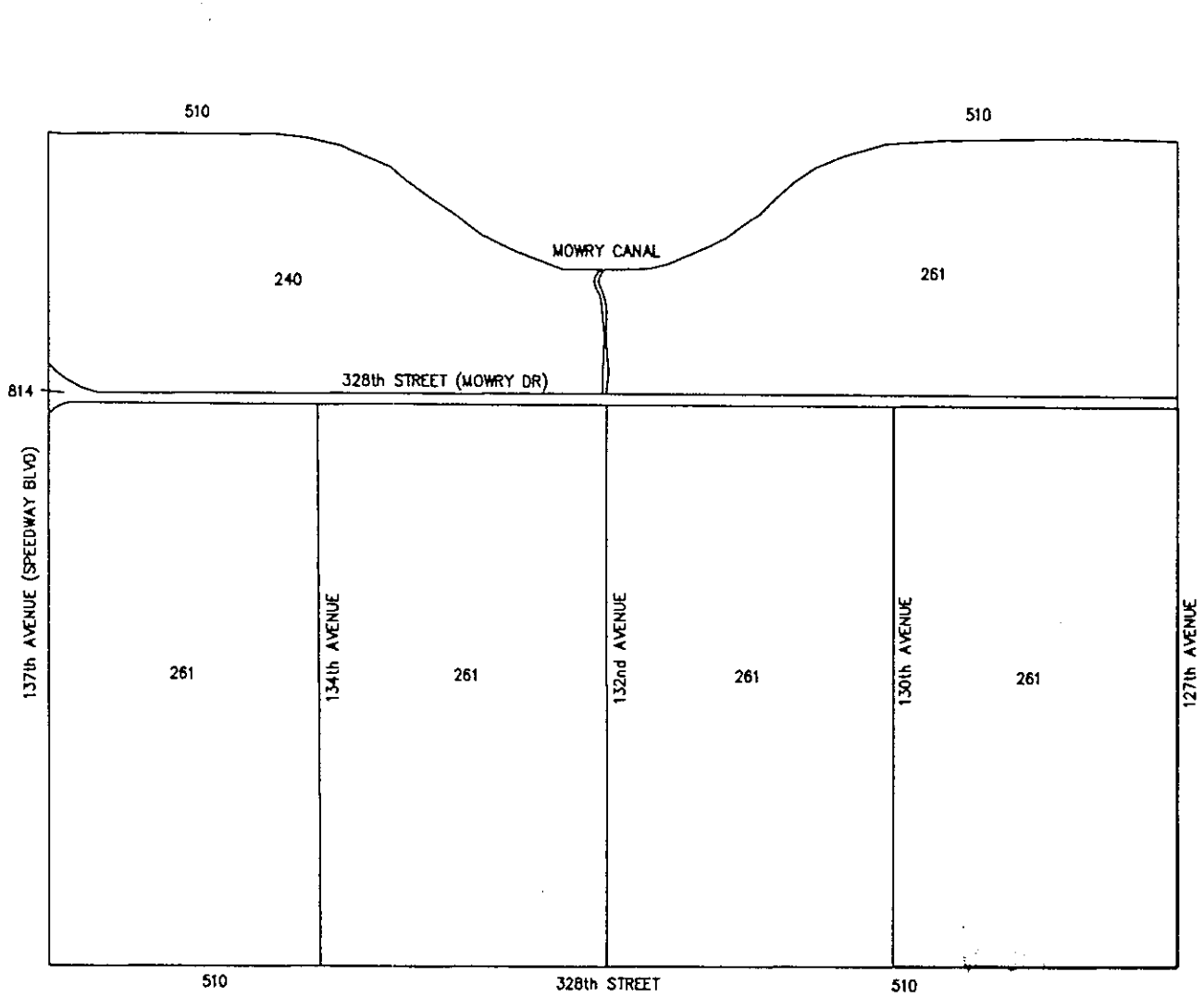
SITE PARAMETERS			
Mapped Area (ac):	502.2	Storage Capacity (cy):	153,600
Containment Area (ac):	N/A	Dike Height (ft):	N/A
Impacted Area (ac):	11.90	Excavation Depth (ft):	N/A
Buffer Area (ac):	35.11	Existing Mean Site Elevation (ft):	5
N Buffer Width (ft):	350	Dike Volume (cy):	N/A
S Buffer Width (ft):	350	Max. Pumping Distance (mi):	N/A
E Buffer Width (ft):	350	Max. Barging Distance (mi):	N/A
W Buffer Width (ft):	350	Min. Distance from Waterway (mi):	8.49
Total Site Area (ac):	47.01		

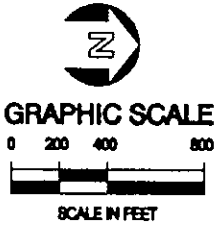
SITE			
Public Access:	308th St, 312th St (Campbell Dr)	Comprehensive Plan Designation:	Agriculture
		Adjacent Land Use:	
Road Easement (ft):	Not Required	Military Canal (N); Brazilian pepper/wetlands (E); Agricultural lands (S); Plant nurseries and military (W)	
Pipeline Easement (ft):	N/A	Land Use of Impacted Area:	
Deep Draft Access:	N/A	Fallow cropland, Tree nurseries/ornamentals, Brazilian Pepper	
		Wetlands W/I Mapped Area (ac):	49.14
		Wetlands Impacted (ac):	0.00

Site Narrative:

Site D-47 is a 502-acre agricultural area in south Miami-Dade County near the former Homestead Air Force Base (173/811). The property is composed of numerous parcels with public road (814) access. Most of the land consists of related agricultural uses including row crops (214), tree nurseries/ornamentals (241/243), and fallow cropland (261). Some of the land in the area is associated with former agricultural use has been neglected and reverted to an un-maintained status. This area is classified as nurseries and vineyards/other open lands (240/260). Remnant wetlands are located throughout the region and typically represent a disturbed wetland community such as Brazilian pepper/wetland (422/600). Some parcels appear to be related to Homestead Air Force Base, having some type of radar or military-related function (173/422).

Adjacent land uses include Military Canal (510) and 308th Street (814) to the north, 112th Avenue (814) and Brazilian pepper/wetlands (422/600) to the east, agricultural lands (261 and 241/243) to the south, and fallow cropland (261), plant nurseries (241/243), and military/Brazilian pepper (173/422) to the west.





	LEGEND D-48	ACRES
240	NURSERIES AND VINEYARDS	53.94
261	FALLOW CROP LAND	343.56
814	ROADS AND HIGHWAYS	6.03
	TOTAL ACRES	403.53

OTHER COVER TYPES SHOWN

510 STREAMS AND WATERWAYS

—— DIRT ROADS

LAND USE AND VEGETATION FOR CANDIDATE SITE D-48, MIAMI-DADE COUNTY, FLORIDA

TAYLOR ENGINEERING INC.
9000 CYPRESS GREEN DRIVE, SUITE 200
JACKSONVILLE, FLORIDA 32256

Figure B-55
Land Use and Vegetation
of Candidate Site D-48
Miami-Dade County, Florida

PROJECT C1999-021
REVISION
SHEET
DATE Sept., 2000

SITE DATA SUMMARY SHEET

Name: D-48

AKA:

Site Use: Multi-Reach Inland Storage

Comment: Agricultural land adjacent to Mowry Canal; Future land use plans indicate an expansion of Homestead airport into this area

LOCATION			
County:	Dade	ICWW REACH MILEAGE:	370.71
Municipality:	Unincorporated	East/West of	West
Section/Township/Range:	14/57/39	Receiving Waterbody:	N/A
		FDEP	N/A

REACH			
Reach Designation:	DA-5	Projected Dredging Frequency (yr):	20
Reach Length (mi):	15.29	50-yr Dredging Requirement (cy):	71,295
ICWW Mileage:	366.87 to 382.16	50-yr Storage Requirement (cy):	153,284
Cut/Station:	D-5/0+00 to D-9/201+74.60		
Geographic: (FDEP Classification)	Black Point Dade/Monroe County line	(III) to (III)	

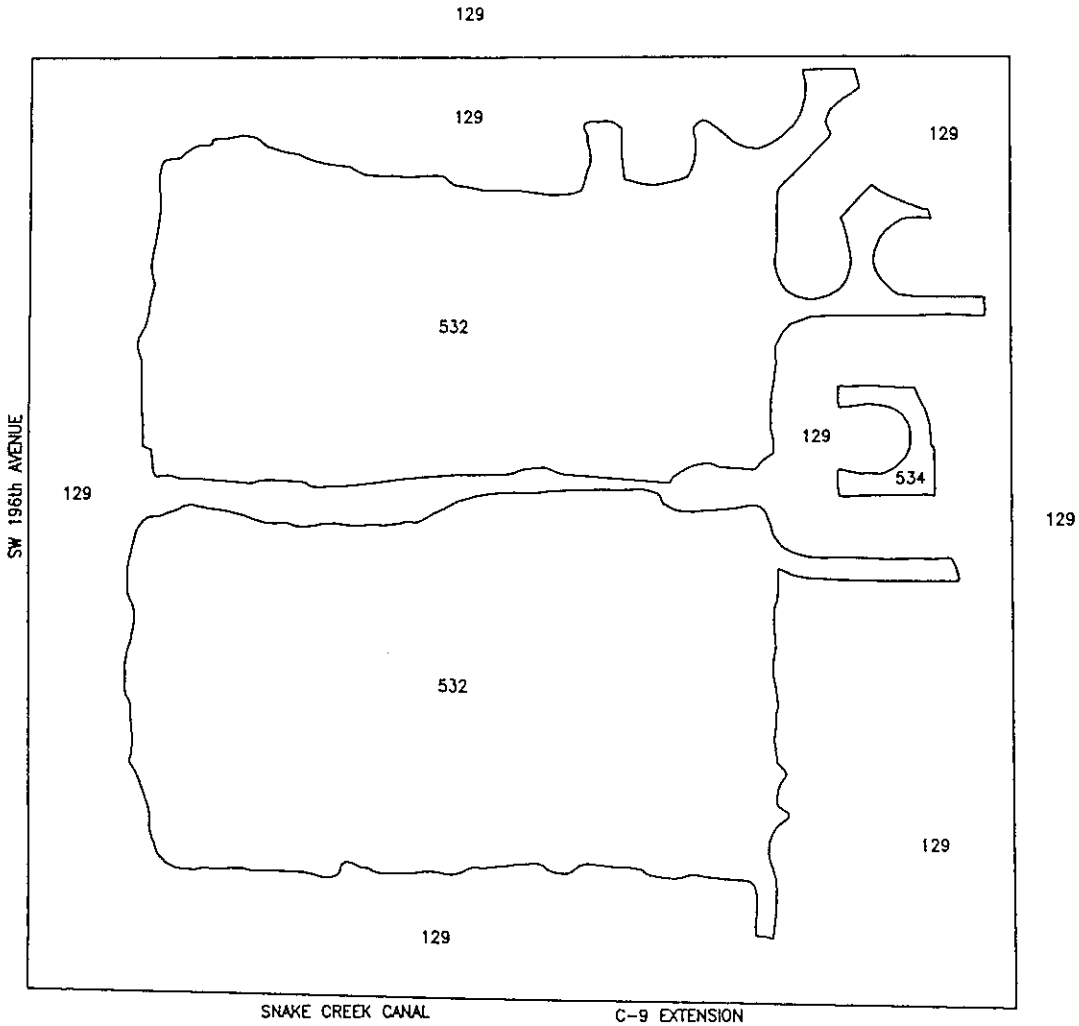
SITE PARAMETERS			
Mapped Area (ac):	403.53	Storage Capacity (cy):	153,600
Containment Area (ac):	N/A	Dike Height (ft):	N/A
Impacted Area (ac):	11.90	Excavation Depth (ft):	N/A
Buffer Area (ac):	34.95	Existing Mean Site Elevation (ft):	5
N Buffer Width (ft):	350	Dike Volume (cy):	N/A
S Buffer Width (ft):	350	Max. Pumping Distance (mi):	N/A
E Buffer Width (ft):	350	Max. Barging Distance (mi):	N/A
W Buffer Width (ft):	350	Min. Distance from Waterway (mi):	9.92
Total Site Area (ac):	46.85		

SITE			
Public Access:	328th St, 137th Ave (Speedway Blvd), & 127th Ave	Comprehensive Plan Designation:	Agriculture and Institutional and Public
		Adjacent Land Use:	
Road Easement (ft):	Not Required	Roads (N, E, S); Mowry Canal (W)	
Pipeline Easement (ft):	N/A		
		Land Use of Impacted Area:	
Deep Draft Access:	N/A	Agriculture	
		Wetlands W/I Mapped Area (ac):	0.00
		Wetlands Impacted (ac):	0.00

Site Narrative:

Site D-48 is a 404-acre site located south of Mowry Canal and north of 328th Street. The site is almost entirely in an agricultural use with 85% of the site in fallow cropland (261). Most of the fields appeared to be worked regularly and some were recently plowed in preparation for planting. The southwest corner of the site was used for the production of ornamental plants including trees and shrubs. This area was mapped as nurseries and vineyards (240). Mowry Drive, a paved collector road, runs north to south through the site. Three dirt roads provide access to the agricultural fields.

Adjacent land uses include roads (814) to the north, east, and south. The Mowry Canal (510) borders the site to the west.



LEGEND D-49

		ACRES
129	MEDIUM DENSITY UNDER CONSTRUCTION	289.70
532	RESERVOIRS LARGER THAN 100 ACRES BUT LESS THAN 500 ACRES	274.59
534	RESERVOIRS LESS THAN 10 ACRES WHICH ARE DOMINANT FEATURES	3.36
	TOTAL ACRES	567.65

N

GRAPHIC SCALE

0 250 500 1000

SCALE IN FEET

LAND USE AND VEGETATION OF CANDIDATE SITE D-49, BROWARD COUNTY, FLORIDA

TAYLOR ENGINEERING INC.
9000 CYPRESS GREEN DRIVE, SUITE 200
JACKSONVILLE, FLORIDA 32256

Figure B-56
Land Use and Vegetation
of Candidate Site D-49
Miami-Dade County, Florida

PROJECT C1999-021
REVISION
SHEET
DATE Sept., 2000

SITE DATA SUMMARY SHEET

Name: D-49

AKA:

Site Use: Multi-Reach Inland Storage

Comment: Incompatible Existing Land Use -- Former limerock mine currently being developed as a lakefront residential

LOCATION

County:	Broward	ICWW REACH MILEAGE:	335.09
Municipality:	Unincorporated	East/West of	West
Section/Township/Range:	36/51/39	Receiving Waterbody:	N/A
		FDEP	N/A

REACH

Reach Designation:	DA-1			Projected Dredging Frequency (yr):	20
Reach Length (mi):	3.99			50-yr Dredging Requirement (cy):	15,801
ICWW Mileage:	334.24	to	338.23	50-yr Storage Requirement (cy):	33,973
Cut/Station:	DA-1/0+00	to	DA-8/0+00		
Geographic: (FDEP Classification)	530 ft South of Broward/Dade County Line (III) to Haulover Beach County Park (III)				

SITE PARAMETERS

Mapped Area (ac):	567.65	Storage Capacity (cy):	N/A
Containment Area (ac):	N/A	Dike Height (ft):	N/A
Impacted Area (ac):	Insufficient Area	Excavation Depth (ft):	N/A
Buffer Area (ac):	N/A	Existing Mean Site Elevation (ft):	10
N Buffer Width (ft):	N/A	Dike Volume (cy):	N/A
S Buffer Width (ft):	N/A	Max. Pumping Distance (mi):	N/A
E Buffer Width (ft):	N/A	Max. Barging Distance (mi):	N/A
W Buffer Width (ft):	N/A	Min. Distance from Waterway (mi):	17.33
Total Site Area (ac):	N/A		

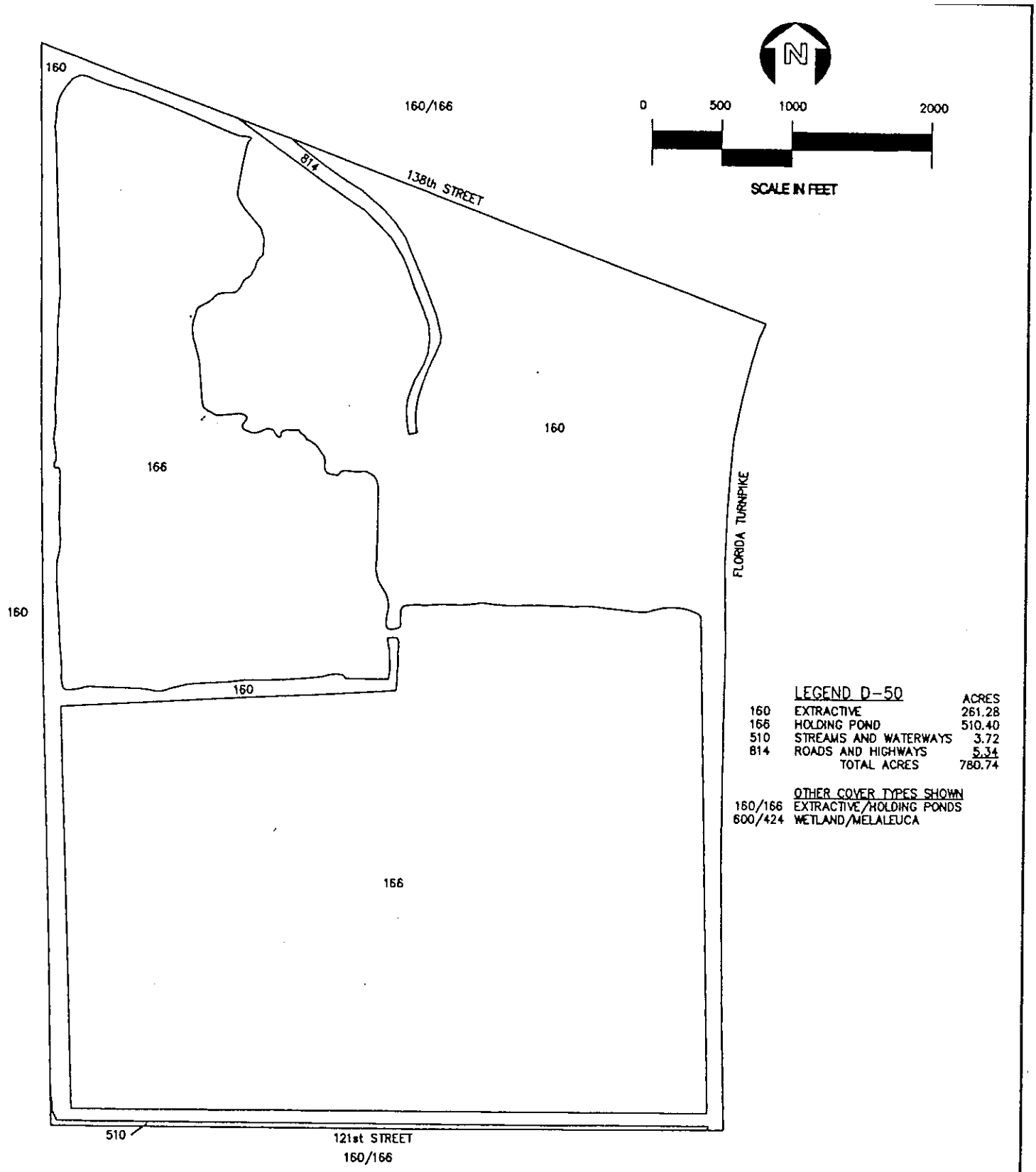
SITE

Public Access:	SW 196th Ave	Comprehensive Plan Designation:	Parks and Recreation
		Adjacent Land Use:	
Road Easement (ft):	Not Required	Residential (N, E); Snake Creek Canal (S); SW 196th Ave (W)	
Pipeline Easement (ft):	N/A	Land Use of Impacted Area:	
Deep Draft Access:	N/A	N/A	
		Wetlands W/I Mapped Area (ac):	0.00
		Wetlands Impacted (ac):	0.00

Site Narrative:

Site D-49 is a 568-acre former limerock mine now under construction as a lakefront residential development. The site consists of mostly barren uplands with exposed limerock (129). Two former holding ponds will become lakes (532). Construction is underway and the edges of the former pits are being dredged to accommodate typical residential lot layouts.

Adjacent land uses include residential under construction (129) to the north and east, Snake Creek Canal (510) to the south, and SW 196th Avenue (814) to the west.



LAND USE AND VEGETATION OF CANDIDATE SITE D-50, MIAMI-DADE COUNTY, FLORIDA

TAYLOR ENGINEERING INC. 8000 CYPRESS GREEN DRIVE, SUITE 200 JACKSONVILLE, FLORIDA 32256	Figure B-57 Land Use and Vegetation of Candidate Site D-50 Miami-Dade County, Florida	PROJECT C1999-021 REVISION SHEET DATE Oct., 2000

SITE DATA SUMMARY SHEET

Name: D-50

AKA:

Site Use: Multi-Reach Inland Storage

Comment: Holding ponds created by the extraction of limerock resources

LOCATION			
County:	Dade	ICWW REACH MILEAGE:	341.29
Municipality:	Unincorporated	East/West of	West
Section/Township/Range:	36/52/39 & 25/52/39	Receiving Waterbody:	N/A
		FDEP	N/A

REACH			
Reach Designation:	DA-2	Projected Dredging Frequency (yr):	5
Reach Length (mi):	4.53	50-yr Dredging Requirement (cy):	469,672
ICWW Mileage:	338.23 to 342.76	50-yr Storage Requirement (cy):	1,009,795
Cut/Station:	DA-8/0+00 to DA-9/178+50		
Geographic: (FDEP Classification)	Haulover Beach County Park Kennedy Causeway (NE 79th Street)	(III) to (III)	

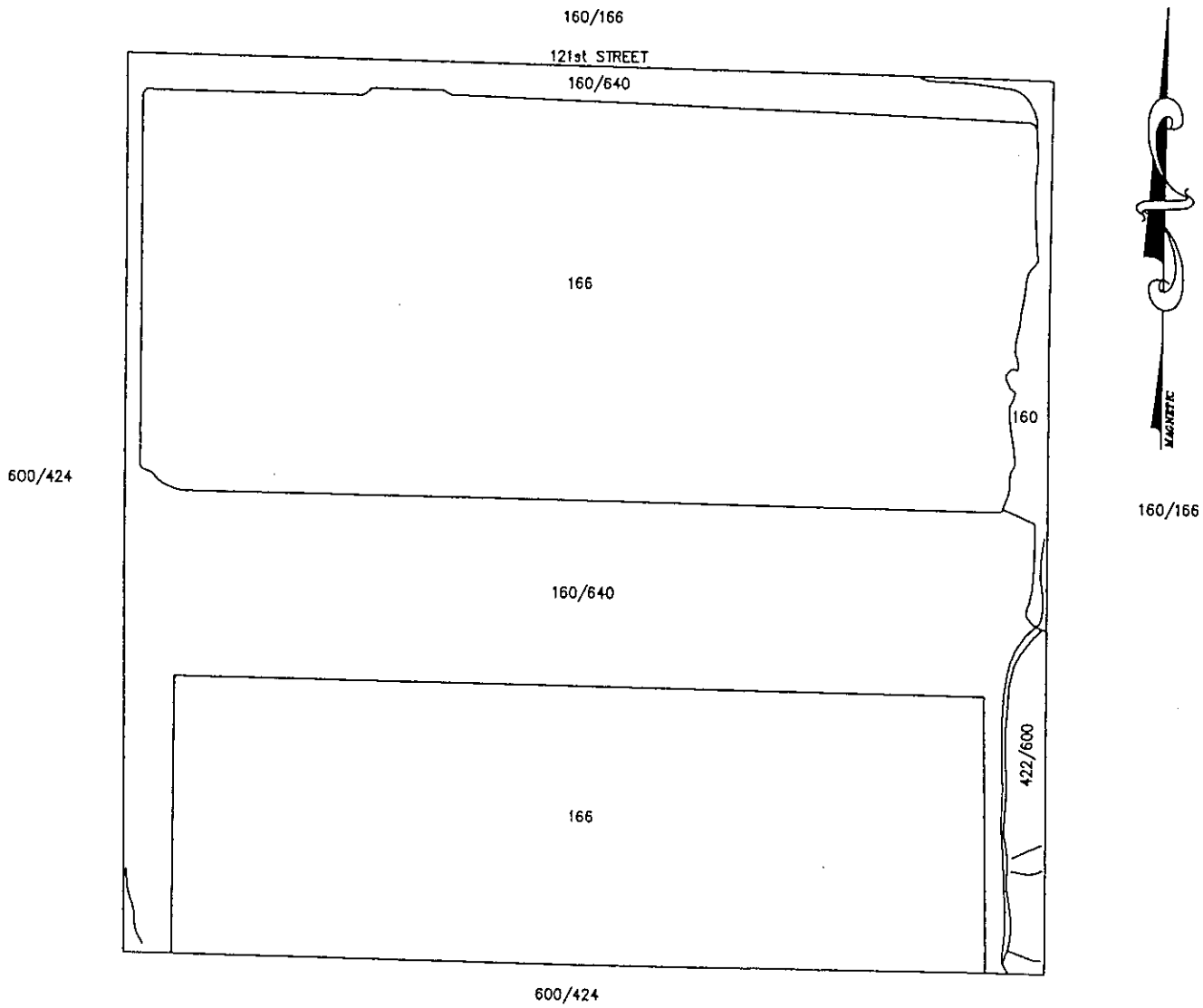
SITE PARAMETERS			
Mapped Area (ac):	780.74	Storage Capacity (cy):	2,323,845
Containment Area (ac):	N/A	Dike Height (ft):	N/A
Impacted Area (ac):	180.05	Excavation Depth (ft):	N/A
Buffer Area (ac):	29.64	Existing Mean Site Elevation (ft):	5
N Buffer Width (ft):	100	Dike Volume (cy):	N/A
S Buffer Width (ft):	100	Max. Pumping Distance (mi):	N/A
E Buffer Width (ft):	100	Max. Barging Distance (mi):	N/A
W Buffer Width (ft):	100	Min. Distance from Waterway (mi):	15.47
Total Site Area (ac):	209.69		

SITE			
Public Access:	FL Turnpike, 138th St, 121st St	Comprehensive Plan Designation:	Open Land
		Adjacent Land Use:	
Road Easement (ft):	Not Required	Mining lands (N, S, W); FL Turnpike (E)	
Pipeline Easement (ft):	N/A		
		Land Use of Impacted Area:	
Deep Draft Access:	N/A	Extractive	
		Wetlands W/I Mapped Area (ac):	0.00
		Wetlands Impacted (ac):	0.00

Site Narrative:

Site D-50 is a 781-acre site used for the extraction of limerock resources. Property descriptions are based on aerial photograph interpretation as a result of limited site access. Most of the site consists of holding ponds (166) created by the extraction of limerock resources. There are two ponds, separated by a narrow band of land. The southernmost pond covers most of the southern portion of the property while the northern pond is located in the northwest corner of the site. The northeastern and north central part of the site is the operations area of the mine, containing roads, buildings, and heavy equipment (160).

Adjacent land uses include mining lands (160) to the north, south, and west and the Florida Turnpike (814) to the east.



LEGEND D-51

		ACRES
160	EXTRACTIVE	10.40
160/640	EXTRACTIVE/NON-FORESTED WETLAND	168.85
166	HOLDING PONDS	436.25
422/600	BRAZILIAN PEPPER/WETLAND	9.28
	TOTAL ACRES	624.78

OTHER COVER TYPES SHOWN

160/166	EXTRACTIVE/HOLDING PONDS
600/424	WETLAND/MELALEUCA

——— DIRT ROAD

0 500 1000 2000

LAND USE AND VEGETATION OF CANDIDATE SITE D-51, MIAMI-DADE COUNTY, FLORIDA

TAYLOR ENGINEERING INC.
9000 CYPRESS GREEN DRIVE, SUITE 200
JACKSONVILLE, FLORIDA 32256

Figure B-58
Land Use and Vegetation
of Candidate Site D-51
Miami-Dade County, Florida

PROJECT C1999-021
REVISION
SHEET
DATE Oct., 2000

SITE DATA SUMMARY SHEET

Name: D-51

AKA:

Site Use: Multi-Reach Inland Storage

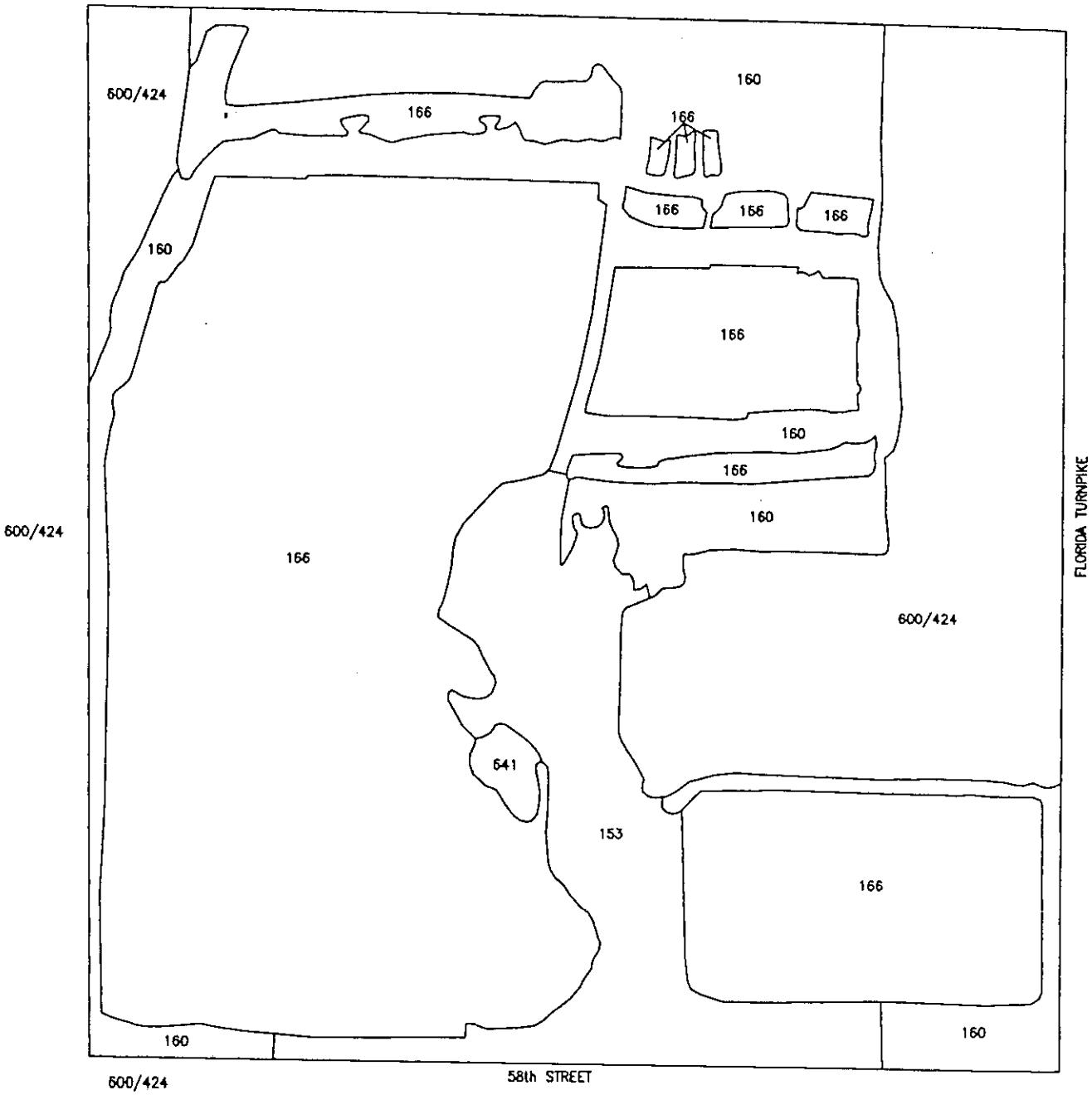
Comment: Incompatible Existing Land Use -- Holding ponds created by the extraction of limerock resources

LOCATION			
County:	Dade	ICWW REACH MILEAGE:	342.24
Municipality:	Unincorporated	East/West of	West
Section/Township/Range:	2/53/39	Receiving Waterbody:	N/A
		FDEP	N/A
REACH			
Reach Designation:	DA-2	Projected Dredging Frequency (yr):	5
Reach Length (mi):	4.53	50-yr Dredging Requirement (cy):	469,672
ICWW Mileage:	338.23 to 342.76	50-yr Storage Requirement (cy):	1,009,795
Cut/Station:	DA-8/0+00 to DA-9/178+50		
Geographic: (FDEP Classification)	Haulover Beach County Park Kennedy Causeway (NE 79th Street)	(III) to (III)	
SITE PARAMETERS			
Mapped Area (ac):	624.78	Storage Capacity (cy):	N/A
Containment Area (ac):	N/A	Dike Height (ft):	N/A
Impacted Area (ac):	Insufficient Area	Excavation Depth (ft):	N/A
Buffer Area (ac):	N/A	Existing Mean Site Elevation (ft):	5
N Buffer Width (ft):	N/A	Dike Volume (cy):	N/A
S Buffer Width (ft):	N/A	Max. Pumping Distance (mi):	N/A
E Buffer Width (ft):	N/A	Max. Barging Distance (mi):	N/A
W Buffer Width (ft):	N/A	Min. Distance from Waterway (mi):	15.92
Total Site Area (ac):	N/A		
SITE			
Public Access:	121st St	Comprehensive Plan Designation:	Open Land
		Adjacent Land Use:	
Road Easement (ft):	Not Required	Extractive/holding ponds (N, E); Melaleuca covered wetlands (S, W)	
Pipeline Easement (ft):	N/A	Land Use of Impacted Area:	
Deep Draft Access:	N/A	N/A	
		Wetlands W/I Mapped Area (ac):	178.13
		Wetlands Impacted (ac):	0.00

Site Narrative:

Site D-51 consists of 625-acres of land associated with the commercial extraction of limerock. Property descriptions are based on aerial photograph interpretation as a result of limited site access. The site consists of two large rectangular holding ponds (166) associated with the mining process. A strip of wetlands is located between the two ponds. This land is mapped as extractive land/non-forested wetland (160/640). The central portion of this area appears higher in elevation than that adjacent to the borders of the ponds, however it did not appear to be uplands. A limerock road/berm are located along the northern, eastern, and western boundary of the site. The eastern portion also contains some small areas of Brazilian pepper (422).

Adjacent land uses include extractive/holding ponds (160/166) to the north and east and Melaleuca covered wetlands (600/424) to the south and west.



LEGEND D-52

		ACRES
153	MINERAL PROCESSING	54.00
160	EXTRACTIVE	113.26
166	HOLDING PONDS	285.52
600/424	WETLANDS/MELALEUCA	121.60
641	FRESHWATER MARSHES	2.53
	TOTAL ACRES	576.91

OTHER COVER TYPES SHOWN

814	ROADS AND HIGHWAYS

N

GRAPHIC SCALE

0 200 400 800

SCALE IN FEET

LAND USE AND VEGETATION OF CANDIDATE SITE D-52, MIAMI-DADE COUNTY, FLORIDA

TAYLOR ENGINEERING INC.
9000 CYPRESS GREEN DRIVE, SUITE 200
JACKSONVILLE, FLORIDA 32256

Figure B-59
Land Use and Vegetation
of Candidate Site D-52
Miami-Dade County, Florida

PROJECT C1999-021
REVISION
SHEET
DATE Aug., 2000

SITE DATA SUMMARY SHEET

Name:	D-52
AKA:	Continental Aggregates
Site Use:	Multi-Reach Inland Storage
Comment:	Insufficient Upland Area -- Holding ponds created by the extraction of limerock resources

LOCATION

County:	Dade	ICWW REACH MILEAGE:	345.24
Municipality:	Unincorporated	East/West of	West
Section/Township/Range:	13/53/39 & 14/53/39	Receiving Waterbody:	N/A
		FDEP	N/A

REACH

Reach Designation:	DA-3	Projected Dredging Frequency (yr):	20
Reach Length (mi):	8.36	50-yr Dredging Requirement (cy):	17,524
ICWW Mileage:	342.76 to 351.12	50-yr Storage Requirement (cy):	37,677
Cut/Station:	DA-9/178+50 to D-3/57+80		
Geographic: (FDEP Classification)	Kennedy Causeway (NE 79th Street) Rickenbacker Causeway	(III) to (III)	

SITE PARAMETERS

Mapped Area (ac):	576.91	Storage Capacity (cy):	N/A
Containment Area (ac):	N/A	Dike Height (ft):	N/A
Impacted Area (ac):	Insufficient Area	Excavation Depth (ft):	N/A
Buffer Area (ac):	N/A	Existing Mean Site Elevation (ft):	10
N Buffer Width (ft):	N/A	Dike Volume (cy):	N/A
S Buffer Width (ft):	N/A	Max. Pumping Distance (mi):	N/A
E Buffer Width (ft):	N/A	Max. Barging Distance (mi):	N/A
W Buffer Width (ft):	N/A	Min. Distance from Waterway (mi):	14.07
Total Site Area (ac):	N/A		

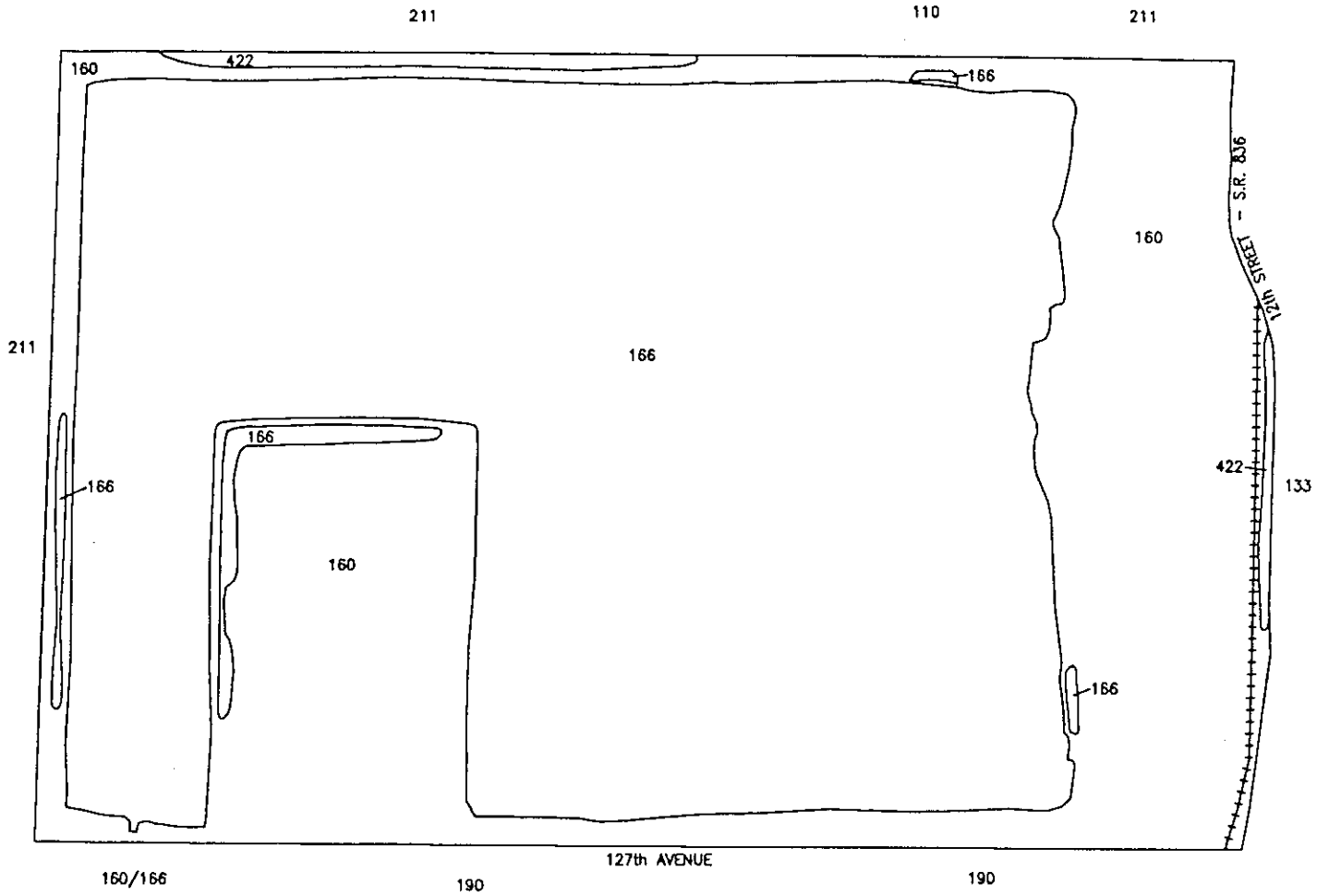
SITE

Public Access:	FL Turnpike, 58th St	Comprehensive Plan Designation:	Open Land
		Adjacent Land Use:	
Road Easement (ft):	Not Required	Wetland/Melaleuca forest (N, S, W); FL Turnpike (E)	
Pipeline Easement (ft):	N/A		
		Land Use of Impacted Area:	
Deep Draft Access:	N/A	N/A	
		Wetlands W/I Mapped Area (ac):	124.13
		Wetlands Impacted (ac):	0.00

Site Narrative:

Site D-52 is a 577-acre area mostly associated with the mining of limestone by Continental Aggregates. The site consists of one large and five smaller holding ponds (166) that were formed following the extraction of the limestone resources. One small delta on the southeastern portion of the largest holding pond was vegetated by cattails and thus mapped as freshwater marsh (641). The rest of active site appears to be disturbed areas along the holding ponds which provide heavy machinery access, or operations, processing, and loading facilities associated with the active mine (153). Little natural vegetation remains on the mining related regions of the site. Some vegetation regrowth is located in the rock and overburden spoil areas (160). Portions of the property that have not been mined are covered in a dense wetland forest of Melaleuca (600/424).

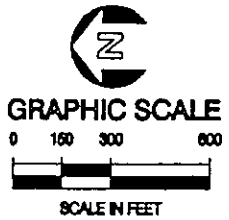
Adjacent land uses include wetland and Melaleuca forest (600/424) to the north, south, and west and to the east is the Florida Turnpike.



	LEGEND D-53	ACRES
160	EXTRACTIVE	82.24
166	HOLDING PONDS	160.74
422	BRAZILIAN PEPPER	2.65
	TOTAL ACRES	245.63

OTHER COVER TYPES SHOWN

110	RESIDENTIAL, LOW DENSITY
133	MULTIPLE DWELLING UNITS, LOW RISE
160/166	EXTRACTIVE/HOLDING PONDS
190	OPEN LAND
211	IMPROVED PASTURES



LAND USE AND VEGETATION OF CANDIDATE SITE D-53, MIAMI-DADE COUNTY, FLORIDA

TAYLOR ENGINEERING INC.
9000 CYPRESS GREEN DRIVE, SUITE 200
JACKSONVILLE, FLORIDA 32256

Figure B-60
Land Use and Vegetation
of Candidate Site D-53
Miami-Dade County, Florida

PROJECT C1999-021
REVISION
SHEET
DATE Aug., 2000

SITE DATA SUMMARY SHEET

Name: D-53

AKA:

Site Use: Multi-Reach Inland Storage

Comment: Holding ponds created by the extraction of limerock resources

LOCATION			
County:	Dade	ICWW REACH MILEAGE:	348.31
Municipality:	Unincorporated	East/West of	West
Section/Township/Range:	36/53/39	Receiving Waterbody:	N/A
		FDEP	N/A

REACH			
Reach Designation:	DA-3	Projected Dredging Frequency (yr):	20
Reach Length (mi):	8.36	50-yr Dredging Requirement (cy):	17,524
ICWW Mileage:	342.76 to 351.12	50-yr Storage Requirement (cy):	37,677
Cut/Station:	DA-9/178+50 to D-3/57+80		
Geographic: (FDEP Classification)	Kennedy Causeway (NE 79th Street) Rickenbacker Causeway	(III) to (III)	

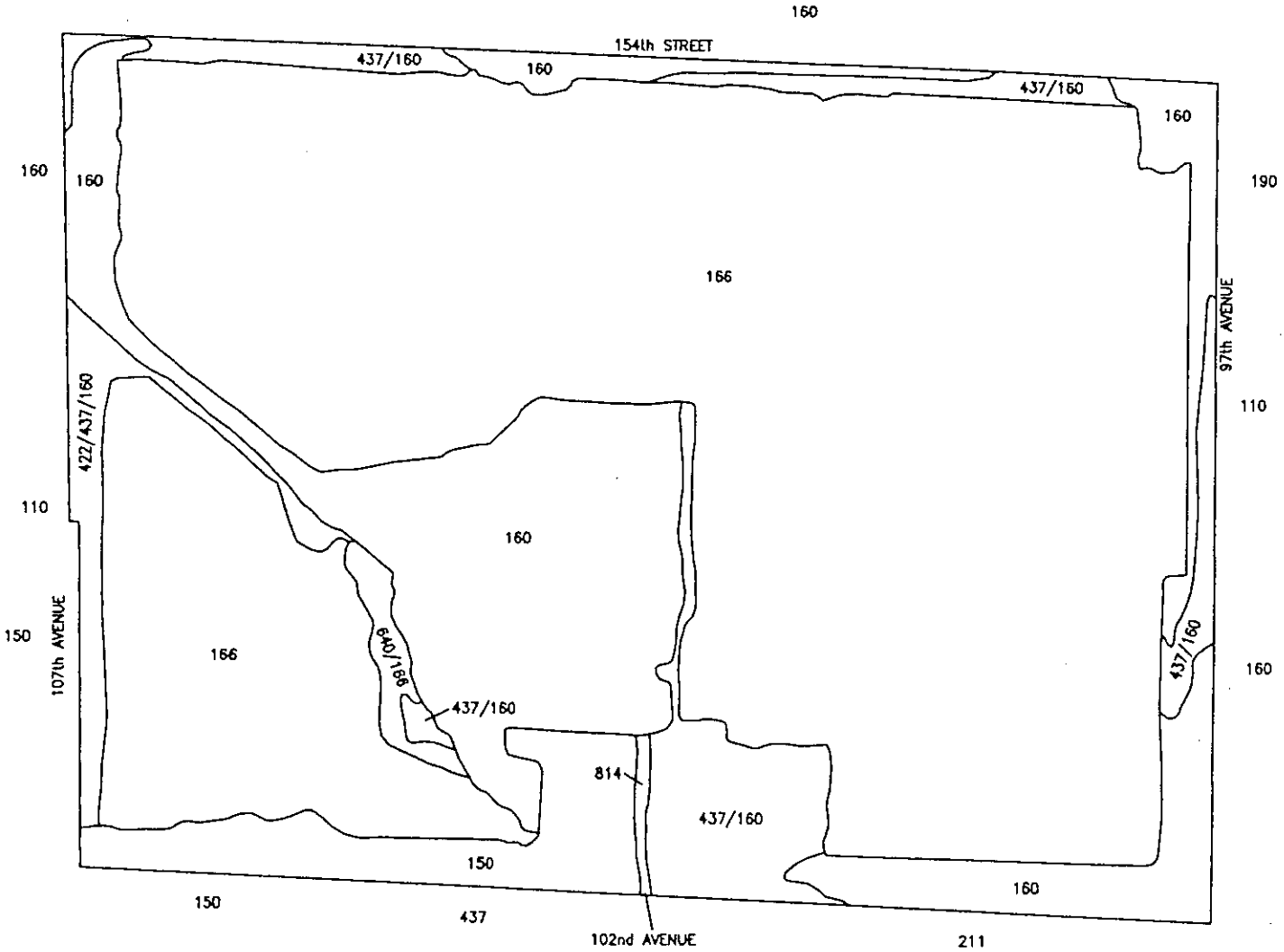
SITE PARAMETERS			
Mapped Area (ac):	245.63	Storage Capacity (cy):	248,192
Containment Area (ac):	N/A	Dike Height (ft):	N/A
Impacted Area (ac):	19.23	Excavation Depth (ft):	N/A
Buffer Area (ac):	4.73	Existing Mean Site Elevation (ft):	10
N Buffer Width (ft):	50	Dike Volume (cy):	N/A
S Buffer Width (ft):	50	Max. Pumping Distance (mi):	N/A
E Buffer Width (ft):	50	Max. Barging Distance (mi):	N/A
W Buffer Width (ft):	50	Min. Distance from Waterway (mi):	13.48
Total Site Area (ac):	23.96		

SITE			
Public Access:	127th Ave, 12th St (State Road 836)	Comprehensive Plan Designation:	Open Land
		Adjacent Land Use:	
Road Easement (ft):	Not Required	Improved pasture (N, E); Multi-family residential (S); Undeveloped and mining land (W)	
Pipeline Easement (ft):	N/A	Land Use of Impacted Area:	
Deep Draft Access:	N/A	Extractive	
		Wetlands W/I Mapped Area (ac):	0.00
		Wetlands Impacted (ac):	0.00

Site Narrative:

Site D-53 is a 246-acre site that is associated with a limerock-mining operation containing a holding pond and other lands used to support the extraction of rock resources. There was no evidence, however, of active excavation work on the property. Since other similar holding ponds are located in the area, it may be part of a larger active mine. The large 161-acre holding pond was steep-sided with only a thin scattered band of cattails, as emergent vegetation, along the western shoreline. Several long, narrow holding ponds are located on the property. These were shallow and in the southernmost portion of the site contained limited emergent and submerged vegetation species such as green algae (*Chara* sp.), spikerush (*Eleocharis* sp.), and several other sterile grasses. The areas show as extractive were mostly barren rock with some widely scattered clumps of herbaceous vegetation including ragweed (*Ambrosia artemisiifolia*), dog fennel (*Eupatorium capillifolium*), rosegentian (*Sabatia* sp.) and white head broom (*Spermacoce verticillata*).

Adjacent land uses include improved pasture (211) to the north and east, multi-family residential (133) to the south, and undeveloped (190) and mining land (160/166) to the west.



	LEGEND D-54	ACRES
150	INDUSTRIAL	18.45
160	EXTRACTIVE	82.94
166	HOLDING PONDS	315.08
422/437/160	BRAZILIAN PEPPER/AUSTRALIAN PINE/EXTRACTIVE	9.09
437/160	AUSTRALIAN PINE/EXTRACTIVE	28.95
640/166	VEGETATED NON-FORESTED WETLANDS	3.47
814	ROADS AND HIGHWAYS	.93
	TOTAL ACRES	458.91

OTHER COVER TYPES SHOWN

110	RESIDENTIAL, LOW DENSITY
190	OPEN LAND
211	IMPROVED PASTURES
437	AUSTRALIAN PINE

N

GRAPHIC SCALE

0 200 400 800

SCALE IN FEET

LAND USE AND VEGETATION OF CANDIDATE SITE D-54, MIAMI-DADE COUNTY, FLORIDA

TAYLOR ENGINEERING INC.
9000 CYPRESS GREEN DRIVE, SUITE 200
JACKSONVILLE, FLORIDA 32256

Figure B-61
Land Use and Vegetation
of Candidate Site D-54
Miami-Dade County, Florida

PROJECT C1999-021
REVISION
SHEET
DATE Aug., 2000

SITE DATA SUMMARY SHEET

Name:	D-54
AKA:	CSR Rinker Lake Quarry
Site Use:	Multi-Reach Inland Storage
Comment:	Holding ponds created by the extraction of limerock resources

LOCATION

County:	Dade	ICWW REACH MILEAGE:	339.09
Municipality:	Unincorporated	East/West of	West
Section/Township/Range:	20/52/40	Receiving Waterbody:	N/A
		FDEP	N/A

REACH

Reach Designation:	DA-2	Projected Dredging Frequency (yr):	5
Reach Length (mi):	4.53	50-yr Dredging Requirement (cy):	469,672
ICWW Mileage:	338.23 to 342.76	50-yr Storage Requirement (cy):	1,009,795
Cut/Station:	DA-8/0+00 to DA-9/178+50		
Geographic: (FDEP Classification)	Haulover Beach County Park Kennedy Causeway (NE 79th Street)	(III) to (III)	

SITE PARAMETERS

Mapped Area (ac):	458.91	Storage Capacity (cy):	776,552
Containment Area (ac):	N/A	Dike Height (ft):	N/A
Impacted Area (ac):	60.17	Excavation Depth (ft):	N/A
Buffer Area (ac):	10.36	Existing Mean Site Elevation (ft):	5
N Buffer Width (ft):	50	Dike Volume (cy):	N/A
S Buffer Width (ft):	50	Max. Pumping Distance (mi):	N/A
E Buffer Width (ft):	50	Max. Barging Distance (mi):	N/A
W Buffer Width (ft):	50	Min. Distance from Waterway (mi):	14.81
Total Site Area (ac):	70.53		

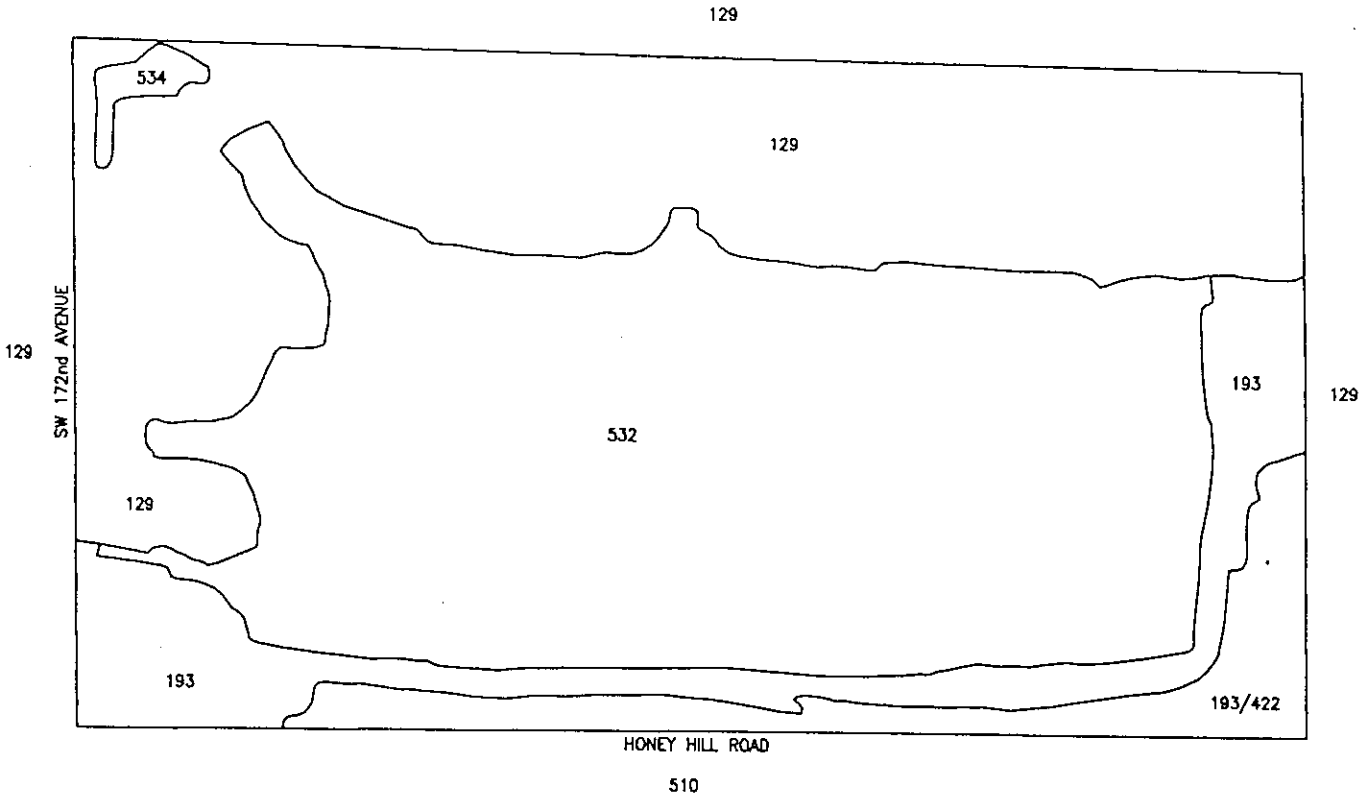
SITE

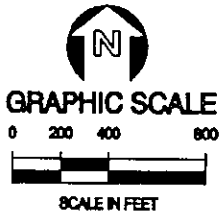
Public Access:	102nd Ave, 107th Ave, 97th Ave, 154th St	Comprehensive Plan Designation:	Open Land
Road Easement (ft):	Not Required	Adjacent Land Use: Extractive (N, E, W); Industrial (E, S, W); Open land (E); Low-density residential (E, W), Australian pine (S); Improved pastureland (S)	
Pipeline Easement (ft):	N/A	Land Use of Impacted Area:	
Deep Draft Access:	N/A	Extractive, Industrial, Roads and Highways, Australian Pine/Extractive	
		Wetlands W/I Mapped Area (ac):	3.47
		Wetlands Impacted (ac):	0.00

Site Narrative:

Site D-54 is a 459-acre area, associated with limestone mining, known as the CSR Rinker Lake Quarry. The site consists of one large holding pond in the northern section of the site and a smaller holding pond (166) in the southwestern corner of the property. These holding ponds resulted from the extraction of the limestone resources. One small area on the southeastern part of the smaller holding pond was vegetated by wetland trees and shrubs and mapped as forested wetland/holding pond (640/166). The rest of the active site, along the holding ponds, appears to be disturbed areas (160) with little natural vegetation (160) or Australian pine and extractive lands (437/160). Little vegetation remains on the section of the site separating the two holding ponds. This area is mapped as extractive (160) and consists of the operations, processing, and loading facilities associated with the mine. An industrial area (150), mapped as part of the site, continues to the south off-site. It appears to be a container storage facility.

Adjacent land uses include open land (190), extractive (160), and residential low-density (110) to the east and extractive (160) to the north. Industrial (150), Australian pine (437) and improved pastureland (211) borders the site to the south. Extractive (160), industrial (150), and low-density residential (110) borders the site to the west.





LEGEND D-55

		ACRES
129	MEDIUM DENSITY UNDER CONSTRUCTION	110.92
193	URBAN LAND IN TRANSITION	32.86
193/422	URBAN LAND IN TRANSITION/BRAZILIAN PEPPER	20.19
532	RESERVOIRS LARGER THAN 100 ACRES, BUT LESS THAN 500 ACRES	153.46
534	RESERVOIRS LESS THAN 10 ACRES WHICH ARE DOMINANT FEATURES	1.99
	TOTAL ACRES	319.42

OTHER COVER TYPES SHOWN

510	STREAMS AND WATERWAYS

LAND USE AND VEGETATION OF CANDIDATE SITE D-55, BROWARD COUNTY, FLORIDA

TAYLOR ENGINEERING INC.
9000 CYPRESS GREEN DRIVE, SUITE 200
JACKSONVILLE, FLORIDA 32256

Figure B-62
Land Use and Vegetation
of Candidate Site D-55
Miami-Dade County, Florida

PROJECT C1999-021
REVISION
SHEET
DATE Sept., 2000

SITE DATA SUMMARY SHEET

Name: D-55

AKA:

Site Use: Multi-Reach Inland Storage

Comment: Incompatible Existing Land Use -- Former limerock mine currently being developed as a lakefront residential

LOCATION			
County:	Broward	ICWW REACH MILEAGE:	335.19
Municipality:	Unincorporated	East/West of	West
Section/Township/Range:	32/51/40	Receiving Waterbody:	N/A
		FDEP	N/A

REACH			
Reach Designation:	DA-1	Projected Dredging Frequency (yr):	20
Reach Length (mi):	3.99	50-yr Dredging Requirement (cy):	15,801
ICWW Mileage:	334.24 to 338.23	50-yr Storage Requirement (cy):	33,973
Cut/Station:	DA-1/0+00 to DA-8/0+00		
Geographic: (FDEP Classification)	530 ft South of Broward/Dade County Line (III) to Haulover Beach County Park (III)		

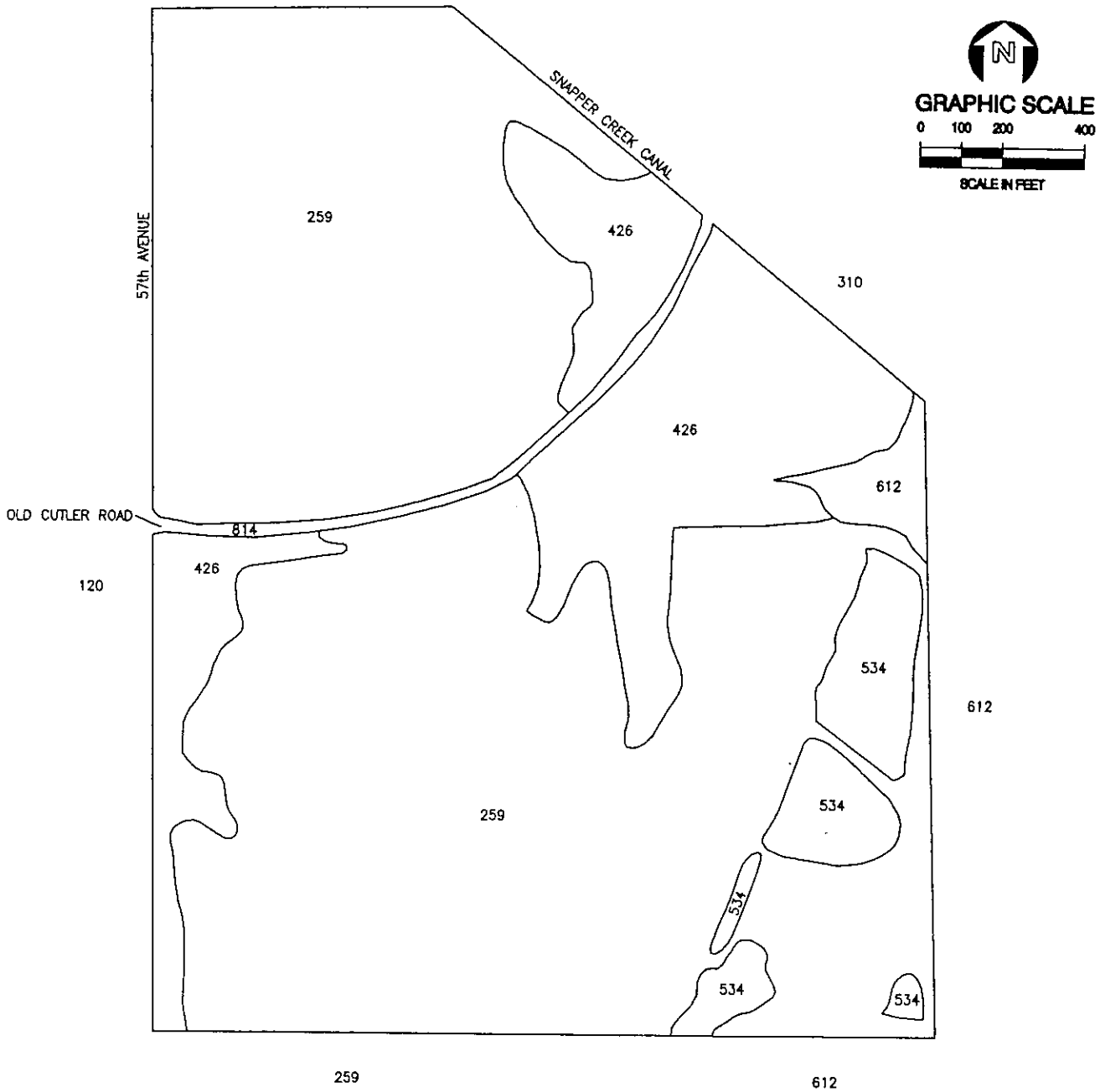
SITE PARAMETERS			
Mapped Area (ac):	319.42	Storage Capacity (cy):	N/A
Containment Area (ac):	N/A	Dike Height (ft):	N/A
Impacted Area (ac):	Insufficient Area	Excavation Depth (ft):	N/A
Buffer Area (ac):	N/A	Existing Mean Site Elevation (ft):	10
N Buffer Width (ft):	N/A	Dike Volume (cy):	N/A
S Buffer Width (ft):	N/A	Max. Pumping Distance (mi):	N/A
E Buffer Width (ft):	N/A	Max. Barging Distance (mi):	N/A
W Buffer Width (ft):	N/A	Min. Distance from Waterway (mi):	15.18
Total Site Area (ac):	N/A		

SITE			
Public Access:	Honey Hill Road, SW 172nd Avenue	Comprehensive Plan Designation:	Parks and Recreation
		Adjacent Land Use:	
Road Easement (ft):	Not Required	Residential (N, E); Honey Hill Rd and Snake Creek Canal (S); SW 172nd Ave and Residential (W)	
Pipeline Easement (ft):	N/A	Land Use of Impacted Area:	
Deep Draft Access:	N/A	N/A	
		Wetlands W/I Mapped Area (ac):	0.00
		Wetlands Impacted (ac):	0.00

Site Narrative:

Site D-55 is a 319-acre former limerock mine now under construction as a lakefront residential development. The site consists of mostly barren uplands with exposed limerock (129). A former holding pond will become a man-made lake classified as a reservoir (532) once construction is completed. Construction is underway and the edges of the former pits are being dredged to accommodate typical residential lot layouts. Some of the property to the south was not yet under construction and was classified as urban land in transition (193).

Adjacent land uses include residential under construction (129) to the north and west, Honey Hill Road (814) and Snake Creek Canal (510) to the south, and SW 172nd Avenue (814) and additional residential under construction (129) to the west.



	LEGEND D-57	ACRES
259	OTHER SPECIALTY FARMS	71.77
426	TROPICAL HARDWOODS	18.81
534	RESERVOIRS LESS THAN 10 ACRES	4.95
612	MANGROVE SWAMPS	1.29
	TOTAL ACRES	96.82

OTHER COVER TYPES SHOWN

120 RESIDENTIAL, MEDIUM DENSITY
310 HERBACEOUS
814 ROADS AND HIGHWAYS

LAND USE AND VEGETATION OF CANDIDATE SITE D-57, MIAMI-DADE COUNTY, FLORIDA

TAYLOR ENGINEERING INC.
9000 CYPRESS GREEN DRIVE, SUITE 200
JACKSONVILLE, FLORIDA 32256

Figure B-63
Land Use and Vegetation
of Candidate Site D-57
Miami-Dade County, Florida

PROJECT C1999-021
REVISION
SHEET
DATE Aug., 2000

SITE DATA SUMMARY SHEET

Name: D-57

AKA: Montgomery Botanical Center

Site Use: Dewatering & Short-Term Storage (Single Operation)

Comment: Incompatible Existing Land Use -- Research center for palms and cycads (Environmentally protected area)

LOCATION

County:	Dade	ICWW REACH MILEAGE:	357.25
Municipality:	Coral Gables	East/West of	West
Section/Township/Range:	7/55/41	Receiving Waterbody:	N/A
		FDEP	N/A

REACH

Reach Designation:	DA-4	Projected Dredging Frequency (yr):	20
Reach Length (mi):	15.75	50-yr Dredging Requirement (cy):	0
ICWW Mileage:	351.12 to 366.87	50-yr Storage Requirement (cy):	0
Cut/Station:	D-3/57+80 to D-5/0+00		
Geographic: (FDEP Classification)	Rickenbacker Causeway Black Point	(III) to (III)	

SITE PARAMETERS

Mapped Area (ac):	96.82	Storage Capacity (cy):	N/A
Containment Area (ac):	Insufficient Area	Dike Height (ft):	N/A
Impacted Area (ac):	N/A	Excavation Depth (ft):	N/A
Buffer Area (ac):	N/A	Existing Mean Site Elevation (ft):	10
N Buffer Width (ft):	N/A	Dike Volume (cy):	N/A
S Buffer Width (ft):	N/A	Max. Pumping Distance (mi):	14.44
E Buffer Width (ft):	N/A	Max. Barging Distance (mi):	N/A
W Buffer Width (ft):	N/A	Min. Distance from Waterway (mi):	4.77
Total Site Area (ac):	N/A		

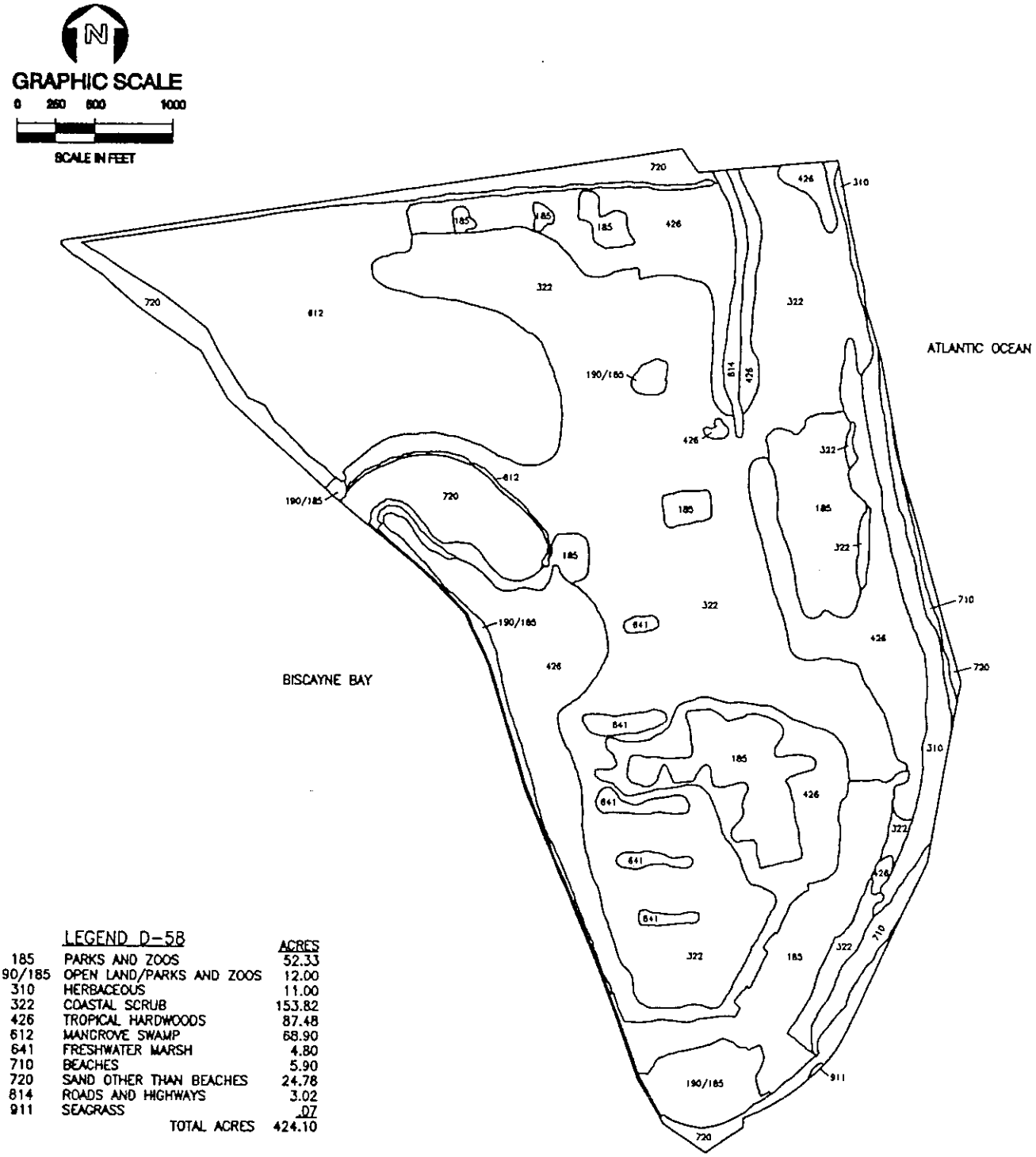
SITE

Public Access:	Old Cutler Rd, 57th Ave	Comprehensive Plan Designation:	Institutional and Public Facility, Environmentally Protected Park.
		Adjacent Land Use:	School (N); Snapper Creek Canal (NE); Mangrove swamp (E); Other specialty farms (S); Single-family homes (W)
Road Easement (ft):	Not Required		
Pipeline Easement (ft):	Not Required	Land Use of Impacted Area:	N/A
Deep Draft Access:	N/A		
		Wetlands W/I Mapped Area (ac):	1.29
		Wetlands Impacted (ac):	0.00

Site Narrative:

Site D-57 is a 97-acre site containing a portion of the Montgomery Botanical Center. Old Cutler Road (814) bisects the institution's property. The property was gated and not accessible for on-site evaluation. Site inspection was conducted from adjacent public road right-of-ways as a result of limited site access. Montgomery Botanical Center functions as a research center for palms and cycads. The center contains well-landscaped grounds surrounding a variety of buildings housing research facilities, laboratories, and guesthouses. Numerous royal queen and other palms were observed from the adjacent roadways. The site was mapped as other specialty farms (259) due the presence of groves of palms and cycads. Several small water-filled reservoirs are located in the southeastern portion of the site (534). Along the northeast corner and the southwest margin of the property, a section of the site contained a remnant tropical hammock (426). Mangrove swamps (612) are located along the eastern side of the property.

Adjacent land uses include a school (171) to the north, Snapper Creek Canal (510) to the northeast, mangrove swamp (612) to the east, additional Montgomery Botanical Center property (259) to the south, and fixed single-family homes (120) to the west.



	LEGEND D-58	ACRES
185	PARKS AND ZOOS	52.33
190/185	OPEN LAND/PARKS AND ZOOS	12.00
310	HERBACEOUS	11.00
322	COASTAL SCRUB	153.82
426	TROPICAL HARDWOODS	87.48
612	MANGROVE SWAMP	68.90
641	FRESHWATER MARSH	4.80
710	BEACHES	5.90
720	SAND OTHER THAN BEACHES	24.78
814	ROADS AND HIGHWAYS	3.02
911	SEAGRASS	.07
	TOTAL ACRES	424.10

LAND USE AND VEGETATION OF CANDIDATE SITE D-58, MIAMI-DADE COUNTY, FLORIDA

TAYLOR ENGINEERING INC.
9000 CYPRESS GREEN DRIVE, SUITE 200
JACKSONVILLE, FLORIDA 32256

Figure B-64
Land Use and Vegetation
of Candidate Site D-58
Miami-Dade County, Florida

PROJECT C1999-021
REVISION
SHEET
DATE Oct., 2000

SITE DATA SUMMARY SHEET

Name: D-58

AKA: Bill Baggs Cape Florida State Recreation Area

Site Use: Dewatering & Long-Term Storage (Multiple Operation)

Comment: Incompatible Existing Land Use -- Southern Key Biscayne (Environmentally protected area)

LOCATION			
County:	Dade	ICWW REACH MILEAGE:	356.24
Municipality:	Unincorporated	East/West of	East
Section/Township/Range:	4/55/42, 5/55/42, & 8/55/42	Receiving Waterbody:	Biscayne Bay
		FDEP	III

REACH			
Reach Designation:	DA-4	Projected Dredging Frequency (yr):	20
Reach Length (mi):	15.75	50-yr Dredging Requirement (cy):	0
ICWW Mileage:	351.12 to 366.87	50-yr Storage Requirement (cy):	0
Cut/Station:	D-3/57+80 to D-5/0+00		
Geographic: (FDEP Classification)	Rickenbacker Causeway Black Point	(III) to (III)	

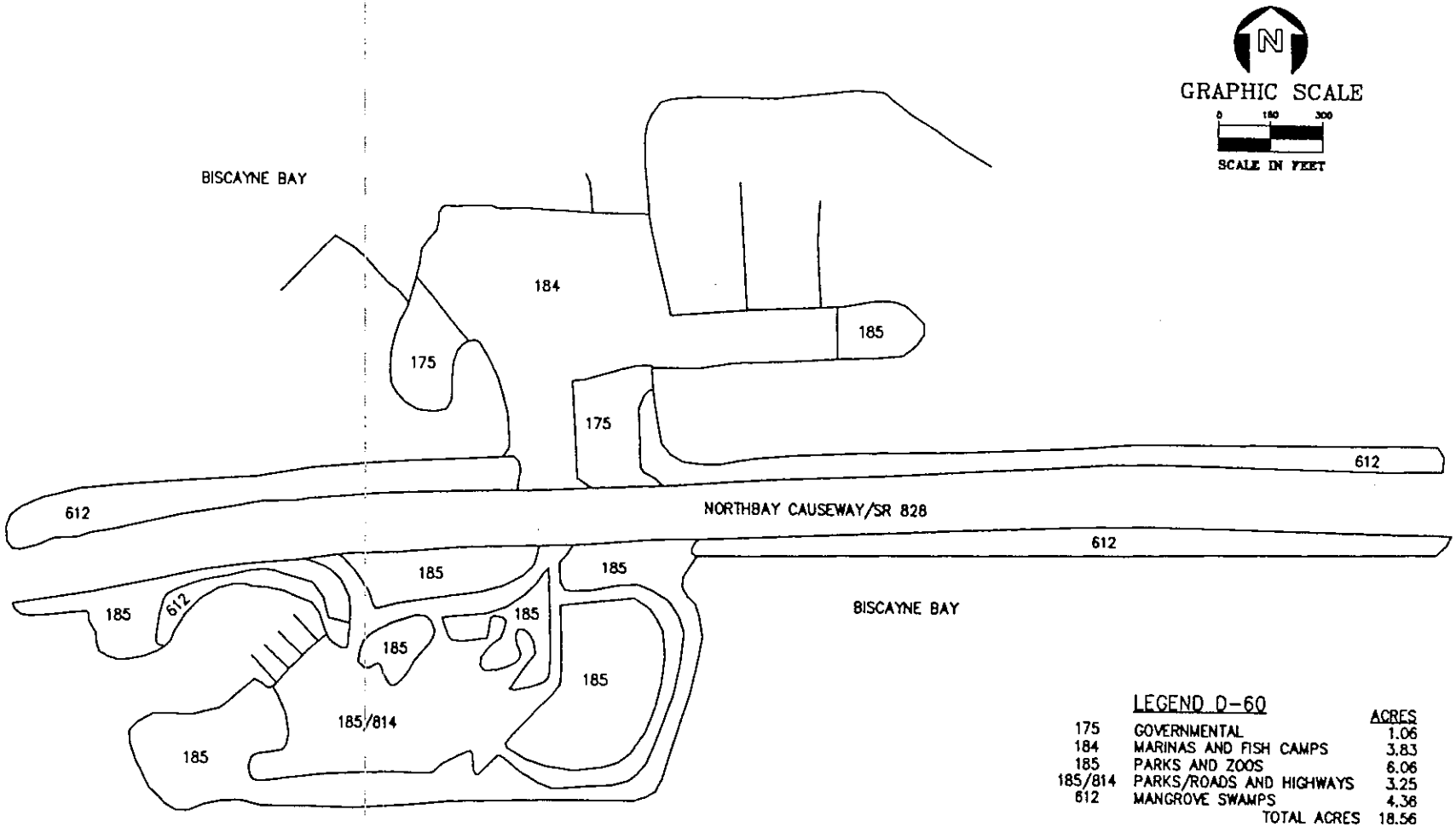
SITE PARAMETERS			
Mapped Area (ac):	424.1	Storage Capacity (cy):	47,556
Containment Area (ac):	7.69	Dike Height (ft):	7
Impacted Area (ac):	11.45	Excavation Depth (ft):	4.43
Buffer Area (ac):	9.10	Existing Mean Site Elevation (ft):	5
N Buffer Width (ft):	150	Dike Volume (cy):	26,469
S Buffer Width (ft):	150	Max. Pumping Distance (mi):	13.53
E Buffer Width (ft):	150	Max. Barging Distance (mi):	N/A
W Buffer Width (ft):	150	Min. Distance from Waterway (mi):	2.45
Total Site Area (ac):	50.22		

SITE			
Public Access:	Rickenbacker Causeway (Crandon Blvd)	Comprehensive Plan Designation:	Parks and Recreation
		Adjacent Land Use:	
Road Easement (ft):	1,600	Residential (N); Atlantic Ocean (E, S); Biscayne Bay (W)	
Pipeline Easement (ft):	130	Land Use of Impacted Area:	
Deep Draft Access:	Yes	Tropical Hardwoods, Coastal Shrub	
		Wetlands W/I Mapped Area (ac):	73.77
		Wetlands Impacted (ac):	0.00

Site Narrative:

Site D-58 is the 424-acre Bill Baggs Cape Florida State Recreation Area. The property consists of mostly undeveloped coastal habitat located on the southern end of Key Biscayne. The majority of the site consists of coastal scrub and strand habitat (322) vegetated by saw palmetto (*Serenoa repens*), a variety of grasses, sea grape (*Coccoloba uvifera*), cabbage palm (*Sabal palmetto*), coconut palm (*Cocos nucifera*), nicker-bean (*Caesalpinia bonduc*), and wild sage (*Lantana involucrata*). Another dominant community type is tropical hardwoods (426) located near the park's entrance and in the east central and west central portions of the property. Common vegetation in this community includes gumbo-limbo (*Bursera simaruba*), lancewood (*Ocotea coriacea*), strangler fig (*Ficus aurea*), wild coffee (*Psychotria nervosa*), and cabbage palm. Several wetland communities are located in the park including a mangrove swamp (612) in the northwestern area of the site and five freshwater marsh areas (641), which likely developed between relict sand dunes. Vegetation in these small marsh and pond communities includes sawgrass (*Cladium jamaicense*), broomsedge (*Andropogon* sp.), cattail (*Typha* sp.), and camphorweed (*Pluchea odorata*). These wetlands are important to wildlife inhabiting the park by providing a source of freshwater. The developed park facilities include paved roads and parking lots, picnic pavilions, restrooms, and park support buildings. These facilities are mapped as parks and zoos (185) or roads and highways (814). The park also provides significant beach access (710) for swimming and other recreational uses.

Adjacent features include the Atlantic Ocean to the east and south and Biscayne Bay (540) to the west. The property north of the park is residential.



LEGEND D-60

		ACRES
175	GOVERNMENTAL	1.06
184	MARINAS AND FISH CAMPS	3.83
185	PARKS AND ZOOS	6.06
185/814	PARKS/ROADS AND HIGHWAYS	3.25
612	MANGROVE SWAMPS	4.36
	TOTAL ACRES	18.56

OTHER COVER TYPES SHOWN

540	BAYS AND ESTUARIES
———	DOCKS AND BREAKWATERS

LAND USE AND VEGETATION FOR CANDIDATE SITE D-60, MIAMI-DADE COUNTY, FLORIDA

TAYLOR ENGINEERING INC.
9000 CYPRESS GREEN DRIVE, SUITE 200
JACKSONVILLE, FLORIDA 32256

Figure B-65
Land Use and Vegetation
of Candidate Site D-60
Miami-Dade County, Florida

PROJECT C1999-021
REVISION
SHEET
DATE Jan., 2002

SITE DATA SUMMARY SHEET

Name:	D-60
AKA:	Pelican Harbor Marina & Park
Site Use:	Material Rehandling (Barge Offloading)
Comment:	Governmental & Recreational Use -- Police Marine Station & Pelican Harbor Seabird Station

LOCATION

County:	Dade	ICWW REACH MILEAGE:	343.94
Municipality:	Miami	East/West of	East
Section/Township/Range:	8/53/42 & 9/53/42	Receiving Waterbody:	N/A
		FDEP	N/A

REACH

Reach Designation:	DA-3	Projected Dredging Frequency (yr):	20
Reach Length (mi):	8.36	50-yr Dredging Requirement (cy):	17,524
ICWW Mileage:	342.76 to 351.12	50-yr Storage Requirement (cy):	37,677
Cut/Station:	DA-9/178+50 to D-3/57+80		
Geographic: (FDEP Classification)	Kennedy Causeway (NE 79th Street) Rickenbacker Causeway	(III) to (III)	

SITE PARAMETERS

Mapped Area (ac):	18.56	Storage Capacity (cy):	N/A
Containment Area (ac):	N/A	Dike Height (ft):	N/A
Impacted Area (ac):	1.32	Excavation Depth (ft):	N/A
Buffer Area (ac):	1.55	Existing Mean Site Elevation (ft):	5
N Buffer Width (ft):	100	Dike Volume (cy):	N/A
S Buffer Width (ft):	0	Max. Pumping Distance (mi):	N/A
E Buffer Width (ft):	0	Max. Barging Distance (mi):	6.29
W Buffer Width (ft):	100	Min. Distance from Waterway (mi):	0.26
Total Site Area (ac):	2.87		

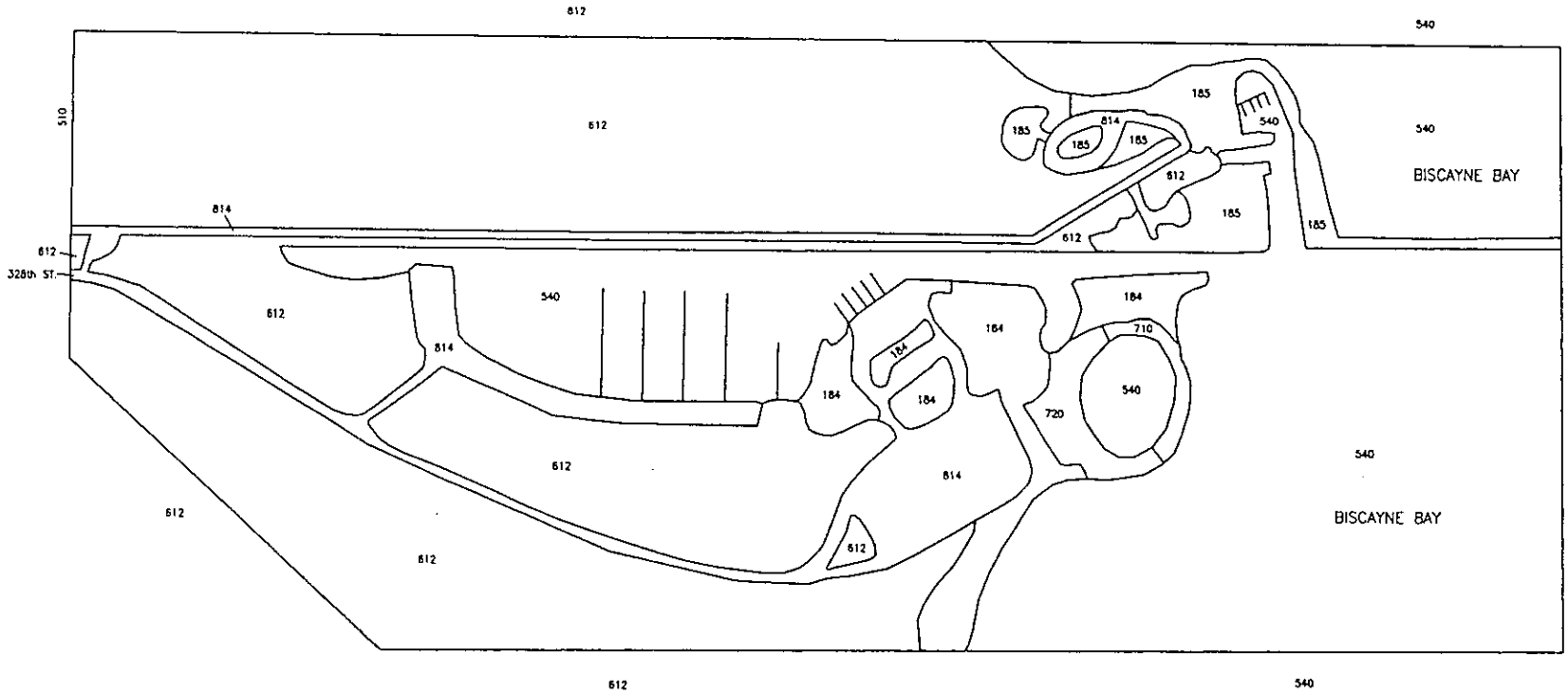
SITE

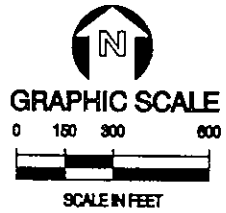
Public Access:	Northbay Causeway (State Road 828)	Comprehensive Plan Designation:	Parks & Recreation
		Adjacent Land Use:	
Road Easement (ft):	Not Required	Biscayne Bay (N, E, S, W)	
Pipeline Easement (ft):	N/A		
		Land Use of Impacted Area:	
Deep Draft Access:	Yes	Marina	
		Wetlands W/I Mapped Area (ac):	4.36
		Wetlands Impacted (ac):	0.00

Site Narrative:

This 19-acre site, D-60, consists of Pelican Harbor Marina (184) to the north and Pelican Harbor Park (185) to the south separated by the Northbay Causeway (State Road 828). The northern marina portion also houses a police marine station base to the west (175), a marine patrol base to the east (175), some mangrove (612) along the Northbay Causeway, and a small privately funded Pelican Harbor Seabird Station, Inc. mapped as parks and zoos (185). The southern half of the site is mapped as parks and zoos (185) and is mostly parking lot associated with the park. A small amount of mangrove (612) also occurs in some areas adjacent to the water.

The site is surrounded by Biscayne Bay and the Intracoastal Waterway lies just to the west of the site.





LEGEND D-61

		ACRES
184	MARINAS AND FISH CAMPS	8.41
185	PARKS AND ZOOS	6.92
540	BAYS AND ESTUARIES	79.59
612	MANGROVE SWAMPS	96.82
710	BEACHES OTHER THAN SWIMMING	.72
720	SWIMMING BEACHES	1.81
814	ROADS AND HIGHWAYS	15.80
	TOTAL ACRES	210.07

OTHER COVER TYPES SHOWN

510 STREAMS AND WATERWAYS

—— DOCKS

LAND USE AND VEGETATION OF CANDIDATE SITE D-61, MIAMI-DADE COUNTY, FLORIDA

TAYLOR ENGINEERING INC.
9000 CYPRESS GREEN DRIVE, SUITE 200
JACKSONVILLE, FLORIDA 32256

Figure B-66
Land Use and Vegetation
of Candidate Site D-61
Miami-Dade County, Florida

PROJECT C1999-021
REVISION
SHEET
DATE Sept., 2000

SITE DATA SUMMARY SHEET

Name:	D-61
AKA:	Biscayne Bay National Park Headquarters, Homestead Bayfront County Park, and Herbert W. Hoover Marina
Site Use:	Material Rehandling (Barge Offloading)
Comment:	Governmental/Recreational Use -- Administrative offices, boat basin, wet-slip marina, bait and tackle shop, fueling

LOCATION

County:	Dade	ICWW REACH MILEAGE:	371.07
Municipality:	Unincorporated	East/West of	West
Section/Township/Range:	16/57/40 & 21/57/40	Receiving Waterbody:	N/A
		FDEP	N/A

REACH

Reach Designation:	DA-5			Projected Dredging Frequency (yr):	20
Reach Length (mi):	15.29			50-yr Dredging Requirement (cy):	71,295
ICWW Mileage:	366.87	to	382.16	50-yr Storage Requirement (cy):	153,284
Cut/Station:	D-5/0+00	to	D-9/201+74.60		
Geographic: (FDEP Classification)	Black Point Dade/Monroe County line			(III) to (III)	

SITE PARAMETERS

Mapped Area (ac):	210.07	Storage Capacity (cy):	N/A
Containment Area (ac):	N/A	Dike Height (ft):	N/A
Impacted Area (ac):	2.72	Excavation Depth (ft):	N/A
Buffer Area (ac):	0	Existing Mean Site Elevation (ft):	0
N Buffer Width (ft):	0	Dike Volume (cy):	N/A
S Buffer Width (ft):	0	Max. Pumping Distance (mi):	16.95
E Buffer Width (ft):	0	Max. Barging Distance (mi):	N/A
W Buffer Width (ft):	0	Min. Distance from Waterway (mi):	5.89
Total Site Area (ac):	2.72		

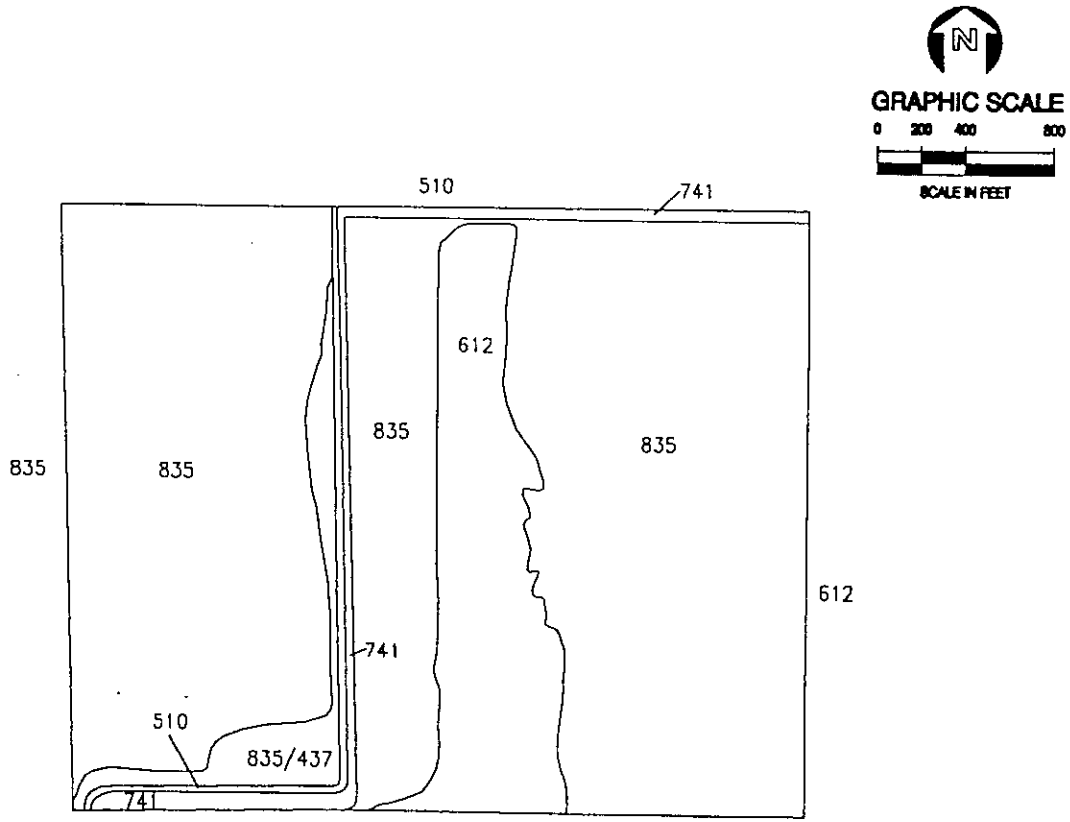
SITE

Public Access:	328th Street	Comprehensive Plan Designation:	Parks and Recreation
		Adjacent Land Use:	
Road Easement (ft):	Not Required	Mangrove Swamps (N, S); Biscayne Bay (E); Canal (W)	
Pipeline Easement (ft):	N/A	Land Use of Impacted Area:	
Deep Draft Access:	Yes	Marina, Roads, and Highways	
		Wetlands W/I Mapped Area (ac):	96.82
		Wetlands Impacted (ac):	0.00

Site Narrative:

Site D-61 is a 210-acre recreational area located along the mangrove-lined coastline of Biscayne Bay National Park, Homestead Bayfront County Park, and Herbert W. Hoover Marina. Upland recreational lands and roads throughout the site have been created by fill and are surrounded by mangrove vegetation or bay waters. Site D-61 can be accessed from 328th Street. The site consists of two separate recreational facilities. The visitor center and park headquarters for Biscayne Bay National Park is located north of the linear waterway (510). The park headquarters consist of a filled access road, parking, a visitor center, administrative offices, and a small boat basin. The park area is mapped as parks and zoos (184). The boat basin access channel leads directly to Biscayne Bay (540). There is a long breakwater on the north side of the channel. South of the waterway is Homestead Bayfront County Park and Herbert W. Hoover Marina. This area is mostly mapped as marinas and fish camps (185) since it supports a large wet-slip marina. The marina contains five long concrete docks for permanent mooring and five shorter temporary mooring docks. The park contains park office, bait and tackle shop, fueling dock, boat ramp, and fenced boat and trailer storage. A large circular embayment on the site provides sheltered swimming and a wide sandy beach area on the west side of the swimming lagoon. Waters adjacent to the park are posted with warning signs regarding the presence of the endangered American crocodile. Other facilities at the park include restrooms and picnic shelters.

Adjacent features include the mangrove swamps (612) and Biscayne Bay (540) to the north and south, Biscayne Bay (540) to the east, and a canal (510) to the west.



	LEGEND	ACRES
510	STREAMS AND WATERWAYS	2.63
612	MANGROVE SWAMPS	26.46
741	RURAL LAND IN TRANSITION	6.62
835	SOLID WASTE DISPOSAL	163.65
835/437	SOLID WASTE DISPOSAL/ AUSTRALIAN PINE	7.57
	TOTAL ACRES	206.93

LAND USE AND VEGETATION FOR CANDIDATE SITE D-62, MIAMI-DADE COUNTY, FLORIDA

TAYLOR ENGINEERING INC.
9000 CYPRESS GREEN DRIVE, SUITE 200
JACKSONVILLE, FLORIDA 32256

Figure B-67
Land Use and Vegetation of
Candidate Site D-62 (Southeast Landfill)
Miami-Dade County, Florida

PROJECT C1999-021
REVISION
SHEET
DATE Aug, 2001

SITE DATA SUMMARY SHEET

Name: D-62
AKA: Southeast Landfill
Site Use: Dewatering & Long-Term Storage (Multiple Operation)
Comment: Former unregulated landfill, planned remediation by excavation

LOCATION

County:	Dade	**ICWW REACH MILEAGE:**	366.14
Municipality:	Unincorporated	**East/West of**	West
Section/Township/Range:	28/56/40	**Receiving Waterbody:**	N/A
		FDEP	N/A

REACH

Reach Designation:	DA-4	**Projected Dredging Frequency (yr):**	20
Reach Length (mi):	15.75	**50-yr Dredging Requirement (cy):**	0
ICWW Mileage:	351.12 to 366.87	**50-yr Storage Requirement (cy):**	0
Cut/Station:	D-3/57+80 to D-5/0+00		
Geographic: (FDEP Classification)	Rickenbacker Causeway Black Point	(III) to (III)	

SITE PARAMETERS

Mapped Area (ac):	206.93	**Storage Capacity (cy):**	166,700
Containment Area (ac):	16.49	**Dike Height (ft):**	10
Impacted Area (ac):	21.61	**Excavation Depth (ft):**	4.18
Buffer Area (ac):	40.25	**Existing Mean Site Elevation (ft):**	5.0
N Buffer Width (ft):	350	**Dike Volume (cy):**	63,262
S Buffer Width (ft):	350	**Max. Pumping Distance (mi):**	23.29
E Buffer Width (ft):	350	**Max. Barging Distance (mi):**	N/A
W Buffer Width (ft):	350	**Min. Distance from Waterway (mi):**	6.42
Total Site Area (ac):	61.86		

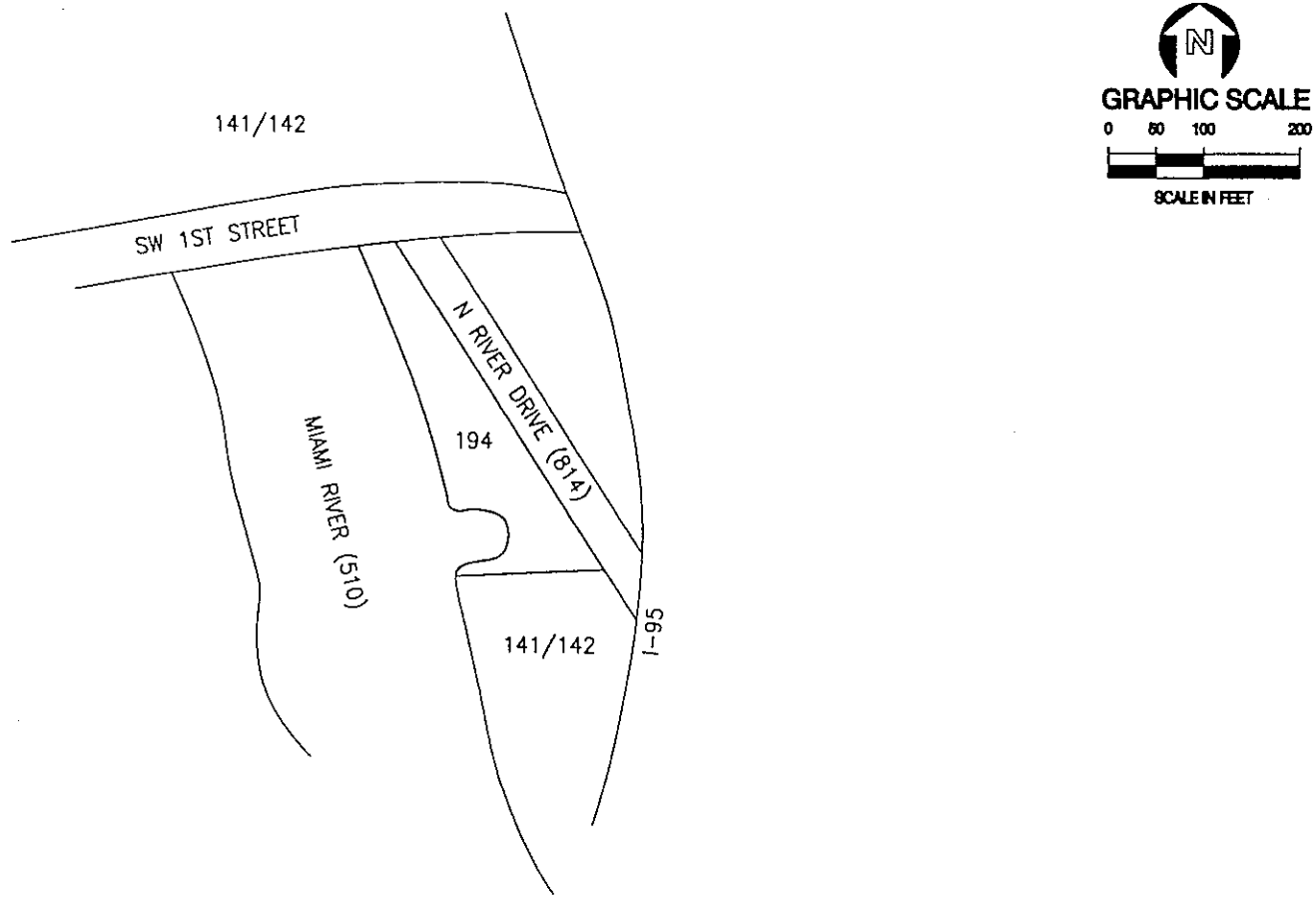
SITE

Public Access:	Coconut Palm Dr (SW 248th St)	**Comprehensive Plan Designation:**	Open Land
		Adjacent Land Use:	
Road Easement (ft):	Not Required	Goulds Canal (N); Mangrove Swamp (E, S): Solid Waste Disposal (N, W)	
Pipeline Easement (ft):	Not Required	**Land Use of Impacted Area:**	
Deep Draft Access:	N/A	Solid Waste Disposal	
		Wetlands W/I Mapped Area (ac):	26.46
		Wetlands Impacted (ac):	0.00

Site Narrative:

This 207-acre site, 29.09 acres of wetlands and canals and 177.84 upland acres, is located northeast of the former Homestead Air Force Base and borders Site 365A-01 to the south. Site D-62 is primarily a mixture of active and inactive solid waste disposal facilities (835, 171.22 acres). A mangrove swamp (612) runs north to south through the center of the site. A canal (510) and an area identified as rural land in transition (741) also bisect the site just west of the mangrove swamp. Vegetation within the mangrove swamp (612) is primarily white mangrove (*Laguncularia racemosa*). The westernmost disposal area appears to be capped and no longer in use. The eastern section of Site D-62 is currently undergoing excavation.

The site is bounded on the north by a large canal (510) and another section of the solid waste disposal facility (835), on the east and south by mangrove swamps (612), and on the west by another section of the landfill (835).



	LEGEND	ACRES
194	OTHER OPEN LAND	.61

OTHER COVER TYPES SHOWN

141/142 RETAIL SALES AND SERVICE/WHOLESALE SALES AND SERVICE
510 STREAMS AND WATERWAYS
814 ROADS AND HIGHWAYS

LAND USE AND VEGETATION OF CANDIDATE SITE MIAMI RIVER #1, MIAMI-DADE COUNTY, FLORIDA

TAYLOR ENGINEERING INC.
9000 CYPRESS GREEN DRIVE, SUITE 200
JACKSONVILLE, FLORIDA 32256

Figure B-68
Land Use and Vegetation
of Candidate Site MR-1
Miami-Dade County, Florida

PROJECT C1999-021
REVISION
SHEET
DATE July, 2001

SITE DATA SUMMARY SHEET

Name: MR-1

AKA: 200 SW North River Drive

Site Use: Material Rehandling (Barge Offloading)

Comment: Site fronts Miami River, bulkheaded, cleared, and fenced, property across North River Drive also for sale

LOCATION

County:	Dade	**ICWW REACH MILEAGE:**	349.33
Municipality:	Miami	**East/West of**	West
Section/Township/Range:	1/54/41	**Receiving Waterbody:**	N/A
		FDEP	N/A

REACH

Reach Designation:	DA-3	**Projected Dredging Frequency (yr):**	20
Reach Length (mi):	8.36	**50-yr Dredging Requirement (cy):**	17,524
ICWW Mileage:	342.76 to 351.12	**50-yr Storage Requirement (cy):**	37,677
Cut/Station:	DA-9/178+50 to D-3/57+80		
Geographic: (FDEP Classification)	Kennedy Causeway (NE 79th Street) Rickenbacker Causeway	(III) to (III)	

SITE PARAMETERS

Mapped Area (ac):	0.61	**Storage Capacity (cy):**	N/A
Containment Area (ac):	N/A	**Dike Height (ft):**	N/A
Impacted Area (ac):	0.61	**Excavation Depth (ft):**	N/A
Buffer Area (ac):	0	**Existing Mean Site Elevation (ft):**	10
N Buffer Width (ft):	0	**Dike Volume (cy):**	N/A
S Buffer Width (ft):	0	**Max. Pumping Distance (mi):**	N/A
E Buffer Width (ft):	0	**Max. Barging Distance (mi):**	6.57
W Buffer Width (ft):	0	**Min. Distance from Waterway (mi):**	1.10
Total Site Area (ac):	0.61		

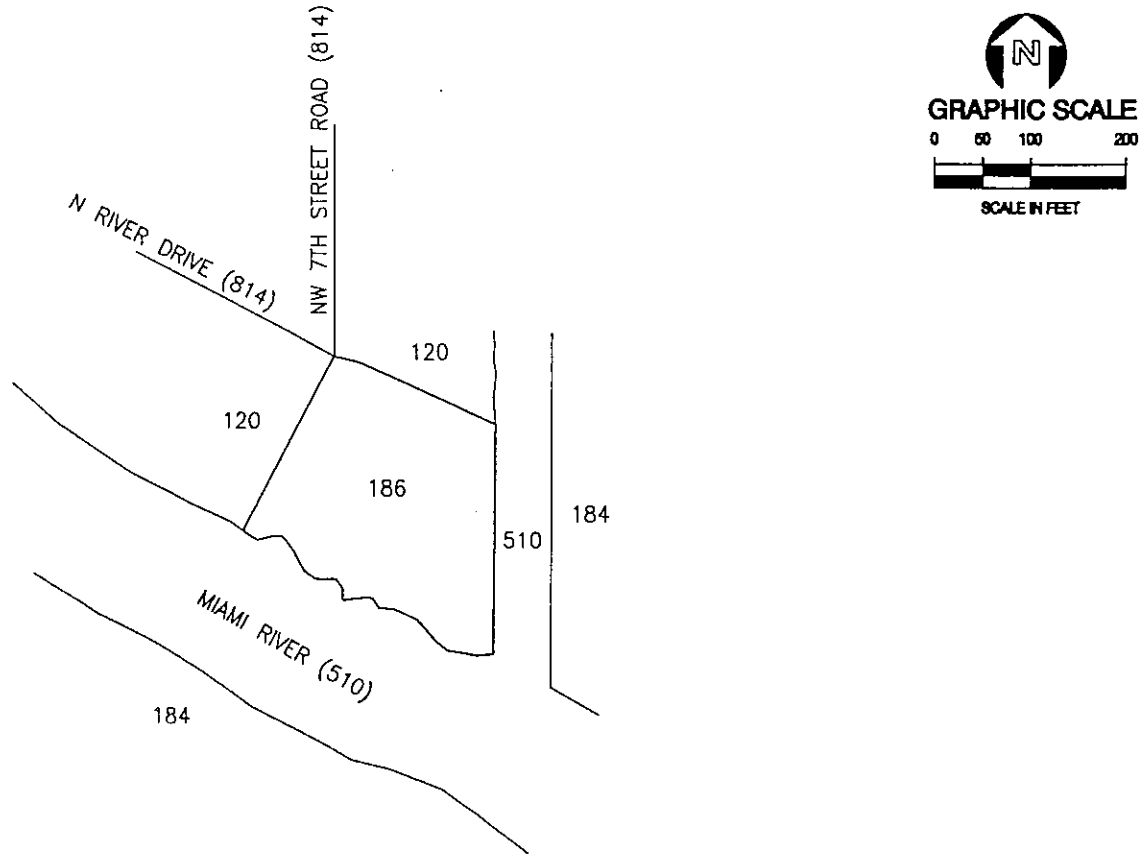
SITE

Public Access:	SW 1st St, N River Dr	**Comprehensive Plan Designation:**	Business and Office
		Adjacent Land Use:	
Road Easement (ft):	Not Required	Retail Sales and Service (N, S); I-95 (E); Miami River (W)	
Pipeline Easement (ft):	N/A		
		Land Use of Impacted Area:	
Deep Draft Access:	Yes	N/A	
		Wetlands W/I Mapped Area (ac):	0.00
		Wetlands Impacted (ac):	0.00

Site Narrative:

Miami River Site #1, MR-1, is a 0.61-acre upland waterfront parcel on the Miami River that was mapped as other open land (194) due to the current inactive use of the property. The property is bulkheaded along the Miami River except for a small embayment on the south end of the property. The property is fenced with a 6-foot high chain link fence topped with barbed wire. Therefore, observations of the property were limited to inspection from the adjacent sidewalk. Part of the site contained an area of broken pavement and limerock. Items observed on the site included plastic crates, iron scrap, buckets, drums, a dumpster, and a fiberglass platform. A few trees are located on the southern end of the property including live oak (*Quercus virginiana*), mimosa (*Albizzia* sp.), seaside mahoe (*Thespesia populnea*), and Australian pine (*Casuarina equisetifolia*). Scattered ground cover included beggar-ticks (*Bidens alba*), dogfennel (*Eupatorium capillifolium*), dock (*Rumex* sp.), and a few grasses. The northern end of the site is fenced off from the southern end by a 10 to 12-foot tall chain link fence. This area contains a concrete pad and a small concrete block building with no windows. The use of this portion of Site MR-1 was not apparent.

Adjacent land uses include marine-related retail and wholesale sales and service (141/142), roads (814) and the Miami River (510). Seafood businesses are located north and south of the site.



	LEGEND	ACRES
186	COMMUNITY RECREATIONAL FACILITIES	1.17

OTHER COVER TYPES SHOWN

120	RESIDENTIAL, MEDIUM DENSITY
184	MARINAS AND FISH CAMPS
510	STREAMS AND WATERWAYS
814	ROADS AND HIGHWAYS

LAND USE AND VEGETATION OF CANDIDATE SITE MIAMI RIVER #2, MIAMI-DADE COUNTY, FLORIDA

TAYLOR ENGINEERING INC.
9000 CYPRESS GREEN DRIVE, SUITE 200
JACKSONVILLE, FLORIDA 32256

Figure B-69
Land Use and Vegetation
of Candidate Site MR-2
Miami-Dade County, Florida

PROJECT C1999-021
REVISION
SHEET
DATE July, 2001

SITE DATA SUMMARY SHEET

Name:	MR-2
AKA:	Spring Garden Point Park
Site Use:	Material Rehandling (Barge Offloading)
Comment:	Recreational Use -- City of Miami proposed park

LOCATION

County:	Dade	**ICWW REACH MILEAGE:**	348.72
Municipality:	Miami	**East/West of**	West
Section/Township/Range:	1/54/41 & 2/54/41	**Receiving Waterbody:**	N/A
		FDEP	N/A

REACH

Reach Designation:	DA-3	**Projected Dredging Frequency (yr):**	20
Reach Length (mi):	8.36	**50-yr Dredging Requirement (cy):**	17,524
ICWW Mileage:	342.76 to 351.12	**50-yr Storage Requirement (cy):**	37,677
Cut/Station:	DA-9/178+50 to D-3/57+80		
Geographic: (FDEP Classification)	Kennedy Causeway (NE 79th Street) Rickenbacker Causeway	(III) to (III)	

SITE PARAMETERS

Mapped Area (ac):	1.17	**Storage Capacity (cy):**	N/A
Containment Area (ac):	N/A	**Dike Height (ft):**	N/A
Impacted Area (ac):	Insufficient Area	**Excavation Depth (ft):**	N/A
Buffer Area (ac):	N/A	**Existing Mean Site Elevation (ft):**	5
N Buffer Width (ft):	N/A	**Dike Volume (cy):**	N/A
S Buffer Width (ft):	N/A	**Max. Pumping Distance (mi):**	N/A
E Buffer Width (ft):	N/A	**Max. Barging Distance (mi):**	N/A
W Buffer Width (ft):	N/A	**Min. Distance from Waterway (mi):**	1.62
Total Site Area (ac):	N/A		

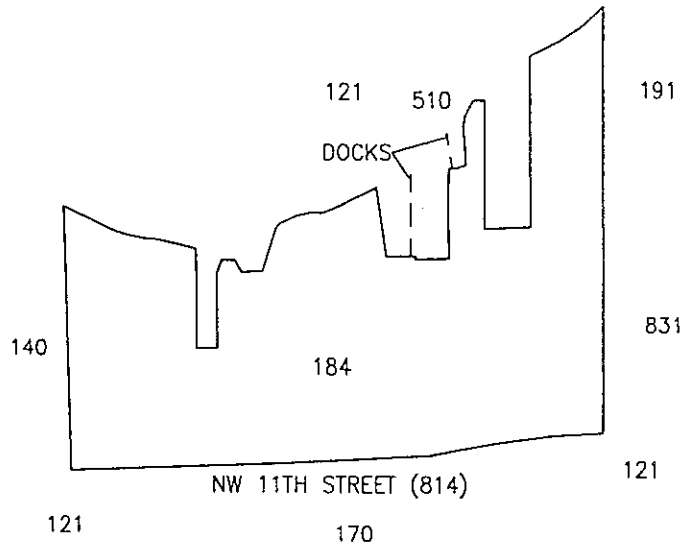
SITE

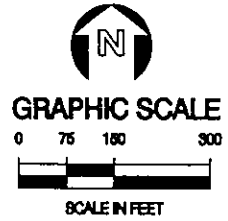
Public Access:	N River Dr, NW 7th St Rd	**Comprehensive Plan Designation:**	Residential (MD)
		Adjacent Land Use:	
Road Easement (ft):	Not Required	Medium density residential (N, W); Marina, Streams and Waterway (E); Miami River (S)	
Pipeline Easement (ft):	N/A	**Land Use of Impacted Area:**	
Deep Draft Access:	Yes	N/A	
		Wetlands W/I Mapped Area (ac):	0.00
		Wetlands Impacted (ac):	0.00

Site Narrative:

Miami River Site #2, MR-2, is a 1.17-acre upland community park (186) identified as Spring Garden Point Park. It was purchased by the City of Miami as passive recreation park to assist with restoring the history and ecology of the early Miami River. The pedestrian access gate to the park was locked but an adjacent property owner unlocked the gate to allow inspection of the property. The property is located on a point of land at the confluence of the Miami River (510) and the Seybold Canal and Wagner Creek system (510). Site MR-2 contains numerous concrete picnic tables, an old gazebo, and benches and appears to have been used for recreation. The Miami River borders the property on the south and the Seybold Canal borders it on the east. Along the canal, there is a concrete bulkhead with an attached narrow wooden catwalk and mooring pilings. A portion of the catwalk has fallen into the canal near where it joins the Miami River. Along the Miami River, there is no apparent bulkhead but there is some rubble and concrete adjacent to the shoreline. Additionally, there are two deteriorated wooden docks adjacent to a concrete pad situated along the Miami River shoreline. Dense patches of seaside mahoe (*Thespesia populnea*), Brazilian pepper (*Schinus terebinthifolius*), and coin vine (*Dalbergia ecastophyllum*) are growing along the Miami River shoreline. The site is mowed and groundcover consists of beggar-ticks (*Bidens alba*), morning glory (*Ipomoea* sp.), and a variety of grasses including finger grass (*Eustachys petraea*), St. Augustine grass (*Stenotaphrum secundatum*), and sedge (*Cyperus* sp.). Scattered trees are located on the property including Washington palms (*Washingtonia robusta*), cabbage palms (*Sabal palmetto*), strangler fig (*Ficus aurea*), mimosa (*Albizzia* sp.), and Australian pine (*Casuarina equisetifolia*).

Adjacent land uses consist of single family residential (120), within the Spring Garden Historic District, to the north and west and marinas (184), across the river and the canal, to the east and south.





	LEGEND	ACRES
184	MARINAS AND FISH CAMPS	7.46

	OTHER COVER TYPES SHOWN
121	FIXED SINGLE FAMILY UNITS
140	COMMERCIAL AND SERVICES
170	INSTITUTIONAL
191	UNDEVELOPED LAND WITHIN URBAN AREAS
510	STREAMS AND WATERWAYS
831	ELECTRICAL POWER FACILITIES

LAND USE AND VEGETATION OF CANDIDATE SITE MIAMI RIVER #3, MIAMI-DADE COUNTY, FLORIDA

TAYLOR ENGINEERING INC.
9000 CYPRESS GREEN DRIVE, SUITE 200
JACKSONVILLE, FLORIDA 32256

Figure B-70
Land Use and Vegetation
of Candidate Site MR-3
Miami-Dade County, Florida

PROJECT C1999-021
REVISION
SHEET
DATE July, 2001

SITE DATA SUMMARY SHEET

Name:	MR-3
AKA:	Revenge Marine and Consolidated Yacht Corporation
Site Use:	Material Rehandling (Barge Offloading)
Comment:	Insufficient Undeveloped Area -- Marina and marine industrial site

LOCATION

County:	Dade	ICWW REACH MILEAGE:	348.5
Municipality:	Miami	East/West of	West
Section/Township/Range:	34/53/41	Receiving Waterbody:	N/A
		FDEP	N/A

REACH

Reach Designation:	DA-3	Projected Dredging Frequency (yr):	20
Reach Length (mi):	8.36	50-yr Dredging Requirement (cy):	17,524
ICWW Mileage:	342.76 to 351.12	50-yr Storage Requirement (cy):	37,677
Cut/Station:	DA-9/178+50 to D-3/57+80		
Geographic: (FDEP Classification)	Kennedy Causeway (NE 79th Street) Rickenbacker Causeway	(III) to (III)	

SITE PARAMETERS

Mapped Area (ac):	7.46	Storage Capacity (cy):	N/A
Containment Area (ac):	N/A	Dike Height (ft):	N/A
Impacted Area (ac):	Insufficient Area	Excavation Depth (ft):	N/A
Buffer Area (ac):	N/A	Existing Mean Site Elevation (ft):	5
N Buffer Width (ft):	N/A	Dike Volume (cy):	N/A
S Buffer Width (ft):	N/A	Max. Pumping Distance (mi):	N/A
E Buffer Width (ft):	N/A	Max. Barging Distance (mi):	N/A
W Buffer Width (ft):	N/A	Min. Distance from Waterway (mi):	2.86
Total Site Area (ac):	N/A		

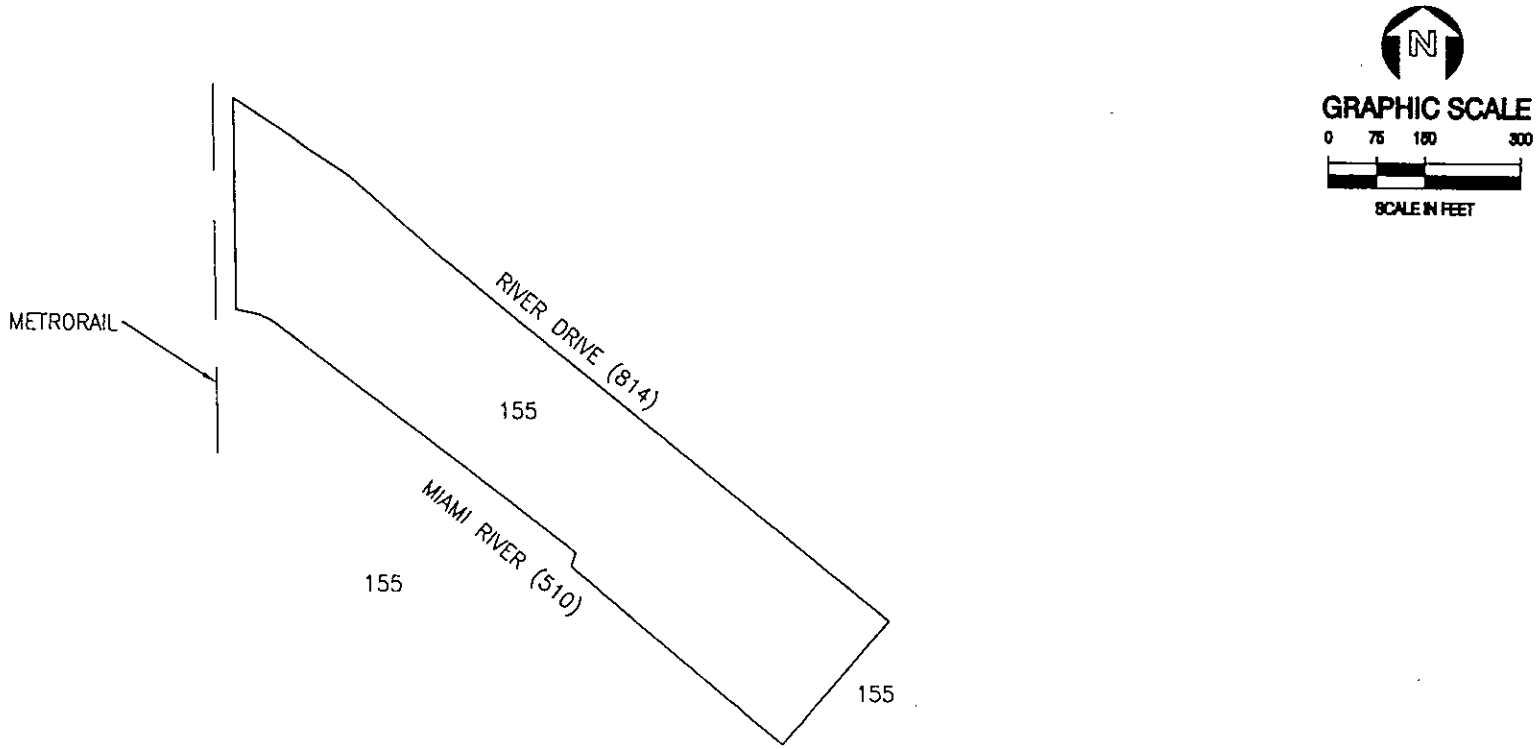
SITE

Public Access:	NW 11th St	Comprehensive Plan Designation:	Industrial and Office
		Adjacent Land Use:	
Road Easement (ft):	Not Required	Canal (N); Electrical Power Facility (E); Single-family residential (SE, SW), Institutional (S); Commercial (W)	
Pipeline Easement (ft):	N/A	Land Use of Impacted Area:	
Deep Draft Access:	Yes	N/A	
		Wetlands W/I Mapped Area (ac):	0.00
		Wetlands Impacted (ac):	0.00

Site Narrative:

Miami River Site #3, MR-3, is a 7.5-acre upland marina site (184) located on the southern shore of the South Fork of the Miami River. The entire site is fenced with a masonry fence or 6-foot tall chain link fence. Landscaping along the fence includes an exotic viburnum shrub and cabbage palm (*Sabal palmetto*). Consolidated Yacht Corporation and smaller associated marine related businesses occupy the site. The eastern two-thirds of the site is covered by a variety of buildings and pavement. There are eight large buildings constructed of both metal and concrete and a few smaller sheds and gatehouses on the site. Two of the buildings are constructed over large wet boat slips. There is a small grassy area on the eastern side of the site with scattered landscaping including live oak (*Quercus virginiana*), umbrella tree (*Scheffelera actinophylla*), and several exotic palms. The western third of the property is undeveloped and vegetated by scattered shrubs and low grasses that are mowed. This portion of the site appears to be mostly used for storage of containers, old equipment, and surplus parts. Vegetation in this area includes Bahia grass (*Paspalum notatum*), ragweed (*Ambrosia artemisiifolia*), beggar-ticks (*Bidens alba*), fogfruit (*Phyla nodiflora*), and scattered Brazilian pepper (*Schinus terebinthifolius*). Along the shoreline, the entire waterfront has a concrete bulkhead and some areas have wooden docks adjacent to the bulkhead. Near the westernmost building, there is a large boatlift constructed over a boat slip.

Adjacent land uses include single-family residential (121) north of the Miami River (510), undeveloped land (191) and an electrical substation (831) to the east, a road (814), government buildings (170), and residential (121) to the south, and commercial (140) to the west.



	LEGEND	ACRES
155	OTHER LIGHT INDUSTRIAL	6.60
	OTHER COVER TYPES SHOWN	
510	STREAMS AND WATERWAYS	
814	ROADS AND HIGHWAYS	

LAND USE AND VEGETATION OF CANDIDATE SITE MIAMI RIVER #4, MIAMI-DADE COUNTY, FLORIDA

TAYLOR ENGINEERING INC.
9000 CYPRESS GREEN DRIVE, SUITE 200
JACKSONVILLE, FLORIDA 32256

Figure B-71
Land Use and Vegetation
of Candidate Site MR-4
Miami-Dade County, Florida

PROJECT C1999-021
REVISION
SHEET
DATE July, 2001

SITE DATA SUMMARY SHEET

Name:	MR-4
AKA:	FP&T/Florida LLC
Site Use:	Material Rehandling (Barge Offloading)
Comment:	Industrial Use -- Metals recycling facility, secured site with no access

LOCATION

County:	Dade	ICWW REACH MILEAGE:	347.01
Municipality:	Unincorporated	East/West of	West
Section/Township/Range:	28/53/41 & 29/53/41	Receiving Waterbody:	NA
		FDEP	N/A

REACH

Reach Designation:	DA-3	Projected Dredging Frequency (yr):	20
Reach Length (mi):	8.36	50-yr Dredging Requirement (cy):	17,524
ICWW Mileage:	342.76 to 351.12	50-yr Storage Requirement (cy):	37,677
Cut/Station:	DA-9/178+50 to D-3/57+80		
Geographic: (FDEP Classification)	Kennedy Causeway (NE 79th Street) Rickenbacker Causeway	(III) to (III)	

SITE PARAMETERS

Mapped Area (ac):	6.60	Storage Capacity (cy):	N/A
Containment Area (ac):	N/A	Dike Height (ft):	N/A
Impacted Area (ac):	2.94	Excavation Depth (ft):	N/A
Buffer Area (ac):	3.66	Existing Mean Site Elevation (ft):	5
N Buffer Width (ft):	100	Dike Volume (cy):	N/A
S Buffer Width (ft):	0	Max. Pumping Distance (mi):	N/A
E Buffer Width (ft):	100	Max. Barging Distance (mi):	10.68
W Buffer Width (ft):	100	Min. Distance from Waterway (mi):	5.09
Total Site Area (ac):	6.60		

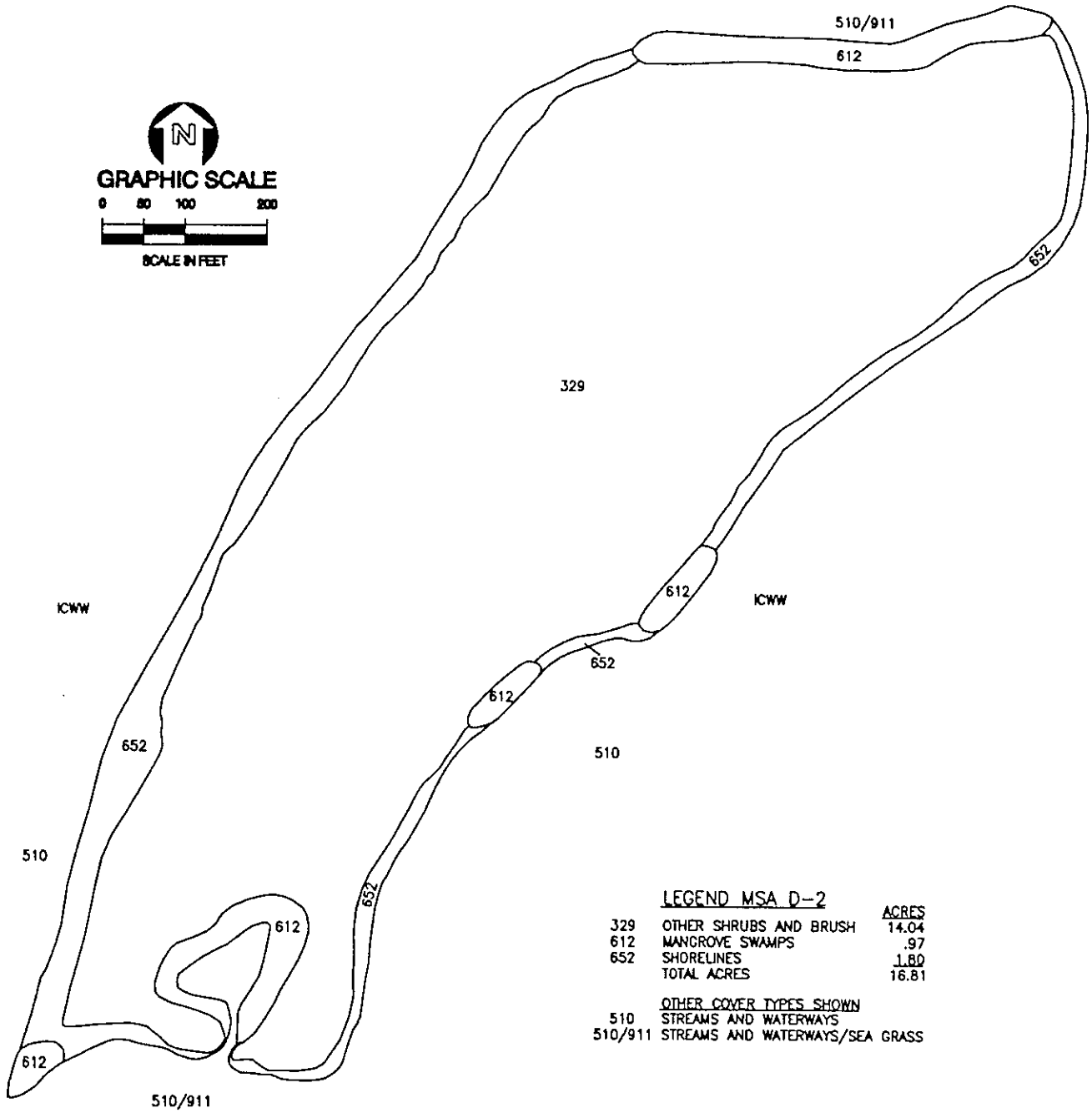
SITE

Public Access:	River Drive	Comprehensive Plan Designation:	Industrial and Office
		Adjacent Land Use:	
Road Easement (ft):	Not Required	River Dr (NE); Miami River and Light Industrial (SW, SE); Miami Metrorail (W)	
Pipeline Easement (ft):	N/A	Land Use of Impacted Area:	
Deep Draft Access:	Yes	Light Industrial	
		Wetlands W/I Mapped Area (ac):	0.00
		Wetlands Impacted (ac):	0.00

Site Narrative:

Miami River Site #4, MR-4, is a 6.6-acre upland industrial (155) site along the Miami Canal. According to a sign at the site, the property is occupied by FP&T/Florida LLC, a business that appears to be involved in salvage and storage of scrap metal for recycling. Based on aerials, the site is completely developed and paved except for landscaped buffers at the entrance to the facility along the highway and along the west side of the property. Vegetation included a tall fig hedge (*Ficus* sp.), some ixora shrubs (*Ixora* sp.), Australian pine (*Casuarina equisetifolia*), and several palm varieties including queen (*Syagrus romanzoffiana*), coconut (*Cocos nucifera*), and fan (*Chamaerops* sp.). Other open areas on the property consisted of asphalt or concrete paving. The site contained a very large, open-sided metal building that appeared to store mounds of scrap metal. Two other buildings were located on the site. One of them, located in the southwest corner of the site, consists of a concrete block building containing company offices. Although the shoreline was not inspected, the waterfront appears to be bulkheaded and to have moorings capable of securing large boats.

Adjacent land uses include the Miami Jai-Alai Fronton across River Drive (814) to the northeast, marine-dependent industry (155) to the southeast and southwest, the Miami River (510) to the southwest, and the elevated Miami Metrorail line to the west. The entire waterfront area, surrounding the site, appears to be marine-dependent industry.



LAND USE AND VEGETATION OF CANDIDATE SITE MSA D-2, MIAMI-DADE COUNTY, FLORIDA

TAYLOR ENGINEERING INC. 9000 CYPRESS GREEN DRIVE, SUITE 200 JACKSONVILLE, FLORIDA 32256	Figure B-72 Land Use and Vegetation of Candidate Site MSA D-2 Miami-Dade County, Florida	PROJECT C1999-021 REVISION SHEET DATE Sept., 2000

SITE DATA SUMMARY SHEET

Name:	MSA D-2
AKA:	Sandspur Island
Site Use:	Dewatering & Short-Term Storage (Single Operation)
Comment:	Haulover Inlet Spoil Island Enhancement Project

LOCATION

County:	Dade	ICWW REACH MILEAGE:	339.34
Municipality:	North Miami	East/West of	West
Section/Township/Range:	22/52/42 & 27/52/42	Receiving Waterbody:	N/A
		FDEP	N/A

REACH

Reach Designation:	DA-2	Projected Dredging Frequency (yr):	5
Reach Length (mi):	4.53	50-yr Dredging Requirement (cy):	469,672
ICWW Mileage:	338.23 to 342.76	50-yr Storage Requirement (cy):	1,009,795
Cut/Station:	DA-8/0+00 to DA-9/178+50		
Geographic: (FDEP Classification)	Haulover Beach County Park Kennedy Causeway (NE 79th Street)	(III) to (III)	

SITE PARAMETERS

Mapped Area (ac):	16.81	Storage Capacity (cy):	N/A
Containment Area (ac):	Insufficient Area	Dike Height (ft):	N/A
Impacted Area (ac):	N/A	Excavation Depth (ft):	N/A
Buffer Area (ac):	N/A	Existing Mean Site Elevation (ft):	5
N Buffer Width (ft):	N/A	Dike Volume (cy):	N/A
S Buffer Width (ft):	N/A	Max. Pumping Distance (mi):	N/A
E Buffer Width (ft):	N/A	Max. Barging Distance (mi):	N/A
W Buffer Width (ft):	N/A	Min. Distance from Waterway (mi):	0.19
Total Site Area (ac):	N/A		

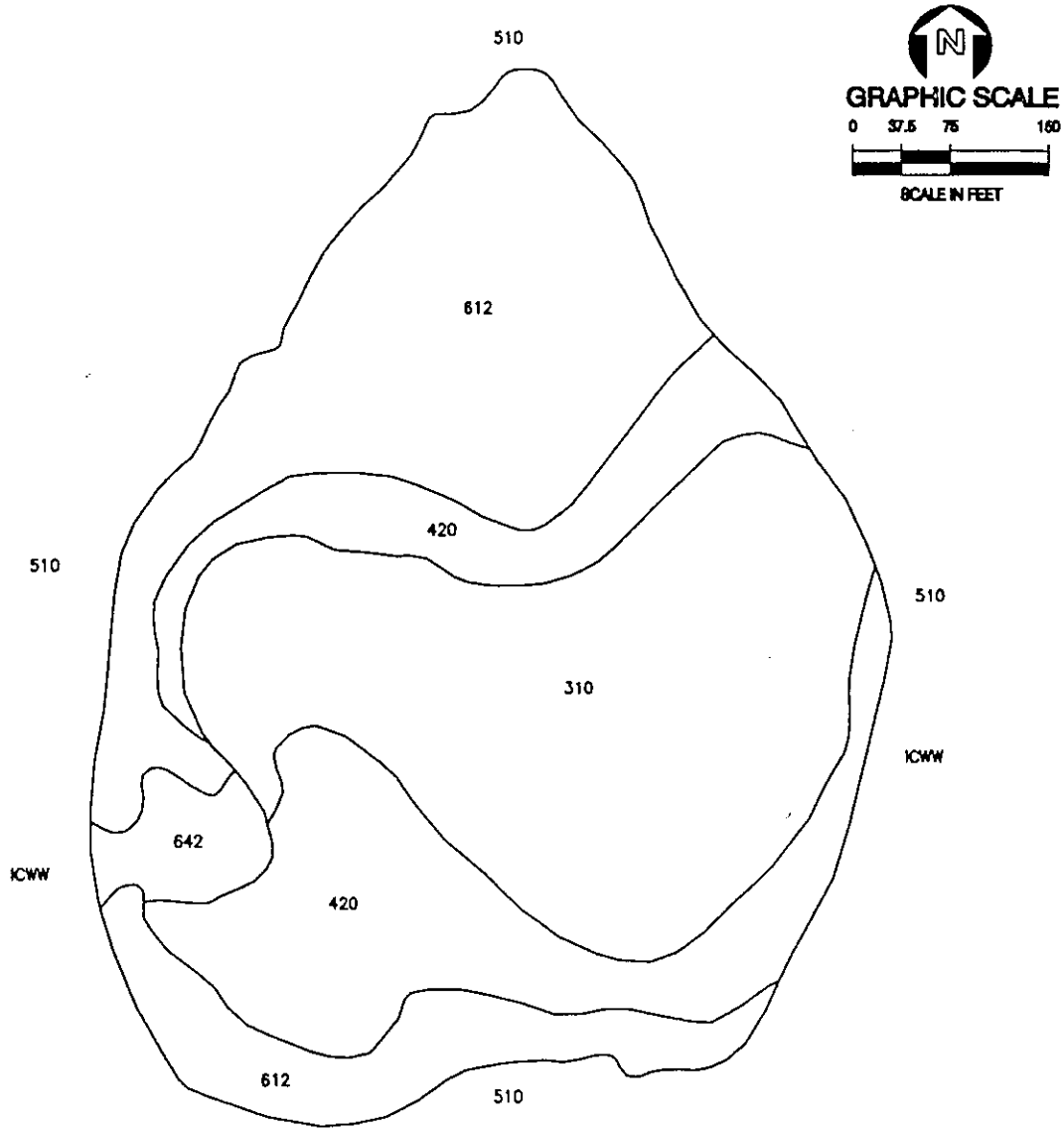
SITE

Public Access:	None	Comprehensive Plan Designation:	Parks and Recreation
		Adjacent Land Use:	
Road Easement (ft):	Not Required	Bal Harbour (N, E, S, W); ICWW (E)	
Pipeline Easement (ft):	Not Required		
		Land Use of Impacted Area:	
Deep Draft Access:	Yes	N/A	
		Wetlands W/I Mapped Area (ac):	2.77
		Wetlands Impacted (ac):	0.00

Site Narrative:

Site MSA D-2 is a 17-acre dredged material disposal island known as Sand Spur Island. The State of Florida manages the island in conjunction with nearby Oleta River State Park. The long, narrow island has recently undergone extensive ecological restoration. The vegetation communities on the island include beach strand, classified as other shrubs and brush (329), and mangrove swamp (612). Created as part of the restoration, four small areas of mangrove are located along the shoreline with three of them receiving wave and erosion protection from a riprap revetment. Mangrove species include red mangrove (Rhizophora mangle) and black mangrove (Avicennia germinans). The small mangrove-lined lagoon on the south end of the island is open to adjacent waters via a small tidal channel. The mangroves here include black and white mangrove (Laguncularia racemosa). Typical vegetation in the beach strand community includes coconut palm (Cocos nucifera), Spanish dagger (Yucca aloifolia), silver buttonwood (Conocarpus erecta), sea grape (Coccoloba uvifera), and necklacepod (Sophora tomentosa).

Streams and waterways, Bal Harbour (510), surround the island. The ICWW (510) lies to the east of Site MSA D-2.



	LEGEND MSA D-5	ACRES
310	HERBACEOUS	2.98
420	UPLAND HARDWOOD FORESTS	2.08
612	MANGROVE SWAMPS	2.92
642	SALTWATER MARSHES	.24
	TOTAL ACRES	8.22

OTHER COVER TYPES SHOWN

510 STREAMS AND WATERWAYS

LAND USE AND VEGETATION OF CANDIDATE SITE MSA D-5, MIAMI-DADE COUNTY, FLORIDA

TAYLOR ENGINEERING INC.
9000 CYPRESS GREEN DRIVE, SUITE 200
JACKSONVILLE, FLORIDA 32256

Figure B-73
Land Use and Vegetation
of Candidate Site MSA D-5
Miami-Dade County, Florida

PROJECT C1999-021
REVISION
SHEET
DATE Sept., 2000

SITE DATA SUMMARY SHEET

Name:	MSA D-5
AKA:	Biscayne Bay Spoil Island Enhancements #6
Site Use:	Dewatering & Short-Term Storage (Single Operation)
Comment:	Insufficient Upland Area -- Mangroves (3.16-acres), difficult access

LOCATION

County:	Dade	ICWW REACH MILEAGE:	344.76
Municipality:	Miami	East/West of	West
Section/Township/Range:	18/53/42	Receiving Waterbody:	N/A
		FDEP	N/A

REACH

Reach Designation:	DA-3	Projected Dredging Frequency (yr):	20
Reach Length (mi):	8.36	50-yr Dredging Requirement (cy):	17,524
ICWW Mileage:	342.76 to 351.12	50-yr Storage Requirement (cy):	37,677
Cut/Station:	DA-9/178+50 to D-3/57+80		
Geographic: (FDEP Classification)	Kennedy Causeway (NE 79th Street) Rickenbacker Causeway	(III) to (III)	

SITE PARAMETERS

Mapped Area (ac):	8.22	Storage Capacity (cy):	N/A
Containment Area (ac):	Insufficient Area	Dike Height (ft):	N/A
Impacted Area (ac):	N/A	Excavation Depth (ft):	N/A
Buffer Area (ac):	N/A	Existing Mean Site Elevation (ft):	5
N Buffer Width (ft):	N/A	Dike Volume (cy):	N/A
S Buffer Width (ft):	N/A	Max. Pumping Distance (mi):	N/A
E Buffer Width (ft):	N/A	Max. Barging Distance (mi):	N/A
W Buffer Width (ft):	N/A	Min. Distance from Waterway (mi):	0.22
Total Site Area (ac):	N/A		

SITE

Public Access:	None	Comprehensive Plan Designation:	Parks and Recreation
		Adjacent Land Use:	
Road Easement (ft):	Not Required	Biscayne Bay (N, E, S, W); ICWW (E)	
Pipeline Easement (ft):	Not Required		
		Land Use of Impacted Area:	
Deep Draft Access:	Yes	N/A	
		Wetlands W/I Mapped Area (ac):	3.16
		Wetlands Impacted (ac):	0.00

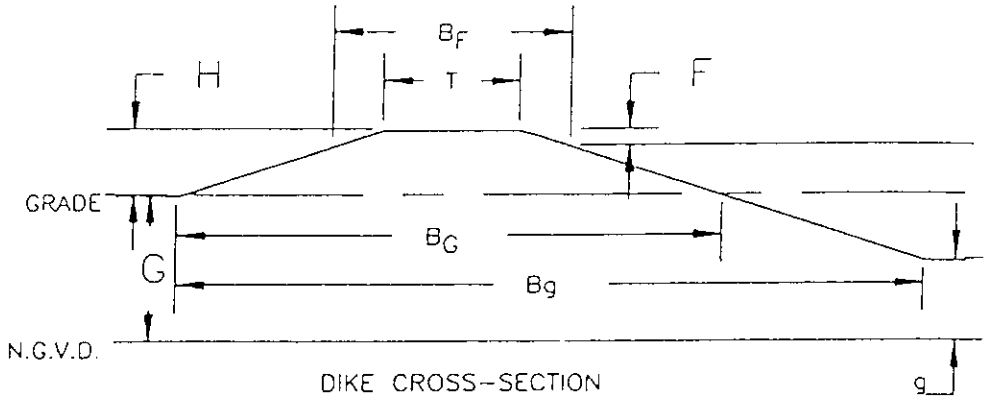
Site Narrative:

Site MSA D-5, an 8-acre dredged material island, is located adjacent to the Intracoastal Waterway (ICWW) in Biscayne Bay. The island contains a mangrove fringe (612) along the northern and western sections of the island. Typical mangrove community vegetation includes red mangrove (*Rhizophora mangle*), black mangrove (*Avicennia germinans*), and seaside mahoe (*Thespesia populnea*). Along the eastern shoreline, the uplands drop off steeply to the water's edge. A small area along the western shoreline contains a small saltmarsh (642) containing sea oxeye (*Borrichia frutescens*) and sea purslane (*Sesuvium portulacastrum*). The interior portions of the island reach significantly higher elevations. A nearly complete ring of upland hardwood forests encircles the herbaceous center of the island. The forested area contains a variety of species including Brazilian pepper (*Schinus terebinthifolius*), umbrella tree (*Scheffelera actinophylla*), cabbage palm (*Sabal palmetto*), gumbo-limbo (*Bursera simaruba*), and Australian pine (*Casuarina equisetifolia*). The herbaceous community contains a variety of grasses and herbs including St. Augustine grass (*Stenotaphrum secundatum*), plume grass (identification pending), beggar-ticks (*Bidens alba*), and morning glory (*Ipomoea* sp.).

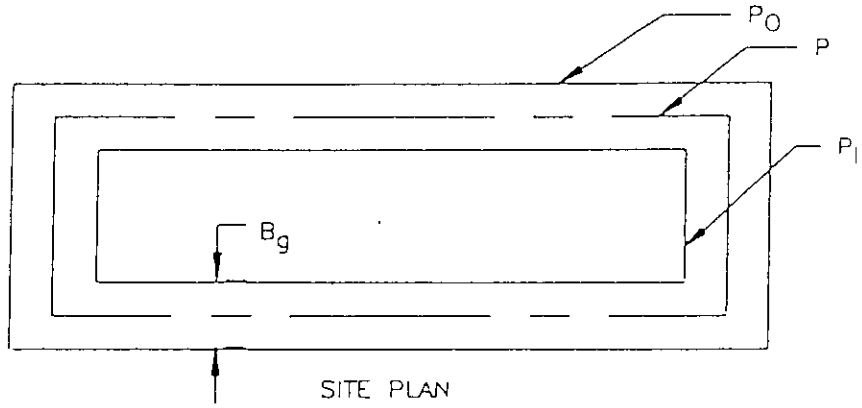
Streams and waterways, Biscayne Bay (510), surround the island. The ICWW (510) lies to the east of Site MSA D-5.

APPENDIX C

Dike Requirements and Capacity Analysis



DIKE CROSS-SECTION



SITE PLAN

P_o	OUTER PERIMETER OF DIKE FOOTPRINT	SITE SPECIFIC
P	DIKE PERIMETER @ CENTERLINE OF DIKE CREST	SITE SPECIFIC
P_I	PERIMETER OF DIKE AT INTERIOR DIKE TOE	SITE SPECIFIC
A	REQUIRED DISPOSAL AREA, BOUNDED BY P_o	SITE SPECIFIC
A_I	AREA WITHIN P_I	SITE SPECIFIC
G	SITE GRADE (+ NGVD)	SITE SPECIFIC
g	EXCAVATED GRADE (+ NGVD)	SITE SPECIFIC
H	DIKE HEIGHT ABOVE GRADE	15 ft.
S	DIKE SIDE SLOPE	3 (1V:3H)
T	DIKE CREST WIDTH	12 ft.
F	FREEBOARD AND PONDING	4 ft

TAYLOR ENGINEERING INC
9086 CYPRESS GREEN DRIVE
JACKSONVILLE, FLORIDA 32256

Figure C-1

Dike Requirements and Site Capacity

PROJECT
REVISION
SHEET
DATE

Width of Dike at Grade, B_G

$$B_G = 2HS + T \qquad (1)$$

Width of Dike at Excavated Grade, B_g

$$B_g = 2HS + T + (G - g)\,S \qquad (2)$$

Width of Dike at Depth of Freeboard and Ponding, B_F

$$B_F = 2FS + T \qquad (3)$$

Volume of Dike Material Required, V_{MR}

[illegible] (4)

Volume of [illegible] Available on Site, V_{MA}

$$V_{MA} = (G \quad [illegible] \quad (B_g - B_G)) \qquad (5)$$

Volume of Disposal Capacity, V_D

$$V_D = V_{MA} + (H - F)\left\{A + \tfrac{1}{2}P_I[B_G - (H - F)\,S - B_F]\right\} \qquad (6)$$

Depth of Excavation, $(G - g)$

$$(G - g) = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a} \qquad (7)$$

where: $a = \tfrac{1}{2}P_I S$

$b = P_I HS + \tfrac{1}{2}P_I T - A - \tfrac{1}{2}P_I B_G$

$c = \tfrac{1}{2}H\,(T + B_G)\,P$

APPENDIX D

Property Ownership, Primary and Secondary Sites

Table D-1: Site Ownership[1], Primary and Secondary Sites, Intracoastal Waterway, Miami-Dade County

Site Name	Parcel Number	Owner	Parcel Acreage	Assessed Value	Comprehensive Plan Designation	Zoning
72-05	28-2203-053-0010	Happiness Inc. 2900 NE 188th Street North Miami Beach, FL 33180-2911	6.53	3,871,135	Light Manufacturing	Office Park District
	28-2203-053-0020	Happiness Inc.	0.55	275	Vacant Land	Office Park District
Port of Miami	01-4205-000-0010	Miami-Dade County Seaport - Accounting Department 1015 N. America Way, Suite 200 Miami, FL 33132-2017	2,819.84	511,698,270	Commercial	Industrial Conditional
D-29	01-4216-000-0010	City of Miami-Dept of P&D Asset Management Division 444 SW 2nd Avenue #325 Miami, FL 33130-1910	124.56	37,257,234	Municipal	Agriculture
D-45	30-6020-000-0230	Vick Enterprises P.O. Box 700455 Goulds, FL 33170-0455	20.00	240,000	Vacant Land	Agriculture
	30-6020-000-0240	Lewis W Peters TR McClain & Co. 200 South Biscayne Boulevard #2800 Miami, FL 33131-5324	105.00	910,000	Vacant Land	Agriculture

Table D-1: Site Ownership[1], Primary and Secondary Sites, Intracoastal Waterway, Miami-Dade County

Site Name	Parcel Number	Owner	Parcel Acreage	Assessed Value	Comprehensive Plan Designation	Zoning
D-59	30-6022-000-0030	Miami-Dade County GSA R/E Management - Parks Department User 111 NW 1st Street 2460 Miami, Fl 33128-1907	41.46	1,028,844	Vacant Land Governmental	Single Family Residence
365C-01	30-6032-000-0080	Singletary Concrete Products Inc. 59 Sarasota Boulevard Sarasota, FL 34240	20.17	201,700	Mineral Processing	Unzoned
	30-6032-000-0120	Singletary Concrete Products Inc.	455.72	898,702	Mineral Processing	Unzoned

[1] Based on tax roll/public record information, Miami-Dade County, Florida as of July 2002

APPENDIX E

Sediment Data

Columbia Analytical Services INC.
An Employee-Owned Company

November 20, 2000

Service Request No. J2003466

Certification Numbers:

Florida DOH:	E82502
Louisiana:	AI 30759
Massachusetts:	M-FL937
New Hampshire:	294297-A
North Carolina:	527
South Carolina:	96021001

Lori Brownell
Taylor Engineering, Inc.
9000 Cypress Green Dr., Ste. 200
Jacksonville, FL 32256

RE: Project No.: C1999-021
Project Name: Dade Phase I

Dear Lori Brownell:

Enclosed are the results of the samples(s) submitted to our laboratory on October 16, 2000. For your reference, these analyses have been assigned our service request number: J2003466.

All analyses were performed according to our laboratory's quality assurance program. All results are intended to be considered in the entirety, and Columbia Analytical Services, Inc. (CAS) is not responsible for use of less than the complete report. Results apply only to the samples analyzed.

Please call if you have any questions.

Respectfully submitted,

Columbia Analytical Services, Inc.

Travis Trader
Project Manager

TT/jg

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Taylor Engineering, Inc.
Project: Dade Phase I / C1999-021
Sample Matrix: Sediment

Service Request: J2003466
Date Collected: 10/11-13/00
Date Received: 10/16/00
Date Extracted: 10/17/00

Polynuclear Aromatic Hydrocarbons by GC/MS SIM
EPA Methods 3550/8270
Units: µg/Kg (ppb)
Dry Weight Basis

	Sample Name:	**DA-1-1C**	**DA-1-2C**	**DA-2-3C**
	Lab Code:	J2003466-001 (a)	J2003466-002	J2003466-003 (a)
	Date Analyzed:	11/6/00	11/6/00	11/6/00
Analyte	**MRL**			
Naphthalene	3.3	6.6U	U	6.6U
2-Methylnaphthalene	3.3	6.6U	U	6.6U
1-Methylnaphthalene	3.3	6.6U	U	6.6U
Acenaphthylene	3.3	6.6U	U	6.6U
Acenaphthene	3.3	6.6U	U	6.6U
Fluorene	3.3	6.6U	U	6.6U
Phenanthrene	3.3	6.6U	11	6.6U
Anthracene	3.3	6.6U	U	6.6U
Fluoranthene	3.3	26	36	18
Pyrene	3.3	11	21	6.6U
Benz(a)anthracene	3.3	7.6	11	6.6U
Chrysene	3.3	9.6	14	6.6U
Benzo(b)fluoranthene	3.3	27	26	18
Benzo(k)fluoranthene	3.3	9.6	13	6.6U
Benzo(a)pyrene	3.3	25	26	6.6U
Indeno(1,2,3-cd)pyrene	3.3	34	33	6.6U
Dibenz(a,h)anthracene	3.3	6.6U	20	6.6U
Benzo(g,h,i)perylene	3.3	22	22	6.6U

U Not detected at or above the MRL.
(a) MRL is elevated because of the low percent solids in the sample as received.

Approved By: Terri Traeder Date: 11/20/00

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	Taylor Engineering, Inc.	Service Request:	J2003466
Project:	Dade Phase I / C1999-021	Date Collected:	10/11-13/00
Sample Matrix:	Sediment	Date Received:	10/16/00
		Date Extracted:	10/17/00

Polynuclear Aromatic Hydrocarbons by GC/MS SIM
EPA Methods 3550/8270
Units: µg/Kg (ppb)
Dry Weight Basis

	Sample Name:	**DA-2-4C**	**DA-2-5C**	**DA-2-6C**
	Lab Code:	J2003466-004 (a)	J2003466-005 (a)	J2003466-006 (a)
	Date Analyzed:	11/6/00	11/6/00	11/6/00
Analyte	**MRL**			
Naphthalene	3.3	6.6U	6.6U	6.6U
2-Methylnaphthalene	3.3	6.6U	6.6U	6.6U
1-Methylnaphthalene	3.3	6.6U	6.6U	6.6U
Acenaphthylene	3.3	6.6U	6.6U	14
Acenaphthene	3.3	6.6U	6.6U	6.6U
Fluorene	3.3	6.6U	6.6U	6.6U
Phenanthrene	3.3	6.6U	6.6U	30
Anthracene	3.3	6.6U	6.6U	18
Fluoranthene	3.3	17	28	120
Pyrene	3.3	6.6U	7.9	88
Benz(a)anthracene	3.3	6.6U	6.6U	48
Chrysene	3.3	6.6U	6.6	100
Benzo(b)fluoranthene	3.3	17	28	140
Benzo(k)fluoranthene	3.3	6.6U	7.9	96
Benzo(a)pyrene	3.3	6.6U	28	120
Indeno(1,2,3-cd)pyrene	3.3	6.6U	39	88
Dibenz(a,h)anthracene	3.3	6.6U	27	42
Benzo(g,h,i)perylene	3.3	6.6U	24	60

U Not detected at or above the MRL.
(a) MRL is elevated because of the low percent solids in the sample as received.

Approved By: [signature] Date: 11/20/00

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	Taylor Engineering, Inc.	**Service Request:**	J2003466
Project:	Dade Phase I / C1999-021	**Date Collected:**	10/11-13/00
Sample Matrix:	Sediment	**Date Received:**	10/16/00
		Date Extracted:	10/17/00

Polynuclear Aromatic Hydrocarbons by GC/MS SIM
EPA Methods 3550/8270
Units: µg/Kg (ppb)
Dry Weight Basis

Sample Name:		**DA-3-7C**	**DA-3-8C**	**DA-3-9C**
Lab Code:		J2003466-007 (a)	J2003466-008	J2003466-009
Date Analyzed:		11/6/00	11/6/00	11/6/00
Analyte	**MRL**			
Naphthalene	3.3	6.6U	U	U
2-Methylnaphthalene	3.3	6.6U	U	U
1-Methylnaphthalene	3.3	6.6U	U	U
Acenaphthylene	3.3	6.6U	U	U
Acenaphthene	3.3	6.6U	U	U
Fluorene	3.3	6.6U	U	U
Phenanthrene	3.3	11	U	U
Anthracene	3.3	6.6U	U	U
Fluoranthene	3.3	48	24	14
Pyrene	3.3	21	8.8	U
Benz(a)anthracene	3.3	13	8.4	U
Chrysene	3.3	21	12	U
Benzo(b)fluoranthene	3.3	48	28	14
Benzo(k)fluoranthene	3.3	19	13	U
Benzo(a)pyrene	3.3	45	27	U
Indeno(1,2,3-cd)pyrene	3.3	60	32	U
Dibenz(a,h)anthracene	3.3	38	20	U
Benzo(g,h,i)perylene	3.3	39	22	U

U Not detected at or above the MRL.
(a) MRL is elevated because of the low percent solids in the sample as received.

Approved By: Terri Trader Date: 11/20/00

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	Taylor Engineering, Inc.	**Service Request:**	J2003466
Project:	Dade Phase I / C1999-021	**Date Collected:**	10/11-13/00
Sample Matrix:	Sediment	**Date Received:**	10/16/00
		Date Extracted:	10/17/00

Polynuclear Aromatic Hydrocarbons by GC/MS SIM
EPA Methods 3550/8270
Units: µg/Kg (ppb)
Dry Weight Basis

	Sample Name:	**DA-5-10C**	**DA-5-11C**	**DA-5-12C**
	Lab Code:	J2003466-010	J2003466-011	J2003466-012 (a)
	Date Analyzed:	11/6/00	11/6/00	11/6/00
Analyte	**MRL**			
Naphthalene	3.3	U	U	6.6U
2-Methylnaphthalene	3.3	U	U	6.6U
1-Methylnaphthalene	3.3	U	U	6.6U
Acenaphthylene	3.3	U	U	6.6U
Acenaphthene	3.3	U	U	6.6U
Fluorene	3.3	U	U	6.6U
Phenanthrene	3.3	7.1	U	6.6U
Anthracene	3.3	U	U	6.6U
Fluoranthene	3.3	27	15	24
Pyrene	3.3	12	U	6.6U
Benz(a)anthracene	3.3	7.1	U	6.6U
Chrysene	3.3	10	U	6.6U
Benzo(b)fluoranthene	3.3	25	U	6.6U
Benzo(k)fluoranthene	3.3	10	U	6.6U
Benzo(a)pyrene	3.3	22	U	6.6U
Indeno(1,2,3-cd)pyrene	3.3	29	U	6.6U
Dibenz(a,h)anthracene	3.3	18	U	6.6U
Benzo(g,h,i)perylene	3.3	19	U	6.6U

U Not detected at or above the MRL.
(a) MRL is elevated because of the low percent solids in the sample as received.

Approved By: [signature] Date: 11/20/00

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	Taylor Engineering, Inc.	**Service Request:**	J2003466
Project:	Dade Phase I / C1999-021	**Date Collected:**	10/11-13/00
Sample Matrix:	Sediment	**Date Received:**	10/16/00
		Date Extracted:	10/17/00

Polynuclear Aromatic Hydrocarbons by GC/MS SIM
EPA Methods 3550/8270
Units: µg/Kg (ppb)
Dry Weight Basis

	Sample Name:	**DA-6-13C**	**DA-6-14C**	**DA-6-15C**
	Lab Code:	J2003466-013	J2003466-014	J2003466-015
	Date Analyzed:	11/6/00	11/6/00	11/6/00
Analyte	**MRL**			
Naphthalene	3.3	U	U	U
2-Methylnaphthalene	3.3	U	U	U
1-Methylnaphthalene	3.3	U	U	U
Acenaphthylene	3.3	U	U	U
Acenaphthene	3.3	U	U	U
Fluorene	3.3	U	U	U
Phenanthrene	3.3	U	U	U
Anthracene	3.3	U	U	U
Fluoranthene	3.3	U	U	U
Pyrene	3.3	U	U	U
Benz(a)anthracene	3.3	U	U	U
Chrysene	3.3	U	U	U
Benzo(b)fluoranthene	3.3	U	U	U
Benzo(k)fluoranthene	3.3	U	U	U
Benzo(a)pyrene	3.3	U	U	U
Indeno(1,2,3-cd)pyrene	3.3	U	U	U
Dibenz(a,h)anthracene	3.3	U	U	U
Benzo(g,h,i)perylene	3.3	U	U	U

U Not detected at or above the MRL.

Approved By: Travis Tuckle Date: 11/20/00

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	Taylor Engineering, Inc.	**Service Request:**	J2003466
Project:	Dade Phase I / C1999-021	**Date Collected:**	10/11-13/00
Sample Matrix:	Sediment	**Date Received:**	10/16/00
		Date Extracted:	10/17/00

Polynuclear Aromatic Hydrocarbons by GC/MS SIM
EPA Methods 3550/8270
Units: µg/Kg (ppb)
Dry Weight Basis

Sample Name:	**DA-6-16C**	**Method Blank**
Lab Code:	J2003466-016	EX200437-MB
Date Analyzed:	11/6/00	11/6/00

Analyte	**MRL**		
Naphthalene	3.3	U	U
2-Methylnaphthalene	3.3	U	U
1-Methylnaphthalene	3.3	U	U
Acenaphthylene	3.3	U	U
Acenaphthene	3.3	U	U
Fluorene	3.3	U	U
Phenanthrene	3.3	U	U
Anthracene	3.3	U	U
Fluoranthene	3.3	13	U
Pyrene	3.3	U	U
Benz(a)anthracene	3.3	U	U
Chrysene	3.3	U	U
Benzo(b)fluoranthene	3.3	U	U
Benzo(k)fluoranthene	3.3	U	U
Benzo(a)pyrene	3.3	U	U
Indeno(1,2,3-cd)pyrene	3.3	U	U
Dibenz(a,h)anthracene	3.3	U	U
Benzo(g,h,i)perylene	3.3	U	U

U Not detected at or above the MRL.

Approved By: Tracie Tucker Date: 11/20/00

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Taylor Engineering, Inc
Project: Dade Phase I / C1999-021
Sample Matrix: Sediment

Service Request: J2003466
Date Collected: 10/11-13/00
Date Received: 10/16/00
Date Extracted: 10/17/00

Organochlorine Pesticides
EPA Method 3550/8081
Units: µg/Kg (ppb)
Dry Weight Basis

Sample Name:		DA-1-1C	DA-1-2C	DA-2-3C
Lab Code:		J2003466-001 (a,b)	J2003466-002 (a)	J2003466-003 (a,b)
Date Analyzed:		10/30/00	10/30/00	10/30/00
Analyte	**MRL**			
Alpha-BHC	0.066	0.13U	U	0.13U
Beta-BHC	0.066	0.13U	U	0.13U
Delta-BHC	0.066	0.13U	U	0.13U
Heptachlor	0.066	0.13U	U	0.13U
Aldrin	0.066	0.13U	U	0.13U
Gamma-BHC (Lindane)	0.066	0.13U	U	0.13U
Heptachlor Epoxide	0.066	0.13U	U	0.13U
Endosulfan I	0.066	0.13U	U	0.13U
Endrin	0.066	0.13U	U	0.13U
Endosulfan II	0.066	0.13U	U	0.13U
4,4'-DDD	0.066	0.13U	U	0.13U
Endrin Aldehyde	0.066	0.13U	U	0.13U
Endosulfan Sulfate	0.066	0.13U	U	0.13U
4,4'-DDT	0.066	0.13U	U	0.13U
4,4'-DDE	0.066	0.13U	U	0.13U
Dieldrin	0.066	0.13U	U	0.13U
Methoxychlor	1.6	3.2U	U	3.2U
Chlordane	1.6	3.2U	U	3.2U
Toxaphene	6.6	13U	U	13U

U Not detected at or above the MRL.

(a) Values estimated due to matrix interferences. Original analysis showed excessive breakdown of DDT in the continuing calibration verifications. The samples were re-run at a dilution factor of 1:10 to confirm the breakdown was the result of matrix effects from the samples. The continuing calibration verifications for the re-runs did not show the breakdown of DDT. Therefore, it is the opinion of CAS that the sample matrix, which is sediment, affected the GC system.

(b) MRL is elevated because of the low percent solids in the sample as received.

Approved By: Tania Tanda Date: 11/29/00

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	Taylor Engineering, Inc.	**Service Request:**	J2003466
Project:	Dade Phase I / C1999-021	**Date Collected:**	10/11-13/00
Sample Matrix:	Sediment	**Date Received:**	10/16/00
		Date Extracted:	10/17/00

Organochlorine Pesticides
EPA Method 3550/8081
Units: µg/Kg (ppb)
Dry Weight Basis

Sample Name:		DA-2-4C	DA-2-5C	DA-2-6C
Lab Code:		J2003466-004 (a,b)	J2003466-005 (a,b)	J2003466-006 (a,b)
Date Analyzed:		10/30/00	10/30/00	10/30/00
Analyte	**MRL**			
Alpha-BHC	0.066	0.13U	0.13U	0.13U
Beta-BHC	0.066	0.13U	0.13U	0.13U
Delta-BHC	0.066	0.13U	0.13U	0.13U
Heptachlor	0.066	0.13U	0.13U	0.13U
Aldrin	0.066	0.13U	0.13U	0.13U
Gamma-BHC (Lindane)	0.066	0.13U	0.13U	0.13U
Heptachlor Epoxide	0.066	0.13U	0.13U	0.13U
Endosulfan I	0.066	0.13U	0.13U	0.13U
Endrin	0.066	0.13U	0.13U	0.13U
Endosulfan II	0.066	0.13U	0.13U	0.13U
4,4'-DDD	0.066	0.13U	0.13U	0.13U
Endrin Aldehyde	0.066	0.13U	0.13U	0.13U
Endosulfan Sulfate	0.066	0.13U	0.13U	0.13U
4,4'-DDT	0.066	0.13U	0.13U	0.13U
4,4'-DDE	0.066	0.13U	0.13U	0.13U
Dieldrin	0.066	0.13U	0.13U	0.13U
Methoxychlor	1.6	3.2U	3.2U	3.2U
Chlordane	1.6	3.2U	3.2U	3.2U
Toxaphene	6.6	13U	13U	13U

U Not detected at or above the MRL.

(a) Values estimated due to matrix interferences. Original analysis showed excessive breakdown of DDT in the continuing calibration verifications. The samples were re-run at a dilution factor of 1:10 to confirm the breakdown was the result of matrix effects from the samples. The continuing calibration verifications for the re-runs did not show the breakdown of DDT. Therefore, it is the opinion of CAS that the sample matrix, which is sediment, affected the GC system.

(b) MRL is elevated because of the low percent solids in the sample as received.

Approved By: _____ Date: 11/20/00

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Taylor Engineering, Inc.
Project: Dade Phase I / C1999-021
Sample Matrix: Sediment

Service Request: J2003466
Date Collected: 10/11-13/00
Date Received: 10/16/00
Date Extracted: 10/17/00

Organochlorine Pesticides
EPA Method 3550/8081
Units: µg/Kg (ppb)
Dry Weight Basis

	Sample Name:	DA-3-7C	DA-3-8C	DA-3-9C
	Lab Code:	J2003466-007 (a,b,c)	J2003466-008 (a)	J2003466-009 (a)
	Date Analyzed:	10/30/00	10/30/00	10/30/00
Analyte	**MRL**			
Alpha-BHC	0.066	13U	U	U
Beta-BHC	0.066	13U	U	U
Delta-BHC	0.066	13U	U	U
Heptachlor	0.066	13U	U	U
Aldrin	0.066	13U	U	U
Gamma-BHC (Lindane)	0.066	13U	U	U
Heptachlor Epoxide	0.066	13U	U	U
Endosulfan I	0.066	13U	U	U
Endrin	0.066	13U	U	U
Endosulfan II	0.066	13U	U	U
4,4'-DDD	0.066	13U	U	U
Endrin Aldehyde	0.066	13U	U	U
Endosulfan Sulfate	0.066	13U	U	U
4,4'-DDT	0.066	13U	U	U
4,4'-DDE	0.066	13U	U	U
Dieldrin	0.066	13U	U	U
Methoxychlor	1.6	160U	U	U
Chlordane	1.6	160U	U	U
Toxaphene	6.6	1300U	U	U

U Not detected at or above the MRL.
(a) Values estimated due to matrix interferences. Original analysis showed excessive breakdown of DDT in the continuing calibration verifications. The samples were re-run at a dilution factor of 1:10 to confirm the breakdown was the result of matrix effects from the samples. The continuing calibration verifications for the re-runs did not show the breakdown of DDT. Therefore, it is the opinion of CAS that the sample matrix, which is sediment, affected the GC system.
(b) MRL is elevated because of the low percent solids in the sample as received.
(c) MRL elevated due to matrix interferences. Dilution factor 1:100.

Approved By: _____ Date: 11/20/00

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	Taylor Engineering, Inc.	**Service Request:**	J2003466
Project:	Dade Phase I / C1999-021	**Date Collected:**	10/11-13/00
Sample Matrix:	Sediment	**Date Received:**	10/16/00
		Date Extracted:	10/17/00

Organochlorine Pesticides
EPA Method 3550/8081
Units: µg/Kg (ppb)
Dry Weight Basis

	Sample Name:	**DA-5-10C**	**DA-5-11C**	**DA-5-12C**
	Lab Code:	J2003466-010 (a)	J2003466-011 (a)	2003466-012 (a,b)
	Date Analyzed:	10/30/00	10/30/00	10/30/00
Analyte	**MRL**			
Alpha-BHC	0.066	U	U	0.13U
Beta-BHC	0.066	U	U	0.13U
Delta-BHC	0.066	U	U	0.13U
Heptachlor	0.066	U	U	0.13U
Aldrin	0.066	U	U	0.13U
Gamma-BHC (Lindane)	0.066	U	U	0.13U
Heptachlor Epoxide	0.066	U	U	0.13U
Endosulfan I	0.066	U	U	0.13U
Endrin	0.066	U	U	0.13U
Endosulfan II	0.066	U	U	0.13U
4,4'-DDD	0.066	U	U	0.13U
Endrin Aldehyde	0.066	U	U	0.13U
Endosulfan Sulfate	0.066	U	U	0.13U
4,4'-DDT	0.066	U	U	0.13U
4,4'-DDE	0.066	U	U	0.13U
Dieldrin	0.066	U	U	0.13U
Methoxychlor	1.6	U	U	3.2U
Chlordane	1.6	U	U	3.2U
Toxaphene	6.6	U	U	13U

U Not detected at or above the MRL.

(a) Values estimated due to matrix interferences. Original analysis showed excessive breakdown of DDT in the continuing calibration verifications. The samples were re-run at a dilution factor of 1.10 to confirm the breakdown was the result of matrix effects from the samples. The continuing calibration verifications for the re-runs did not show the breakdown of DDT. Therefore, it is the opinion of CAS that the sample matrix, which is sediment, affected the GC system.

(b) MRL is elevated because of the low percent solids in the sample as received

Approved By: [signature] Date: 11/20/00

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Taylor Engineering, Inc.
Project: Dade Phase I / C1999-021
Sample Matrix: Sediment

Service Request: J2003466
Date Collected: 10/11-13/00
Date Received: 10/16/00
Date Extracted: 10/17/00

Organochlorine Pesticides
EPA Method 3550/8081
Units: µg/Kg (ppb)
Dry Weight Basis

	Sample Name:	**DA-6-13C**	**DA-6-14C**	**DA-6-15C**
	Lab Code:	J2003466-013 (a)	J2003466-014 (a)	J2003466-015 (a)
	Date Analyzed:	10/30/00	10/30/00	10/30/00
Analyte	**MRL**			
Alpha-BHC	0.066	U	U	U
Beta-BHC	0.066	U	U	U
Delta-BHC	0.066	U	U	U
Heptachlor	0.066	U	U	U
Aldrin	0.066	U	U	U
Gamma-BHC (Lindane)	0.066	U	U	U
Heptachlor Epoxide	0.066	U	U	U
Endosulfan I	0.066	U	U	U
Endrin	0.066	U	U	U
Endosulfan II	0.066	U	U	U
4,4'-DDD	0.066	U	U	U
Endrin Aldehyde	0.066	U	U	U
Endosulfan Sulfate	0.066	U	U	U
4,4'-DDT	0.066	U	U	U
4,4'-DDE	0.066	U	U	U
Dieldrin	0.066	U	U	U
Methoxychlor	1.6	U	U	U
Chlordane	1.6	U	U	U
Toxaphene	6.6	U	U	U

U Not detected at or above the MRL.
(a) Values estimated due to matrix interferences. Original analysis showed excessive breakdown of DDT in the continuing calibration verifications. The samples were re-run at a dilution factor of 1:10 to confirm the breakdown was the result of matrix effects from the samples. The continuing calibration verifications for the re-runs did not show the breakdown of DDT. Therefore, it is the opinion of CAS that the sample matrix, which is sediment, affected the GC system.

Approved By: [signature] Date: 11/20/00

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	Taylor Engineering, Inc.	**Service Request:**	J2003466
Project:	Dade Phase I / C1999-021	**Date Collected:**	10/11-13/00
Sample Matrix:	Sediment	**Date Received:**	10/16/00
		Date Extracted:	10/17/00

Organochlorine Pesticides
EPA Method 3550/8081
Units: µg/Kg (ppb)
Dry Weight Basis

Sample Name:		**DA-6-16C**	**Method Blank**
Lab Code:		J2003466-016 (a)	EX200436-MB
Date Analyzed:		10/30/00	10/30/00
Analyte	**MRL**		
Alpha-BHC	0.066	U	U
Beta-BHC	0.066	U	U
Delta-BHC	0.066	U	U
Heptachlor	0.066	U	U
Aldrin	0.066	U	U
Gamma-BHC (Lindane)	0.066	U	U
Heptachlor Epoxide	0.066	U	U
Endosulfan I	0.066	U	U
Endrin	0.066	U	U
Endosulfan II	0.066	U	U
4,4'-DDD	0.066	U	U
Endrin Aldehyde	0.066	U	U
Endosulfan Sulfate	0.066	U	U
4,4'-DDT	0.066	U	U
4,4'-DDE	0.066	U	U
Dieldrin	0.066	U	U
Methoxychlor	1.6	U	U
Chlordane	1.6	U	U
Toxaphene	6.6	U	U

U Not detected at or above the MRL.

(a) Values estimated due to matrix interferences. Original analysis showed excessive breakdown of DDT in the continuing calibration verifications. The samples were re-run at a dilution factor of 1:10 to confirm the breakdown was the result of matrix effects from the samples. The continuing calibration verifications for the re-runs did not show the breakdown of DDT. Therefore, it is the opinion of CAS that the sample matrix, which is sediment, affected the GC system.

Approved By: _____ Date: 11/20/00

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Taylor Engineering, Inc
Project: Dade Phase I / C1999-021
Sample Matrix: Sediment

Service Request: J2003466
Date Collected: 10/11-13/000
Date Received: 10/16/00
Date Extracted: 10/23/00

Polychlorinated Biphenyls (PCBs)
EPA Method 3550/8082
Units: µg/Kg (ppb)
Dry Weight Basis

	Sample Name:	DA-1-1C	DA-1-2C	DA-2-3C
	Lab Code:	J2003466-001 (a)	J2003466-002	J2003466-003 (a)
	Date Analyzed:	10/31/00	10/31/00	10/31/00
Analyte	**MRL**			
PCBs: Aroclor 1016	33	66U	U	66U
Aroclor 1221	33	66U	U	66U
Aroclor 1232	33	66U	U	66U
Aroclor 1242	33	66U	U	66U
Aroclor 1248	33	66U	U	66U
Aroclor 1254	33	66U	U	66U
Aroclor 1260	33	66U	U	66U

U Not detected at or above the MRL.
(a) MRL is elevated because of the low percent solids in the sample as received

Approved By: [signature] Date: 11/20/00

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Taylor Engineering, Inc
Project: Dade Phase I / C1999-021
Sample Matrix: Sediment

Service Request: J2003466
Date Collected: 10/11-13/000
Date Received: 10/16/00
Date Extracted: 10/23/00

Polychlorinated Biphenyls (PCBs)
EPA Method 3550/8082
Units: µg/Kg (ppb)
Dry Weight Basis

Sample Name:		DA-2-4C	DA-2-5C	DA-2-6C
Lab Code:		J2003466-004 (a)	J2003466-005 (a)	J2003466-006 (a)
Date Analyzed:		10/31/00	10/31/00	10/31/00
Analyte	**MRL**			
PCBs: Aroclor 1016	33	66U	66U	66U
Aroclor 1221	33	66U	66U	66U
Aroclor 1232	33	66U	66U	66U
Aroclor 1242	33	66U	66U	66U
Aroclor 1248	33	66U	66U	66U
Aroclor 1254	33	66U	66U	66U
Aroclor 1260	33	66U	66U	66U

U Not detected at or above the MRL.
(a) MRL is elevated because of the low percent solids in the sample as received.

Approved By _____ Date: 11/20/00

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Taylor Engineering, Inc
Project: Dade Phase I / C1999-021
Sample Matrix: Sediment

Service Request: J2003466
Date Collected: 10/11-13/000
Date Received: 10/16/00
Date Extracted: 10/23/00

Polychlorinated Biphenyls (PCBs)
EPA Method 3550/8082
Units: µg/Kg (ppb)
Dry Weight Basis

	Sample Name:	**DA-3-7C**	**DA-3-8C**	**DA-3-9C**
	Lab Code:	J2003466-007 (a)	J2003466-008	J2003466-009
	Date Analyzed:	10/31/00	10/31/00	10/31/00
Analyte	**MRL**			
PCBs: Aroclor 1016	33	66U	U	U
Aroclor 1221	33	66U	U	U
Aroclor 1232	33	66U	U	U
Aroclor 1242	33	66U	U	U
Aroclor 1248	33	66U	U	U
Aroclor 1254	33	66U	U	U
Aroclor 1260	33	66U	U	U

U Not detected at or above the MRL.
(a) MRL is elevated because of the low percent solids in the sample as received.

Approved By: Travis Tucker Date: 11/20/00

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	Taylor Engineering, Inc	**Service Request:**	J2003466
Project:	Dade Phase I / C1999-021	**Date Collected:**	10/11-13/000
Sample Matrix:	Sediment	**Date Received:**	10/16/00
		Date Extracted:	10/23/00

Polychlorinated Biphenyls (PCBs)
EPA Method 3550/8082
Units: µg/Kg (ppb)
Dry Weight Basis

	Sample Name:	**DA-5-10C**	**DA-5-11C**	**DA-5-12C**
	Lab Code:	J2003466-010	J2003466-011	J2003466-012 (a)
	Date Analyzed:	10/31/00	10/31/00	10/31/00
Analyte	**MRL**			
PCBs: Aroclor 1016	33	U	U	66U
Aroclor 1221	33	U	U	66U
Aroclor 1232	33	U	U	66U
Aroclor 1242	33	U	U	66U
Aroclor 1248	33	U	U	66U
Aroclor 1254	33	U	U	66U
Aroclor 1260	33	U	U	66U

U Not detected at or above the MRL.
(a) MRL is elevated because of the low percent solids in the sample as received.

Approved By: _____ Date: 11/20/00

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Taylor Engineering, Inc
Project: Dade Phase I / C1999-021
Sample Matrix: Sediment

Service Request: J2003466
Date Collected: 10/11-13/000
Date Received: 10/16/00
Date Extracted: 10/23/00

Polychlorinated Biphenyls (PCBs)
EPA Method 3550/8082
Units: µg/Kg (ppb)
Dry Weight Basis

Sample Name:		DA-6-13C	DA-6-14C	DA-6-15C
Lab Code:		J2003466-013	J2003466-014	J2003466-015
Date Analyzed:		10/31/00	10/31/00	10/31/00
Analyte	**MRL**			
PCBs: Aroclor 1016	33	U	U	U
Aroclor 1221	33	U	U	U
Aroclor 1232	33	U	U	U
Aroclor 1242	33	U	U	U
Aroclor 1248	33	U	U	U
Aroclor 1254	33	U	U	U
Aroclor 1260	33	U	U	U

U Not detected at or above the MRL.

Approved By: Tracie Tucker Date: 11/20/00

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	Taylor Engineering, Inc.	**Service Request:**	J2003466
Project:	Dade Phase I / C1999-021	**Date Collected:**	10/11-13/000
Sample Matrix:	Sediment	**Date Received:**	10/16/00
		Date Extracted:	10/23/00

Polychlorinated Biphenyls (PCBs)
EPA Method 3550/8082
Units. µg/Kg (ppb)
Dry Weight Basis

	Sample Name:	**DA-6-16C**	**Method Blank**
	Lab Code:	J2003466-016	EX200447-MB
	Date Analyzed:	10/31/00	10/31/00
Analyte	**MRL**		
PCBs: Aroclor 1016	33	U	U
Aroclor 1221	33	U	U
Aroclor 1232	33	U	U
Aroclor 1242	33	U	U
Aroclor 1248	33	U	U
Aroclor 1254	33	U	U
Aroclor 1260	33	U	U

U Not detected at or above the MRL.

Approved By: [signature] Date: 11/20/00

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	Taylor Engineering, Inc.	**Service Request:**	J2003466
Project:	Dade Phase I / C1999-021	**Date Collected:**	10/11/00
Sample Matrix:	Sediment	**Date Received:**	10/16/00
		Date Extracted:	10/19/00
		Date Analyzed:	11/6/00

Petroleum Range Organics
EPA Methods 3550/FL-PRO
Units: mg/Kg (ppm) Total PHS
Dry Weight Basis

Sample Name	Lab Code	MRL	Result
DA-1-1C	J2003466-001	3.3	17
DA-1-2C	J2003466-002	3.3	26
DA-2-3C	J2003466-003	3.3	43
DA-2-4C	J2003466-004	3.3	32
DA-2-5C	J2003466-005	3.3	35
DA-2-6C	J2003466-006	3.3	64
DA-3-7C	J2003466-007	3.3	61
DA-3-8C	J2003466-008	3.3	39
DA-3-9C	J2003466-009	3.3	21
DA-5-10C	J2003466-010	3.3	50
DA-5-11C	J2003466-011	3.3	19
DA-5-12C	J2003466-012	3.3	16
DA-6-13C	J2003466-013	3.3	12
DA-6-14C	J2003466-014	3.3	10
DA-6-15C	J2003466-015	3.3	14
DA-6-16C	J2003466-016	3.3	11
Method Blank	EX200441-MB	3.3	U

U Not detected at or above the MRL.

Approved By: Travis Tandy Date: 11/20/00

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	Taylor Engineering, Inc	Service Request:	J2003466
Project:	Dade Phase I C1999-021	Date Collected:	10 11 00
Sample Matrix:	Sediment	Date Received:	10 16 00
		Date Extracted:	NA

Inorganic Parameters
Dry Weight Basis

				Sample Name	DA-1-1C	DA-1-2C	DA-2-3C
				Lab Code.	J2003466-001	J2003466-002	J2003466-003
Analyte	Units	EPA Method	MRL	Date/Time Analyzed			
TOC	mg/Kg (ppm)	SID, S3	1000	10/31/00 1830	12456	8620	15968
TKN	mg/Kg (ppm)	351.4(m)	100	10/24-26/00	686	450	279
Bicarbonate as CaCO3	mg/Kg (ppm)	SM 2320B	5	10/27/00 1600	476	524	656
Carbonate as CaCO3	mg/Kg (ppm)	SM 2320B	5	10/27/00 1600	U	U	U
Solids, Total	%	160.3	0	10/17/00 1130	65.4	71.9	65.7

U Not detected at or above the MRL.

Approved By: Tuvis Tucker Date: 11/20/00

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	Taylor Engineering, Inc.	Service Request:	J2003466
Project:	Dade Phase I C1999-021	Date Collected:	10/11/00
Sample Matrix:	Sediment	Date Received:	10/16/00
		Date Extracted:	NA

Inorganic Parameters
Dry Weight Basis

Analyte	Units	EPA Method	MRL	Date/Time Analyzed	DA-2-4C	DA-2-5C	DA-2-6C
Sample Name:					DA-2-4C	DA-2-5C	DA-2-6C
Lab Code:					J2003466-004	J2003466-005	J2003466-006
TOC	mg/Kg (ppm)	SID, S3	1000	10/31/00 1830	11452	27450	26693
TKN	mg/Kg (ppm)	351.4(m)	100	10/24-26/00	404	1440	2810
Bicarbonate as CaCO3	mg/Kg (ppm)	SM 2320B	5	10/27/00 1600	500	282	132
Carbonate as CaCO3	mg/Kg (ppm)	SM 2320B	5	10/27/00 1600	U	U	U
Solids, Total	%	160.3	0	10/17/00 1130	66.2	50.3	41.1

U Not detected at or above the MRL.

Approved By: Terri Teeter Date: 11/20/00

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	Taylor Engineering, Inc.	**Service Request:**	J2003466
Project:	Dade Phase I/C1999-021	**Date Collected:**	10/11/00
Sample Matrix:	Sediment	**Date Received:**	10/16/00
		Date Extracted:	NA

Inorganic Parameters
Dry Weight Basis

					Sample Name:	DA-3-7C	DA-3-8C	DA-3-9C
					Lab Code:	J2003466-007	J2003466-008	J2003466-009
Analyte	**Units**	**EPA Method**	**MRL**	**Date/Time Analyzed**				
TOC	mg/Kg (ppm)	SID, S3	1000	10/31/00 1830		37718	6811	1305
TKN	mg/Kg (ppm)	351.4(m)	100	10/24-26/00		3610	585	126
Bicarbonate as CaCO3	mg/Kg (ppm)	SM 2320B	5	10/27/00 1600		168	730	470
Carbonate as CaCO3	mg/Kg (ppm)	SM 2320B	5	10/27/00 1600		U	U	U
Solids, Total	%	160.3	0	10/17/00 1130		35.7	71.5	80.2

U Not detected at or above the MRL.

Approved By: Terri Teeter Date: 11/20/00

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	Taylor Engineering, Inc.	**Service Request:**	J2003466
Project:	Dade Phase I/C1999-021	**Date Collected:**	10/11/00
Sample Matrix:	Sediment	**Date Received:**	10/16/00
		Date Extracted:	NA

Inorganic Parameters
Dry Weight Basis

				Sample Name:	**DA-5-10C**	**DA-5-11C**	**DA-5-12C**
				Lab Code:	J2003466-010	J2003466-011	J2003466-012
Analyte	**Units**	**EPA Method**	**MRL**	**Date/Time Analyzed**			
TOC	mg/Kg (ppm)	SID, S3	1000	10/31/00 1830	4880	2560	24297
TKN	mg/Kg (ppm)	351.4(m)	100	10/24-26/00	275	170	2390
Bicarbonate as CaCO3	mg/Kg (ppm)	SM 2320B	5	10/27/00 1600	232	330	170
Carbonate as CaCO3	mg/Kg (ppm)	SM 2320B	5	10/27/00 1600	U	U	U
Solids, Total	%	160.3	0	10/17/00 1130	79.4	76.9	45.5

U Not detected at or above the MRL.

Approved By: [signature] Date: 11/20/00

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	Taylor Engineering, Inc.	Service Request:	J2003466
Project:	Dade Phase I/C1999-021	Date Collected:	10/11/00
Sample Matrix:	Sediment	Date Received:	10/16/00
		Date Extracted:	NA

Inorganic Parameters
Dry Weight Basis

Sample Name:					DA-6-13C	DA-6-14C	DA-6-15C
Lab Code:					J2003466-013	J2003466-014	J2003466-015
Analyte	Units	EPA Method	MRL	Date/Time Analyzed			
TOC	mg/Kg (ppm)	SID, S3	1000	10/31/00 1830	4526	7367	3187
TKN	mg/Kg (ppm)	351.4(m)	100	10/24-26/00	187	449	168
Bicarbonate as CaCO3	mg/Kg (ppm)	SM 2320B	5	10/27/00 1600	1140	186	1960
Carbonate as CaCO3	mg/Kg (ppm)	SM 2320B	5	10/27/00 1600	80.0	U	80.0
Solids, Total	%	160.3	0	10/17/00 1130	78.2	70.2	79.7

U Not detected at or above the MRL.

Approved By: [signature] Date: 11/20/00

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	Taylor Engineering, Inc.	**Service Request:**	J2003466
Project:	Dade Phase I/C1999-021	**Date Collected:**	10/11/00
Sample Matrix:	Sediment	**Date Received:**	10/16/00
		Date Extracted:	NA

Inorganic Parameters
Dry Weight Basis

					Sample Name:	**DA-6-16C**	**Method Blank**
					Lab Code:	J2003466-016	J001017-MB
Analyte	**Units**	**EPA Method**	**MRL**	**Date/Time Analyzed**			
TOC	mg/Kg (ppm)	SID, S3	1000	10/31/00 1830		6082	--
TKN	mg/Kg (ppm)	351.4(m)	100	10/24-26/00		148	U
Bicarbonate as CaCO3	mg/Kg (ppm)	SM 2320B	5	10/27/00 1600		1200	U
Carbonate as CaCO3	mg/Kg (ppm)	SM 2320B	5	10/27/00 1600		40.0	U
Solids, Total	%	160.3	0	10/17/00 1130		79.6	--

U Not detected at or above the MRL.

Approved By: Terri Teeter Date: 11/20/00

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: Taylor Engineering, Inc.
Project: Dade Phase I / C1999-021
Sample Matrix: Sediment

Service Request: J2003466
Date Collected: 10/11-13/00
Date Received: 10/16/00
Date Extracted: 10/17/00
Date Analyzed: 11/6/00

Surrogate Recovery Summary
Polynuclear Aromatic Hydrocarbons by GC/MS SIM
EPA Methods 3550/8270

Sample Name	Lab Code	Percent Recovery 2-Fluorobiphenyl
DA-1-1C	J2003466-001	61
DA-1-2C	J2003466-002	61
DA-2-3C	J2003466-003	60
DA-2-4C	J2003466-004	68
DA-2-5C	J2003466-005	74
DA-2-6C	J2003466-006	71
DA-3-7C	J2003466-007	64
DA-3-8C	J2003466-008	34 (a)
DA-3-9C	J2003466-009	63
DA-5-10C	J2003466-010	59
DA-5-11C	J2003466-011	60
DA-5-12C	J2003466-012	65
DA-6-13C	J2003466-013	66
DA-6-14C	J2003466-014	45
DA-6-15C	J2003466-015	64
DA-6-16C	J2003466-016	64
Method Blank	EX200437-MB	73
Laboratory Control Sample	EX200437-LCS	42
Batch QC	J2003466-001MS	72
Batch QC	J2003466-001DMS	72

CAS Acceptance Limits: 36-144

(a) Outside of acceptance limits. Suspected matrix interferences due to low percent solids in sample.

Approved By: Travis Tuckle Date: 11/20/00

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	Taylor Engineering, Inc.	**Service Request:**	J2003466
Project:	Dade Phase I / C1999-021	**Date Collected:**	NA
Sample Matrix:	Soil	**Date Received:**	NA
		Date Extracted:	10/17/00
		Date Analyzed:	11/6/00

Matrix Spike/Duplicate Matrix Spike Summary
Polynuclear Aromatic Hydrocarbons by GC/MS SIM
EPA Methods 3550/8270
Units: µg/Kg (ppb)
Dry Weight Basis

Sample Name: Batch QC
Lab Code: Batch QC

	Spike Level		Sample	Spike Result		Percent Recovery		CAS Acceptance	Relative Percent	CAS RPD Acceptance
Analyte	**MS**	**DMS**	**Result**	**MS**	**DMS**	**MS**	**DMS**	**Limits**	**Difference**	**Limit**
Acenaphthene	254	254	U	173	173	68	68	42-134	<1	30
Fluoranthene	254	254	26	188	188	64	64	38-128	<1	30
Benzo(a)pyrene	254	254	25	178	168	60	56	39-131	6	30

U Not detected at or above the MRL.

Approved By: _____ Date: 11/20/00

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	Taylor Engineering, Inc.	Service Request:	J2003466
Project:	Dade Phase I / C1999-021	Date Collected:	NA
LCS Matrix:	Soil	Date Received:	NA
		Date Extracted:	10/17/00
		Date Analyzed:	11/6/00

Laboratory Control Sample Summary
Polynuclear Aromatic Hydrocarbons by GC/MS SIM
EPA Methods 3550/8270
Units: µg/Kg (ppb)

Analyte	True Value	Result	Percent Recovery	CAS Percent Recovery Acceptance Limits
Acenaphthene	165	22	13 (a)	42-134
Fluoranthene	165	86	52	38-128
Benzo(a)pyrene	165	15	9 (a)	39-131

(a) Outside of acceptance limits due to documented solvent loss during concentration.

Approved By: Tania Tandler Date: 11/20/00

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	Taylor Engineering, Inc.	**Service Request:**	J2003466
Project:	Dade Phase I / C1999-021	**Date Collected:**	10/11-13/00
Sample Matrix:	Sediment	**Date Received:**	10/16/00
		Date Extracted:	10/17/00
		Date Analyzed:	10/30/00

Surrogate Recovery Summary
Organochlorine Pesticides
EPA Method 3550/8081

Sample Name	**Lab Code**	**Percent Recovery** Tetrachloro-*m*-xylene
DA-1-1C	J2003466-001	29
DA-1-2C	J2003466-002	23 (a)
DA-2-3C	J2003466-003	35
DA-2-4C	J2003466-004	16 (a)
DA-2-5C	J2003466-005	19 (a)
DA-2-6C	J2003466-006	29
DA-3-7C	J2003466-007	(b)
DA-3-8C	J2003466-008	28
DA-3-9C	J2003466-009	36
DA-5-10C	J2003466-010	26
DA-5-11C	J2003466-011	35
DA-5-12C	J2003466-012	25
DA-6-13C	J2003466-013	57
DA-6-14C	J2003466-014	33
DA-6-15C	J2003466-015	78
DA-6-16C	J2003466-016	44
Method Blank	EX200436-MB	92
Laboratory Control Sample	EX200436-LCS	79
Batch QC	J2003466-013MS	65
Batch QC	J2003466-013DMS	66

CAS Acceptance Limits: 26-124

(a) Outside of acceptance limits due to matrix interferences.
(b) Not Applicable because of the sample matrix. Analysis of this sample required a dilution such that the surrogate concentration was diluted below the method reporting limit.

Approved By: Travis Tuder Date: 11/20/00

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: Taylor Engineering, Inc.
Project: Dade Phase I / C1999-021
Sample Matrix: Soil

Service Request: J2003466
Date Collected: NA
Date Received: NA
Date Extracted: 10/17/00
Date Analyzed: 10/30/00

Matrix Spike/Duplicate Matrix Spike Summary
Organochlorine Pesticides
EPA Method 3550/8081
Units: µg/Kg (ppb)
Dry Weight Basis

Sample Name: Batch QC
Lab Code: Batch QC

Analyte	Spike Level MS	Spike Level DMS	Sample Result	Spike Result MS	Spike Result DMS	Percent Recovery MS	Percent Recovery DMS	CAS Acceptance Limits	Relative Percent Difference
Heptachlor	4.2	4.2	U	4.1	3.5	98	83	27-130	16
Aldrin	4.2	4.2	U	2.0	2.3	48	55	28-127	14
Gamma-BHC (Lindane)	4.2	4.2	U	2.6	3.1	62	74	28-127	18
Endrin	4.2	4.2	U	2.2	2.1	52	50	27-153	5
4,4'-DDT	4.2	4.2	U	1.7	1.0	40	24 (a)	27-151	52
Dieldrin	4.2	4.2	U	2.9	3.1	69	74	29-142	7

U Not detected at or above the MRL.
(a) Outside of acceptance limits due to matrix interferences.

Approved By: Travis Tucker Date: 11/20/00

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	Taylor Engineering, Inc.	**Service Request:**	J2003466
Project:	Dade Phase I / C1999-021	**Date Collected:**	NA
LCS Matrix:	Soil	**Date Received:**	NA
		Date Extracted:	10/17/00
		Date Analyzed:	10/30/00

Laboratory Control Sample Summary
Organochlorine Pesticides
EPA Method 3550/8081
Units: µg/Kg (ppb)

Analyte	True Value	Result	Percent Recovery	CAS Percent Recovery Acceptance Limits
Heptachlor	3.3	3.3	100	27-130
Aldrin	3.3	2.6	79	28-127
Gamma-BHC (Lindane)	3.3	2.8	85	28-127
Endrin	3.3	2.7	82	27-153
4,4'-DDT	3.3	3.1	94	27-151
Dieldrin	3.3	2.9	88	29-142

Approved By: [signature] Date: 11/20/00

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	Taylor Engineering, Inc.	**Service Request:**	J2003466
Project:	Dade Phase I / C1999-021	**Date Collected:**	10/11-13/000
Sample Matrix:	Sediment	**Date Received:**	10/16/00
		Date Extracted:	10/23/00
		Date Analyzed:	10/31/00

Surrogate Recovery Summary
Polychlorinated Biphenyls (PCBs)
EPA Method 3550/8082

Sample Name	**Lab Code**	**Percent Recovery** Decachlorobiphenyl
DA-1-1C	J2003466-001	15 (a)
DA-1-2C	J2003466-002	19 (a)
DA-2-3C	J2003466-003	5 (a)
DA-2-4C	J2003466-004	15 (a)
DA-2-5C	J2003466-005	8 (a)
DA-2-6C	J2003466-006	32 (a)
DA-3-7C	J2003466-007	12 (a)
DA-3-8C	J2003466-008	35 (a)
DA-3-9C	J2003466-009	24 (a)
DA-5-10C	J2003466-010	10 (a)
DA-5-11C	J2003466-011	33 (a)
DA-5-12C	J2003466-012	23 (a)
DA-6-13C	J2003466-013	28 (a)
DA-6-14C	J2003466-014	20 (a)
DA-6-15C	J2003466-015	34 (a)
DA-6-16C	J2003466-016	32 (a)
Method Blank	EX200447-MB	83
Laboratory Control Sample	EX200447-LCS	69
Batch QC	J2003466-013MS	21 (a)
Batch QC	J2003466-013DMS	28 (a)

CAS Acceptance Limits: 50-150

(a) Outside of acceptance limits due to confirmed (by re-extraction) matrix effects.

Approved By: Tessie Tessler Date: 11/20/00

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: Taylor Engineering, Inc.
Project: Dade Phase I / C1999-021
Sample Matrix: Soil

Service Request: J2003466
Date Collected: NA
Date Received: NA
Date Extracted: 10/23/00
Date Analyzed: 10/31/00

Matrix Spike/Duplicate Matrix Spike Summary
Polychlorinated Biphenyls (PCBs)
EPA Method 3550/8082
Units: µg/Kg (ppb)

Sample Name: Batch QC
Lab Code: Batch QC

Analyte	Spike Level MS	Spike Level DMS	Sample Result	Spike Result MS	Spike Result DMS	Percent Recovery MS	Percent Recovery DMS	CAS Acceptance Limits	Relative Percent Difference
PCB 1016	33	33	U	12	20	36 (a)	61	50-150	50
PCB 1260	33	33	U	8	10	24 (a)	30 (a)	50-150	22

U Not detected at or above the MRL.
(a) Outside of acceptance limits due to matrix interferences. Since the associated LCS results are acceptable no further corrective action was taken.

Approved By: _____ Date: 11/20/00

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	Taylor Engineering, Inc.	**Service Request:**	J2003466
Project:	Dade Phase I / C1999-021	**Date Collected:**	NA
LCS Matrix:	Soil	**Date Received:**	NA
		Date Extracted:	10/23/00
		Date Analyzed:	10/31/00

Laboratory Control Sample Summary
Polychlorinated Biphenyls (PCBs)
EPA Method 3550/8082
Units: µg/Kg (ppb)

Analyte	True Value	Result	Percent Recovery	CAS Percent Recovery Acceptance Limits
PCB 1016	33	26	79	50-150
PCB 1260	33	22	67	50-150

Approved By: [signature] Date: 11/20/00

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	Taylor Engineering, Inc.	**Service Request:**	J2003466
Project:	Dade Phase I / C1999-021	**Date Collected:**	10/11/00
Sample Matrix:	Sediment	**Date Received:**	10/16/00
		Date Extracted:	10/19/00
		Date Analyzed:	11/6/00

Surrogate Recovery Summary
Petroleum Range Organics
EPA Methods 3550/FL-PRO

Sample Name	Lab Code	Percent Recovery o-Terphenyl (OTP)	Percent Recovery Nonatriacontane (C39)
DA-1-1C	J2003466-001	45 (a)	58
DA-1-2C	J2003466-002	63	71
DA-2-3C	J2003466-003	88	88
DA-2-4C	J2003466-004	49 (a)	73
DA-2-5C	J2003466-005	47 (a)	70
DA-2-6C	J2003466-006	32 (a)	57
DA-3-7C	J2003466-007	36 (a)	46
DA-3-8C	J2003466-008	68	79
DA-3-9C	J2003466-009	66	67
DA-5-10C	J2003466-010	67	84
DA-5-11C	J2003466-011	77	87
DA-5-12C	J2003466-012	62	82
DA-6-13C	J2003466-013	77	88
DA-6-14C	J2003466-014	61	75
DA-6-15C	J2003466-015	63	65
DA-6-16C	J2003466-016	67	70
Batch QC	J2003466-013MS	84	74
Batch QC	J2003466-013MSD	86	49
Laboratory Control Sample	EX200441-LCS	98	51
Method Blank	EX200441-MB	72	57
	CAS Acceptance Limits:	58-129	42-138

(a) Outside of acceptance limits. Since the Nonatriacontane (C39) results are acceptable, no further corrective action was taken.

Approved By: _____ Date: 11/20/00

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	Taylor Engineering, Inc.	Service Request:	J2003466
Project:	Dade Phase I / C1999-021	Date Collected:	NA
Sample Matrix:	Soil	Date Received:	NA
		Date Extracted:	10/19/00
		Date Analyzed:	11/6/00

Matrix Spike/Duplicate Matrix Spike Summary
Petroleum Range Organics
EPA Methods 3550/FL-PRO
Units: mg/Kg (ppm) Total PHS
Dry Weight Basis

Sample Name: Batch QC
Lab Code: Batch QC

	Spike Level		Sample	Spike Result		Percent Recovery		CAS	Relative	CAS RPD
Analyte	MS	DMS	Result	MS	DMS	MS	DMS	Acceptance Limits	Percent Difference	Acceptance Limit
Total PHS (C8-C40)	210	210	12	174	164	77	72	62-204	6	25

U Not detected at or above the MRL.

Approved By: Travis Tucker Date: 11/20/00

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	Taylor Engineering, Inc.	**Service Request:**	J2003466
Project:	Dade Phase I / C1999-021	**Date Collected:**	NA
LCS Matrix:	Soil	**Date Received:**	NA
		Date Extracted:	10/19/00
		Date Analyzed:	11/6/00

Laboratory Control Sample
Petroleum Range Organics
EPA Methods 3550/FL-PRO
Units: mg/Kg (ppm) Total PHS

			Percent Recovery	
Analyte	**True Value** LCS	**Result** LCS	LCS	CAS Acceptance Limits
Total PHS (C8-C40)	165	129	78	63-153

Approved By: Tamir Tuder Date: 11/20/00

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: Taylor Engineering, Inc.
Project: Dade Phase I/C1999-021
Sample Matrix: Sediment

Service Request: J2003466
Date Collected: NA
Date Received: NA
Date Extracted: NA
Date Analyzed: 10/17-31/00

Duplicate Summary
Inorganic Parameters

Sample Name: Batch QC
Lab Code: Batch QC

Analyte	Units	EPA Method	MRL	Sample Result	Duplicate Sample Result	Average	Relative Percent Difference
TOC	mg/Kg (ppm	SID, S3	1000	8620	9995	9307.5	14.77
TKN	mg/Kg (ppm	351.4(m)	100	686	750	718	8.91
Solids, Total	%	160.3	0.001	91.0	91.1	91.1	<1

Approved By: Travis Tuder Date: 11/20/00

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	Taylor Engineering, Inc.	**Service Request:**	J2003466
Project:	Dade Phase I/C1999-021	**Date Collected:**	NA
Sample Matrix:	Sediment	**Date Received:**	NA
		Date Extracted:	NA
		Date Analyzed:	10/17-31/00

Matrix Spike Summary
Inorganic Parameters

Sample Name: Batch QC
Lab Code: Batch QC

Analyte	Units	EPA Method	MRL	Spike Level	Sample Result	Spiked Sample Result	Percent Recovery	CAS Percent Recovery Acceptance Limits
TKN	mg/Kg (ppm)	351.4(m)	100	2889	686	3380	93 3	75-125

Approved By: Travis Tuckler Date 11/20/00

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	Taylor Engineering, Inc.	Service Request:	J2003466
Project:	Dade Phase I/C1999-021	Date Collected:	NA
Sample Matrix:	Water	Date Received:	NA
		Date Analyzed:	10/17-31/00

Laboratory Control Sample Summary
Inorganic Parameters

Analyte	Units	EPA Method	TRUE Value	Result	Percent Recovery	CAS Percent Recovery Acceptance Limits
TKN	mg/L (ppm)	351.4(m)	10.3	10.9	105.8	75-125

Approved By: Travis Trader Date: 11/20/00

Cooler Receipt and Preservation Form

Project/Client: Dade Phase I/Taylor Engineering, Inc. **SR Number:** J2003466

Cooler received on 10/16/00 by: DD

Courier: CAS ☐ UPS ☐ FEDEX ☐

CLIENT ☒ CD&L ☐ OTHER ☐

	Yes	No	N/A
1. Were custody seals on the outside of the cooler?	☐	☒	☐
2. Were custody papers properly filled out(ink, singed, ect.)?	☒	☐	☐
3. Did all bottles arrive in good condition(unbroken)?	☒	☐	☐
4. Did any VOA vials contain significant air bubbles?	☐	☐	☒
5. Where ice of ice packs present?	☒	☐	☐
6. Did all samples arrive within appropriate holding times?	☒	☐	☐
7. Where did the bottles originate? CAS/JAX	☒	CLIENT	☐

8. Temperature of cooler(s) upon receipt/within 0-6C?:

	Temp.	Yes	No	N/A		Temp.	Yes	No	N/A
Cooler 1:	4.7 C	☒	☐	☐	Cooler 3:		☐	☐	☐
Cooler 2:		☐	☐	☐	Cooler 4:		☐	☐	☐

Date/Time Temperature Taken: 10/16/00 11:47 **If No/NA, Explain** _____

Themometer ID: 2618380101-0015 Temp Blank: ☐ Cooler Temp.: ☒

Sample Bottle: ☐ IR. Gun: ☒

If out of temperature, client approval to run samples _____

Cooler Breakdown: Date: 10/16/00 By: DD

	Yes	No	N/A
1. Were all the bottle labels complete(i.e. analysis, preservation, ect.)	☒	☐	☐
2. Did all bottle labels and tags agree with custody papers?	☒	☐	☐
3. Were correct containers used for the test indicated?	☒	☐	☐

4. Air samples: Cassettes/Tubes Intact: ☐ Tedlar Bags Inflated: ☐

Canisters Pressurized: ☐ NA: ☒

Explain any discrepancies _____

		Yes	No	Sample ID	Reagent	Volume Added
pH	Reagent					
>12	NaOH					
>9	NaOH+ZnAc					
<2	HNO3					
<2	H2SO4					
<2	HCl					
5-9*	P/PCB (608 Only)					

* If pH adjustment is required, use NaOH/or H2SO4 PM OK to adjust pH_____

YES= All samples OK NO=Samples were preserved at lab as listed

VOC Vial pH Verification(Tested after Analysis) Following Samples Exhibited pH >2				

Other Comments: _____

Analytical Services, Inc.
An Employee Owned Company
8540 Baycenter Rd. • Jacksonville, FL 32256 • (904) 739-2277 • 800-695-7222 • FAX (904) 739-2011

DATE 10/16/00 PAGE 1 OF 2

PROJECT NAME DADE PHASE I
PROJECT # C1999-021
COMPANY/ADDRESS TAYLOR ENGINEERING, INC.
9000 CYPRESS GREEN DR., SUITE 200
JACKSONVILLE, FL 32256 PHONE (904) 731-7040
REPORT TO LORI BROWNELL

ANALYSIS REQUEST

SAMPLE I.D.	DATE	TIME	SAMPLE MATRIX	NUMBER OF CONTAINERS	PAHs by 8270C	Organochlorine Pest. by 8081	PCBs by 8082	TOC by 415.1	TKN by 315.3	FL PRO	CARBONATES	METALS (HYDROFLUORIC) → Al, As, Cd, Cr, Cu → Pb, Ni, Zn, Hg	REMARKS
DA-1-1C	10/11/00	1:15pm	Sand/clay	1									
DA-1-2C	10/11/00	3:00pm	Sand/clay	1									
DA-2-3C	10/11/00	3:45pm	Sand	1									
DA-2-4C	10/11/00	4:30pm	Sand	1									
DA-2-5C	10/11/00	5:00pm	Silt	1									
DA-2-6C	10/11/00	5:30pm	Silt	1									
DA-3-7C	10/11/00	5:45pm	Silt	1									
DA-3-8C	10/12/00	9:45am	Sand	1									
DA-3-9C	10/12/00	10:30am	Sand	1									
DA-5-10C	10/12/00	11:30am	Sand	1									

RELINQUISHED BY:
Signature
Printed Name
Firm
Date/Time

RECEIVED BY:
Signature
LORI S. BROWNELL
Printed Name
TAYLOR ENGINEERING
Firm
8/21/00
Date/Time

TURNAROUND REQUIREMENTS
___ 24 hr. ___ 48 hr. ___ 5 day
X Standard (7-10 working days)
___ Provide Verbal Preliminary Results
___ Provide FAX Preliminary Results
Requested Report Date _____

REPORT REQUIREMENTS
X I. Routine Report
___ II. Report (includes DUP.MAS MSD, as required, may be charged as samples)
___ III. Data Validation Report (includes All Raw Data)
___ IV CLP Deliverable Report

INVOICE INFORMATION:
P O # _____
Bill To _____

SAMPLE RECEIPT:
Shipping VIA _____
Shipping to _____
Condition _____
Lab No _____

RELINQUISHED BY:
Signature
LORI S. BROWNELL
Printed Name
TAYLOR ENGINEERING
Firm
10/16/00
Date/Time

RECEIVED BY:
Signature
DAVID DICKIE
Printed Name
CAS
Firm
10/16/00 1147
Date/Time

SPECIAL INSTRUCTIONS/COMMENTS.

SAMPLER'S SIGNATURE

Bottle Temp 4.7°C RJG

DISTRIBUTION: WHITE - return to originator; YELLOW - lab; PINK - retained by originator

Analytical Services Inc. 8540 Baycenter Rd. • Jacksonville, FL 32256 • (904) 739-2277 • 800-695-7222 • FAX (904) 739-2011

An Employee Owned Company

DATE 10/16/00 PAGE 2 OF 2

PROJECT NAME: DADE PHASE I

PROJECT #: C1999-021

COMPANY/ADDRESS: TAYLOR ENGINEERING, INC.
9000 CYPRESS GREEN DR., SUITE 200
JACKSONVILLE, FL 32256 PHONE (904) 731-7040

REPORT TO: LORI BROWNELL

ANALYSIS REQUEST

SAMPLE I.D.	DATE	TIME	SAMPLE MATRIX	NUMBER OF CONTAINERS	PAHs by 8270C	ORGANOCHLORINE PEST by 8081	PCBs by 8082	TOC by 415.1	TKN by 351.3	FL PRO	CARBONATES	METALS (HYDROFLUORIC) → Al, As, Cd, Cr, Cu	→ Pb, Ni, Zn, Hg	REMARKS
DA-5-11C	10/12/00	12:00 pm	Sand	1										
DA-5-12C	10/12/00	1:00 pm	Clay	1										
DA-6-13C	10/13/00	2:30 pm	Sand	1										
DA-6-14C	10/13/00	1:45 pm	clay/sand	1										
DA-6-15C	10/13/00	1:30 pm	Sand	1										
DA-6-16C	10/13/00	1:00 pm	Sand	1										

RELINQUISHED BY:
Signature
Printed Name
Firm
Date/Time

RECEIVED BY:
Signature
LORI S. BROWNELL
Printed Name
TAYLOR ENGINEERING
Firm
8/21/00
Date/Time

TURNAROUND REQUIREMENTS
___ 24 hr. ___ 48 hr. ___ 5 day
X Standard (7-10 working days)
___ Provide Verbal Preliminary Results
___ Provide FAX Preliminary Results
Requested Report Date _____

REPORT REQUIREMENTS
X I. Routine Report
___ II. Report (includes DUP, MAS MSD, as required, may be charged as samples)
___ III. Data Validation Report (includes All Raw Data)
___ IV. CLP Deliverable Report

INVOICE INFORMATION:
P.O.# _____
Bill To _____

SAMPLE RECEIPT:
Shipping VIA _____
Shipping to _____
Condition _____
Lab No _____

RELINQUISHED BY:
Signature
LORI S. BROWNELL
Printed Name
TAYLOR ENGINEERING
Firm
10/16/00
Date/Time

RECEIVED BY:
Signature
DAVID DICKIE
Printed Name
CAS
Firm
10/16/00 1147
Date/Time

SPECIAL INSTRUCTIONS/COMMENTS:

Christopher B. Ellis
SAMPLER'S SIGNATURE

DISTRIBUTION: WHITE - return to originator; YELLOW - lab; PINK - retained by originator

MRI
Florida Division

MIDWEST RESEARCH INSTITUTE
1470 Treeland Boulevard, S.E.
Palm Bay, Florida 32909-2211
Telephone: (321) 723-4547
FAX: (321) 722-2514

Laboratory Analysis Report

Submitted to:

Columbia Analytical Service
8540 Baycenter Road
Jacksonville Fla. 32256

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness. Release of the data contained in this hardcopy data package has been authorized by the facility director or his designee, as verified by the following signature. If any questions arise, please direct them to 321-723-4547 ext. 400.

Michael F. Helmstetter, Ph.D.

Report Number 10031
Revision 0
November 2000

Midwest Research Institute
Florida Division

Quality Control Summary

Client:	Columbia Analytical Services
Work Order:	10031
Date Received:	October 17, 2000

Samples were accepted by Midwest Research Institute in accordance with documented chain-of-custody procedures. Analytical results presented in this report have been reviewed for compliance with the laboratory's CompQAP.

A. Laboratory Blank:

All analytes were below method detection limits.

B. Matrix Spike Recovery

Recoveries for analytes were within laboratory precision and accuracy limits.

C. Sample Duplicate

Analysis data demonstrated acceptable reproducibility of laboratory processes.

D. Key:

QCS	Second Source Calibration Verification
CCV	Continuing Calibration Verification
LRB	Laboratory Reagent Blank
****-D	Sample Duplicate
****-S	Sample Spike
****-SD	Sample Spike Duplicate
NRC: MESS-2	National Research Council of Canada. Marine Esturaine Sediment #2.

Midwest Research Institute
Florida Division
Laboratory Analysis
Aluminum

Client:	Columbia Analytical Services
CompQAP #:	990096
Work Order/Report Number:	10031
Date Received:	10/17/00
Matrix:	Sediment
Prep Method/Date:	3052 on 11/06/00
Method:	200.8
Analyst:	N. Julien
Data Released By:	T. Price

QC Data Set:	ELAN31400							
ANALYTE:Al 27	Conc.	Units	Exp.	% REC.	RPD	Target Lo	Target Hi	Result
Sample ID								
10031-LRB-L1000	0	ug/L	0.8664			-0.8664	0.8664	PASS
QCS	50.0158	ug/L	46.7	107		90	110	PASS
1003101-L100	82.6266	ug/L						
1003101-L100-D	83.5018	ug/L			1.053643		20	PASS
1003101-L100-S	101.4207	ug/L	20	93.9705		75	125	PASS
1003101-L100-SD	104.348	ug/L			2.845234		20	PASS
CCV	100.0434	ug/L	100	100.0434		90	110	PASS
CCV	98.7258	ug/L	100	98.7258		90	110	PASS
NRC: MESS-2	36123.79	ug/g dry	42882.35	84.23928				

Midwest Research Institute
Florida Division
Laboratory Analysis
Aluminum

Client:	Columbia Analytical Services
CompQAP #:	990096
Work Order/Report Number:	10031
Date Received:	10/17/00
Matrix:	Sediment
Prep Method/Date:	3052 on 11/06/00
Method:	200.8
Analyst:	N. Julien
Data Released By:	T. Price

Client ID:	Columbia ID:	Lab ID:	Sample Date/Time:	Analysis Result (mg/Kg dry wt)	MDL (mg/Kg)	MRL (mg/Kg)	Date Analyzed
DA-1-1C	J20003466-001	10031-01	10/11/00 at 1315	1639	0.05	4.0	11/06/00
DA-1-2C	J20003466-002	10031-02	10/11/00 at 1500	871	0.05	4.0	11/06/00
DA-2-3C	J20003466-003	10031-03	10/11/00 at 1545	462	0.05	4.0	11/06/00
DA-2-4C	J20003466-004	10031-04	10/11/00 at 1630	436	0.05	4.0	11/06/00
DA-2-5C	J20003466-005	10031-05	10/11/00 at 1700	2199	0.05	4.0	11/06/00
DA-2-6C	J20003466-006	10031-06	10/11/00 at 1730	3364	0.05	4.0	11/06/00
DA-3-7C	J20003466-007	10031-07	10/11/00 at 1745	3294	0.05	4.0	11/06/00
DA-3-8C	J20003466-008	10031-08	10/12/00 at 0945	706	0.05	4.0	11/06/00
DA-3-9C	J20003466-009	10031-09	10/12/00 at 1030	508	0.05	4.0	11/06/00
DA-5-10C	J20003466-010	10031-10	10/12/00 at 1130	150	0.05	4.0	11/06/00
DA-5-11C	J20003466-011	10031-11	10/12/00 at 1200	154	0.05	4.0	11/06/00
DA-5-12C	J20003466-012	10031-12	10/12/00 at 1300	1504	0.05	4.0	11/06/00
DA-6-13C	J20003466-013	10031-13	10/13/00 at 1430	404	0.05	4.0	11/06/00
DA-6-14C	J20003466-014	10031-14	10/13/00 at 1345	370	0.05	4.0	11/06/00
DA-6-15C	J20003466-015	10031-15	10/13/00 at 1330	257	0.05	4.0	11/06/00
DA-6-16C	J20003466-016	10031-16	10/13/00 at 1300	178	0.05	4.0	11/06/00

Midwest Research Institute
Florida Division
Laboratory Analysis
Arsenic

Client:	Columbia Analytical Services
CompQAP #:	990096
Work Order/Report Number:	10031
Date Received:	10/17/00
Matrix:	Sediment
Prep Method/Date:	3052 on 11/06/00
Method:	200.8
Analyst:	N. Julien
Data Released By:	T. Price

Client ID:	Columbia ID:	Lab ID:	Sample Date/Time:	Analysis Result (mg/Kg dry wt)	MDL (mg/Kg)	MRL (mg/Kg)	Date Analyzed
DA-1-1C	J20003466-001	10031-01	10/11/00 at 1315	4.78	0.7	1.13	11/06/00
DA-1-2C	J20003466-002	10031-02	10/11/00 at 1500	5.37	0.7	1.13	11/06/00
DA-2-3C	J20003466-003	10031-03	10/11/00 at 1545	2.86	0.7	1.13	11/06/00
DA-2-4C	J20003466-004	10031-04	10/11/00 at 1630	22.9	0.7	1.13	11/06/00
DA-2-5C	J20003466-005	10031-05	10/11/00 at 1700	14.8	0.7	1.13	11/06/00
DA-2-6C	J20003466-006	10031-06	10/11/00 at 1730	9.83	0.7	1.13	11/06/00
DA-3-7C	J20003466-007	10031-07	10/11/00 at 1745	12.0	0.7	1.13	11/06/00
DA-3-8C	J20003466-008	10031-08	10/12/00 at 0945	4.20	0.7	1.13	11/06/00
DA-3-9C	J20003466-009	10031-09	10/12/00 at 1030	1.88	0.7	1.13	11/06/00
DA-5-10C	J20003466-010	10031-10	10/12/00 at 1130	1.39	0.7	1.13	11/06/00
DA-5-11C	J20003466-011	10031-11	10/12/00 at 1200	2.27	0.7	1.13	11/06/00
DA-5-12C	J20003466-012	10031-12	10/12/00 at 1300	6.64	0.7	1.13	11/06/00
DA-6-13C	J20003466-013	10031-13	10/13/00 at 1430	1.69	0.7	1.13	11/06/00
DA-6-14C	J20003466-014	10031-14	10/13/00 at 1345	1.30	0.7	1.13	11/06/00
DA-6-15C	J20003466-015	10031-15	10/13/00 at 1330	0.81	0.7	1.13	11/06/00
DA-6-16C	J20003466-016	10031-16	10/13/00 at 1300	2.81	0.7	1.13	11/06/00

Midwest Research Institute
Florida Division
Laboratory Analysis
Arsenic

Client:	Columbia Analytical Services
CompQAP #:	990096
Work Order/Report Number:	10031
Date Received:	10/17/00
Matrix:	Sediment
Prep Method/Date:	3052 on 11/06/00
Method:	200.8
Analyst:	N. Julien
Data Released By:	T. Price

ANALYTE:As 75								
Sample ID								
QCS	6.5141	ug/L	6.67	97.66267		75	125	PASS
LRB-L20	0	ug/L	4.8975			-4.8975	4.8975	PASS
1003101-L20	1.2055	ug/L						
1003101-L20-D	1.4447	ug/L			18.05147		20	PASS
1003101-L20-S	10.9933	ug/L	10	97.878		75	125	PASS
1003101-L20-SD	10.3119	ug/L			6.39656		20	PASS
CCV	100.7539	ug/L	100	100.7539		90	110	PASS
CCV	98.9145	ug/L	100	98.9145		90	110	PASS
NRC: MESS-2	21.10573	ug/g dry	20.7	101.96				

Midwest Research Institute
Florida Division
Laboratory Analysis
Cadmium

Client:	Columbia Analytical Services
CompQAP #:	990096
Work Order/Report Number:	10031
Date Received:	10/17/00
Matrix:	Sediment
Prep Method/Date:	3052 on 11/06/00
Method:	200.8
Analyst:	N. Julien
Data Released By:	T. Price

Client ID:	Columbia ID:	Lab ID:	Sample Date/Time:	Analysis Result (mg/Kg dry wt)	MDL (mg/Kg)	MRL (mg/Kg)	Date Analyzed
DA-1-1C	J20003466-001	10031-01	10/11/00 at 1315	0	0.02	0.08	11/06/00
DA-1-2C	J20003466-002	10031-02	10/11/00 at 1500	0.039	0.02	0.08	11/06/00
DA-2-3C	J20003466-003	10031-03	10/11/00 at 1545	0.033	0.02	0.08	11/06/00
DA-2-4C	J20003466-004	10031-04	10/11/00 at 1630	0.065	0.02	0.08	11/06/00
DA-2-5C	J20003466-005	10031-05	10/11/00 at 1700	0.182	0.02	0.08	11/06/00
DA-2-6C	J20003466-006	10031-06	10/11/00 at 1730	0.263	0.02	0.08	11/06/00
DA-3-7C	J20003466-007	10031-07	10/11/00 at 1745	0.244	0.02	0.08	11/06/00
DA-3-8C	J20003466-008	10031-08	10/12/00 at 0945	0.056	0.02	0.08	11/06/00
DA-3-9C	J20003466-009	10031-09	10/12/00 at 1030	0	0.02	0.08	11/06/00
DA-5-10C	J20003466-010	10031-10	10/12/00 at 1130	0.030	0.02	0.08	11/06/00
DA-5-11C	J20003466-011	10031-11	10/12/00 at 1200	0	0.02	0.08	11/06/00
DA-5-12C	J20003466-012	10031-12	10/12/00 at 1300	0.027	0.02	0.08	11/06/00
DA-6-13C	J20003466-013	10031-13	10/13/00 at 1430	0	0.02	0.08	11/06/00
DA-6-14C	J20003466-014	10031-14	10/13/00 at 1345	0	0.02	0.08	11/06/00
DA-6-15C	J20003466-015	10031-15	10/13/00 at 1330	0	0.02	0.08	11/06/00
DA-6-16C	J20003466-016	10031-16	10/13/00 at 1300	0	0.02	0.08	11/06/00

Midwest Research Institute
Florida Division
Laboratory Analysis
Cadmium

Client: Columbia Analytical Services
CompQAP #: 990096
Work Order/Report Number: 10031
Date Received: 10/17/00
Matrix: Sediment
Prep Method/Date: 3052 on 11/06/00
Method: 200.8
Analyst: N. Julien
Data Released By: T. Price

ANALYTE:Cd 114								
Sample ID								
QCS	8.7855	ug/L	8.78	100.0626		75	125	PASS
LRB-L20	0.009307	ug/L	0.2595			-0.2595	0.2595	PASS
1003101-L20	0	ug/L						
1003101-L20-D	0	ug/L			0		20	PASS
1003101-L20-S	9.8699	ug/L	10	98.699		75	125	PASS
1003101-L20-SD	9.354	ug/L			5.367277		20	PASS
CCV	50.7729	ug/L	50	101.5458		90	110	PASS
CCV	50.9845	ug/L	50	101.969		90	110	PASS
NRC: MESS-2	0.265869	ug/g dry	0.24	110.7789				

Midwest Research Institute
Florida Division
Laboratory Analysis
Chromium

Client:	Columbia Analytical Services
CompQAP #:	990096
Work Order/Report Number:	10031
Date Received:	10/17/00
Matrix:	Sediment
Prep Method/Date:	3052 on 11/06/00
Method:	200.8
Analyst:	N. Julien
Data Released By:	T. Price

Client ID:	Columbia ID:	Lab ID:	Sample Date/Time:	Analysis Result (mg/Kg dry wt)	MDL (mg/Kg)	MRL (mg/Kg)	Date Analyzed
DA-1-1C	J20003466-001	10031-01	10/11/00 at 1315	3.26	0.05	0.53	11/06/00
DA-1-2C	J20003466-002	10031-02	10/11/00 at 1500.	2.96	0.05	0.53	11/06/00
DA-2-3C	J20003466-003	10031-03	10/11/00 at 1545	3.35	0.05	0.53	11/06/00
DA-2-4C	J20003466-004	10031-04	10/11/00 at 1630	2.29	0.05	0.53	11/06/00
DA-2-5C	J20003466-005	10031-05	10/11/00 at 1700	8.15	0.05	0.53	11/06/00
DA-2-6C	J20003466-006	10031-06	10/11/00 at 1730	15.3	0.05	0.53	11/06/00
DA-3-7C	J20003466-007	10031-07	10/11/00 at 1745	14.9	0.05	0.53	11/06/00
DA-3-8C	J20003466-008	10031-08	10/12/00 at 0945	4.01	0.05	0.53	11/06/00
DA-3-9C	J20003466-009	10031-09	10/12/00 at 1030	1.26	0.05	0.53	11/06/00
DA-5-10C	J20003466-010	10031-10	10/12/00 at 1130	1.29	0.05	0.53	11/06/00
DA-5-11C	J20003466-011	10031-11	10/12/00 at 1200	1.23	0.05	0.53	11/06/00
DA-5-12C	J20003466-012	10031-12	10/12/00 at 1300	5.21	0.05	0.53	11/06/00
DA-6-13C	J20003466-013	10031-13	10/13/00 at 1430	2.37	0.05	0.53	11/06/00
DA-6-14C	J20003466-014	10031-14	10/13/00 at 1345	2.06	0.05	0.53	11/06/00
DA-6-15C	J20003466-015	10031-15	10/13/00 at 1330	0.78	0.05	0.53	11/06/00
DA-6-16C	J20003466-016	10031-16	10/13/00 at 1300	1.65	0.05	0.53	11/06/00

Midwest Research Institute
Florida Division
Laboratory Analysis
Copper

Client:	Columbia Analytical Services
CompQAP #:	990096
Work Order/Report Number:	10031
Date Received:	10/17/00
Matrix:	Sediment
Prep Method/Date:	3052 on 11/06/00
Method:	200.8
Analyst:	N. Julien
Data Released By:	T. Price

Client ID:	Columbia ID:	Lab ID:	Sample Date/Time:	Analysis Result (mg/Kg dry wt)	MDL (mg/Kg)	MRL (mg/Kg)	Date Analyzed
DA-1-1C	J20003466-001	10031-01	10/11/00 at 1315	12.0	0.03	0.14	11/06/00
DA-1-2C	J20003466-002	10031-02	10/11/00 at 1500	4.95	0.03	0.14	11/06/00
DA-2-3C	J20003466-003	10031-03	10/11/00 at 1545	1.65	0.03	0.14	11/06/00
DA-2-4C	J20003466-004	10031-04	10/11/00 at 1630	2.68	0.03	0.14	11/06/00
DA-2-5C	J20003466-005	10031-05	10/11/00 at 1700	13.2	0.03	0.14	11/06/00
DA-2-6C	J20003466-006	10031-06	10/11/00 at 1730	24.2	0.03	0.14	11/06/00
DA-3-7C	J20003466-007	10031-07	10/11/00 at 1745	24.4	0.03	0.14	11/06/00
DA-3-8C	J20003466-008	10031-08	10/12/00 at 0945	3.91	0.03	0.14	11/06/00
DA-3-9C	J20003466-009	10031-09	10/12/00 at 1030	1.43	0.03	0.14	11/06/00
DA-5-10C	J20003466-010	10031-10	10/12/00 at 1130	3.14	0.03	0.14	11/06/00
DA-5-11C	J20003466-011	10031-11	10/12/00 at 1200	1.11	0.03	0.14	11/06/00
DA-5-12C	J20003466-012	10031-12	10/12/00 at 1300	4.33	0.03	0.14	11/06/00
DA-6-13C	J20003466-013	10031-13	10/13/00 at 1430	0.31	0.03	0.14	11/06/00
DA-6-14C	J20003466-014	10031-14	10/13/00 at 1345	0.64	0.03	0.14	11/06/00
DA-6-15C	J20003466-015	10031-15	10/13/00 at 1330	0.19	0.03	0.14	11/06/00
DA-6-16C	J20003466-016	10031-16	10/13/00 at 1300	0.29	0.03	0.14	11/06/00

Midwest Research Institute
Florida Division
Laboratory Analysis
Chromium

Client:	Columbia Analytical Services
CompQAP #:	990096
Work Order/Report Number:	10031
Date Received:	10/17/00
Matrix:	Sediment
Prep Method/Date:	3052 on 11/06/00
Method:	200.8
Analyst:	N. Julien
Data Released By:	T. Price

QC Data Set:	ELAN 31500							
ANALYTE:Cr 52								
Sample ID	Conc.	Units	Exp.	% REC.	RPD	Target Lo	Target Hi	Result
QCS	84.0988	ug/L	83.3	100.9589		75	125	PASS
LRB-L20	0.5418	ug/L	0.666			-0.666	0.666	PASS
1003101-L20	0.8206	ug/L						
1003101-L20-D	0.9083	ug/L			10.14518		20	PASS
1003101-L20-S	10.4409	ug/L	10	96.203		75	125	PASS
1003101-L20-SD	9.8347	ug/L			5.979601		20	PASS
CCV	51.6421	ug/L	50	103.2842		90	110	PASS
CCV	50.3527	ug/L	50	100.7054		90	110	PASS
NRC: MESS-2	78.52596	ug/g dry	106	74.08109				

Midwest Research Institute
Florida Division
Laboratory Analysis
Copper

Client:	Columbia Analytical Services
CompQAP #:	990096
Work Order/Report Number:	10031
Date Received:	10/17/00
Matrix:	Sediment
Prep Method/Date:	3052 on 11/06/00
Method:	200.8
Analyst:	N. Julien
Data Released By:	T. Price

ANALYTE:Cu 63								
Sample ID								
QCS	44.4225	ug/L	44.4	100.0507		75	125	PASS
LRB-L20	0.4091	ug/L	0.121245			-0.12125	0.121245	PASS
1003101-L20	3.0118	ug/L						
1003101-L20-D	3.2846	ug/L			8.665269		20	PASS
1003101-L20-S	12.5318	ug/L	10	95.2		75	125	PASS
1003101-L20-SD	11.9983	ug/L			4.349758		20	PASS
CCV	49.8725	ug/L	50	99.745		90	110	PASS
CCV	49.2729	ug/L	50	98.5458		90	110	PASS
NRC: MESS-2	34.13732	ug/g dry	39.3	86.86341				

Midwest Research Institute
Florida Division
Laboratory Analysis
Nickel

Client:	Columbia Analytical Services
CompQAP #:	990096
Work Order/Report Number:	10031
Date Received:	10/17/00
Matrix:	Sediment
Prep Method/Date:	3052 on 11/06/00
Method:	200.8
Analyst:	N. Julien
Data Released By:	T. Price

Client ID:	Columbia ID:	Lab ID:	Sample Date/Time:	Analysis Result (mg/Kg dry wt)	MDL (mg/Kg)	MRL (mg/Kg)	Date Analyzed
DA-1-1C	J20003466-001	10031-01	10/11/00 at 1315	1.50	0.02	0.31	11/06/00
DA-1-2C	J20003466-002	10031-02	10/11/00 at 1500	1.52	0.02	0.31	11/06/00
DA-2-3C	J20003466-003	10031-03	10/11/00 at 1545	46.4	0.02	0.31	11/06/00
DA-2-4C	J20003466-004	10031-04	10/11/00 at 1630	1.11	0.02	0.31	11/06/00
DA-2-5C	J20003466-005	10031-05	10/11/00 at 1700	3.37	0.02	0.31	11/06/00
DA-2-6C	J20003466-006	10031-06	10/11/00 at 1730	4.84	0.02	0.31	11/06/00
DA-3-7C	J20003466-007	10031-07	10/11/00 at 1745	5.14	0.02	0.31	11/06/00
DA-3-8C	J20003466-008	10031-08	10/12/00 at 0945	1.11	0.02	0.31	11/06/00
DA-3-9C	J20003466-009	10031-09	10/12/00 at 1030	0.50	0.02	0.31	11/06/00
DA-5-10C	J20003466-010	10031-10	10/12/00 at 1130	0.70	0.02	0.31	11/06/00
DA-5-11C	J20003466-011	10031-11	10/12/00 at 1200	1.18	0.02	0.31	11/06/00
DA-5-12C	J20003466-012	10031-12	10/12/00 at 1300	4.17	0.02	0.31	11/06/00
DA-6-13C	J20003466-013	10031-13	10/13/00 at 1430	1.24	0.02	0.31	11/06/00
DA-6-14C	J20003466-014	10031-14	10/13/00 at 1345	1.45	0.02	0.31	11/06/00
DA-6-15C	J20003466-015	10031-15	10/13/00 at 1330	0.30	0.02	0.31	11/06/00
DA-6-16C	J20003466-016	10031-16	10/13/00 at 1300	1.15	0.02	0.31	11/06/00

Midwest Research Institute
Florida Division
Laboratory Analysis
Nickel

Client:	Columbia Analytical Services
CompQAP #:	990096
Work Order/Report Number:	10031
Date Received:	10/17/00
Matrix:	Sediment
Prep Method/Date:	3052 on 11/06/00
Method:	200.8
Analyst:	N. Julien
Data Released By:	T. Price

ANALYTE:Ni 60								
Sample ID								
QCS	39.5279	ug/L	40.2	98.32811		75	125	PASS
LRB-L20	0.3011	ug/L	0.5835			-0.5835	0.5835	PASS
1003101-L20	0.379	ug/L						
1003101-L20-D	0.3881	ug/L			2.372572		20	PASS
1003101-L20-S	9.9236	ug/L	10	95.446		75	125	PASS
1003101-L20-SD	9.327	ug/L			6.198248		20	PASS
CCV	51.5853	ug/L	50	103.1706		90	110	PASS
CCV	50.2968	ug/L	50	100.5936		90	110	PASS
NRC: MESS-2	45.74111	ug/g dry	49.3	92.78115				

Midwest Research Institute
Florida Division
Laboratory Analysis
Lead

Client:	Columbia Analytical Services
CompQAP #:	990096
Work Order/Report Number:	10031
Date Received:	10/17/00
Matrix:	Sediment
Prep Method/Date:	3052 on 11/06/00
Method:	200.8
Analyst:	N. Julien
Data Released By:	T. Price

Client ID:	Columbia ID:	Lab ID:	Sample Date/Time:	Analysis Result (mg/Kg dry wt)	MDL (mg/Kg)	MRL (mg/Kg)	Date Analyzed
DA-1-1C	J20003466-001	10031-01	10/11/00 at 1315	10.5	0.02	0.07	11/06/00
DA-1-2C	J20003466-002	10031-02	10/11/00 at 1500	7.87	0.02	0.07	11/06/00
DA-2-3C	J20003466-003	10031-03	10/11/00 at 1545	1.95	0.02	0.07	11/06/00
DA-2-4C	J20003466-004	10031-04	10/11/00 at 1630	7.63	0.02	0.07	11/06/00
DA-2-5C	J20003466-005	10031-05	10/11/00 at 1700	21.0	0.02	0.07	11/06/00
DA-2-6C	J20003466-006	10031-06	10/11/00 at 1730	48.9	0.02	0.07	11/06/00
DA-3-7C	J20003466-007	10031-07	10/11/00 at 1745	38.5	0.02	0.07	11/06/00
DA-3-8C	J20003466-008	10031-08	10/12/00 at 0945	8.98	0.02	0.07	11/06/00
DA-3-9C	J20003466-009	10031-09	10/12/00 at 1030	4.70	0.02	0.07	11/06/00
DA-5-10C	J20003466-010	10031-10	10/12/00 at 1130	2.96	0.02	0.07	11/06/00
DA-5-11C	J20003466-011	10031-11	10/12/00 at 1200	1.77	0.02	0.07	11/06/00
DA-5-12C	J20003466-012	10031-12	10/12/00 at 1300	4.74	0.02	0.07	11/06/00
DA-6-13C	J20003466-013	10031-13	10/13/00 at 1430	0.70	0.02	0.07	11/06/00
DA-6-14C	J20003466-014	10031-14	10/13/00 at 1345	0.70	0.02	0.07	11/06/00
DA-6-15C	J20003466-015	10031-15	10/13/00 at 1330	0.46	0.02	0.07	11/06/00
DA-6-16C	J20003466-016	10031-16	10/13/00 at 1300	0.54	0.02	0.07	11/06/00

Midwest Research Institute
Florida Division
Laboratory Analysis
Lead

Client:	Columbia Analytical Services
CompQAP #:	990096
Work Order/Report Number:	10031
Date Received:	10/17/00
Matrix:	Sediment
Prep Method/Date:	3052 on 11/06/00
Method:	200.8
Analyst:	N. Julien
Data Released By:	T. Price

ANALYTE:Pb 208								
Sample ID								
QCS	52.9059	ug/L	51.1	103.5341		75	125	PASS
LRB-L20	0.0443	ug/L	0.2265			-0.2265	0.2265	PASS
1003101-L20	2.6456	ug/L						
1003101-L20-D	2.8795	ug/L			8.466815		20	PASS
1003101-L20-S	12.576	ug/L	10	99.304		75	125	PASS
1003101-L20-SD	12.185	ug/L			3.158192		20	PASS
CCV	105.7435	ug/L	100	105.7435		90	110	PASS
CCV	105.547	ug/L	100	105.547		90	110	PASS
NRC: MESS-2	21.10892	ug/g dry	21.9	96.38776				

Midwest Research Institute
Florida Division
Laboratory Analysis
Zinc

Client:	Columbia Analytical Services
CompQAP #:	990096
Work Order/Report Number:	10031
Date Received:	10/17/00
Matrix:	Sediment
Prep Method/Date:	3052 on 11/06/00
Method:	200.8
Analyst:	N. Julien
Data Released By:	T. Price

Client ID:	Columbia ID:	Lab ID:	Sample Date/Time:	Analysis Result (mg/Kg dry wt)	MDL (mg/Kg)	MRL (mg/Kg)	Date Analyzed
DA-1-1C	J20003466-001	10031-01	10/11/00 at 1315	57.5	0.09	2.4	11/06/00
DA-1-2C	J20003466-002	10031-02	10/11/00 at 1500	19.1	0.09	2.4	11/06/00
DA-2-3C	J20003466-003	10031-03	10/11/00 at 1545	5.57	0.09	2.4	11/06/00
DA-2-4C	J20003466-004	10031-04	10/11/00 at 1630	16.2	0.09	2.4	11/06/00
DA-2-5C	J20003466-005	10031-05	10/11/00 at 1700	39.6	0.09	2.4	11/06/00
DA-2-6C	J20003466-006	10031-06	10/11/00 at 1730	63.5	0.09	2.4	11/06/00
DA-3-7C	J20003466-007	10031-07	10/11/00 at 1745	65.2	0.09	2.4	11/06/00
DA-3-8C	J20003466-008	10031-08	10/12/00 at 0945	19.3	0.09	2.4	11/06/00
DA-3-9C	J20003466-009	10031-09	10/12/00 at 1030	5.53	0.09	2.4	11/06/00
DA-5-10C	J20003466-010	10031-10	10/12/00 at 1130	7.11	0.09	2.4	11/06/00
DA-5-11C	J20003466-011	10031-11	10/12/00 at 1200	2.86	0.09	2.4	11/06/00
DA-5-12C	J20003466-012	10031-12	10/12/00 at 1300	7.65	0.09	2.4	11/06/00
DA-6-13C	J20003466-013	10031-13	10/13/00 at 1430	1.45	0.09	2.4	11/06/00
DA-6-14C	J20003466-014	10031-14	10/13/00 at 1345	1.45	0.09	2.4	11/06/00
DA-6-15C	J20003466-015	10031-15	10/13/00 at 1330	1.44	0.09	2.4	11/06/00
DA-6-16C	J20003466-016	10031-16	10/13/00 at 1300	1.60	0.09	2.4	11/06/00

Midwest Research Institute
Florida Division
Laboratory Analysis
Zinc

Client:	Columbia Analytical Services
CompQAP #:	990096
Work Order/Report Number:	10031
Date Received:	10/17/00
Matrix:	Sediment
Prep Method/Date:	3052 on 11/06/00
Method:	200.8
Analyst:	N. Julien
Data Released By:	T. Price

ANALYTE:Zn 68								
Sample ID								
QCS	23.3795	ug/L	22.2	105.3131		75	125	PASS
LRB-L20	0.2808	ug/L	1.1115			-1.1115	1.1115	PASS
1003101-L20	14.5024	ug/L						
1003101-L20-D	15.9028	ug/L			9.211582		20	PASS
1003101-L20-S	24.3137	ug/L	10	98.113		75	125	PASS
1003101-L20-SD	23.6326	ug/L			2.841095		20	PASS
CCV	52.0558	ug/L	50	104.1116		90	110	PASS
CCV	51.8336	ug/L	50	103.6672		90	110	PASS
NRC: MESS-2	147.7596	ug/g dry	172	85.90677				

Midwest Research Institute
Florida Division
Laboratory Analysis
Mercury

Client:	Columbia Analytical Services
CompQAP #:	990096
Work Order/Report Number:	10031
Date Received:	10/17/00
Matrix:	Sediment
Prep Method/Date:	3052 on 11/06/00
Method:	245.5
Analyst:	N. Julien
Data Released By:	T. Price

Client ID:	Columbia ID:	Lab ID:	Sample Date/Time:	Analysis Result (mg/Kg dry wt)	MDL (mg/Kg)	MRL (mg/Kg)	Date Analyzed
DA-1-1C	J20003466-001	10031-01	10/11/00 at 1315	0.017 T	0.2	0.09	11/06/00
DA-1-2C	J20003466-002	10031-02	10/11/00 at 1500	0.003 T	0.2	0.09	11/06/00
DA-2-3C	J20003466-003	10031-03	10/11/00 at 1545	0.005 T	0.2	0.09	11/06/00
DA-2-4C	J20003466-004	10031-04	10/11/00 at 1630	0.006 T	0.2	0.09	11/06/00
DA-2-5C	J20003466-005	10031-05	10/11/00 at 1700	0.118 T	0.2	0.09	11/06/00
DA-2-6C	J20003466-006	10031-06	10/11/00 at 1730	0.158 T	0.2	0.09	11/06/00
DA-3-7C	J20003466-007	10031-07	10/11/00 at 1745	0.201	0.2	0.09	11/06/00
DA-3-8C	J20003466-008	10031-08	10/12/00 at 0945	0.067 T	0.2	0.09	11/06/00
DA-3-9C	J20003466-009	10031-09	10/12/00 at 1030	0.006 T	0.2	0.09	11/06/00
DA-5-10C	J20003466-010	10031-10	10/12/00 at 1130	0.007 T	0.2	0.09	11/06/00
DA-5-11C	J20003466-011	10031-11	10/12/00 at 1200	0.004 T	0.2	0.09	11/06/00
DA-5-12C	J20003466-012	10031-12	10/12/00 at 1300	0.029 T	0.2	0.09	11/06/00
DA-6-13C	J20003466-013	10031-13	10/13/00 at 1430	0.005 T	0.2	0.09	11/06/00
DA-6-14C	J20003466-014	10031-14	10/13/00 at 1345	0.006 T	0.2	0.09	11/06/00
DA-6-15C	J20003466-015	10031-15	10/13/00 at 1330	0.004 T	0.2	0.09	11/06/00
DA-6-16C	J20003466-016	10031-16	10/13/00 at 1300	0.006 T	0.2	0.09	11/06/00

T - Value reported is less than laboratory method detection limit. The value is reported for informational purposes.

Midwest Research Institute
Florida Division
Laboratory Analysis
Mercury

Client:	Columbia Analytical Services
CompQAP #:	990096
Work Order/Report Number:	10031
Date Received:	10/17/00
Matrix:	Sediment
Prep Method/Date:	3052 on 11/06/00
Method:	245.5
Analyst:	N. Julien
Data Released By:	T. Price

Data Set:	FIMS 32500								
Analyte: Hg									
Sample_ID	Conc	Units		% Recovery	RPD	Target Lo	Target Hi	Result	
LRB	0.030046	ug/L					0.1	PASS	
LFB	1.095873	ug/L	1	106.5827		85	115	PASS	
10031-QCS	0.302515	ug/L	0.46		65.9	75	125	FAIL	Ok. Low analyte
10031-01	0.083253	ug/L							
10031-01-D	0.144942	ug/L			54.0663		20	FAIL	Ok. Low analyte
10031-01-S	1.099652	ug/L	1	103.6253		75	125	PASS	
10031-01-SD	1.11783	ug/L			1.639558		20	PASS	
CCV	4.756937	ug/L	5	95.13874		90	110	PASS	
CCV	4.659956	ug/L	5	93.19912		90	110	PASS	
CCV	4.802422	ug/L	5	96.04844		90	110	PASS	
NRC: MESS-2	0.060292	ug/g dry	0.092	65.53486					

SUMMARY OF GRADATION TEST RESULTS

Project: Intracoastal Waterway - Dade County, Florida
Client: Taylor Engineering, Inc.
Project No.: 00-1451

Sample No.	GRADATION TEST Percent Passing										
	No. 4	No. 10	No. 20	No. 30	No. 40	No. 50	No. 60	No. 80	No. 100	No. 140	No. 200
Reach 1:											
DA-1-1GS	99.5	97.6	92.1	88.6	82.7	73.1	69.4	57.2	48.3	27.5	19.3
DA-1-2GS	99.5	98.4	96.8	95.9	94.4	91.2	89.7	82.2	73.8	45.3	32.2
DA-1-3GS	88.9	68.6	52.0	46.1	35.4	17.2	12.0	4.3	3.2	2.3	2.0
DA-1-4GS	80.3	69.5	57.5	52.0	44.5	34.3	30.3	16.8	10.7	5.2	4.3
Reach 2:											
DA-2-5GS	100.0	99.8	99.4	99.0	98.1	93.0	89.8	61.7	37.7	12.2	7.6
DA-2-6GS	90.3	76.3	59.4	42.6	24.0	11.0	8.7	5.2	4.2	3.1	2.5
DA-2-7GS	90.5	73.6	48.2	39.2	30.8	23.0	20.4	13.2	9.1	4.3	3.6
DA-2-8GS	99.4	98.7	97.6	97.1	96.5	95.7	95.3	93.0	89.2	74.8	68.5
DA-2-9GS	99.8	97.7	94.7	93.2	91.2	88.4	86.9	80.9	75.3	63.5	60.3
Reach 3:											
DA-3-10GS	99.9	99.2	97.6	96.5	94.4	91.0	89.1	82.7	76.5	63.7	59.3
DA-3-11GS	85.4	79.1	71.6	67.4	57.1	38.0	30.8	13.9	8.5	4.1	3.5
DA-3-12GS	96.2	93.8	90.1	85.7	75.3	57.1	47.5	19.6	10.0	3.1	2.6
DA-3-13GS	99.8	98.4	93.6	85.9	65.6	36.0	24.7	9.9	6.1	2.7	2.4

SUMMARY OF GRADATION TEST RESULTS

Project: Intracoastal Waterway - Dade County, Florida
Client: Taylor Engineering, Inc.
Project No.: 00-1451

Sample No.	GRADATION TEST Percent Passing										
	No. 4	No. 10	No. 20	No. 30	No. 40	No. 50	No. 60	No. 80	No. 100	No. 140	No. 200
Reach 5:											
DA-5-14GS	99.2	96.4	91.0	86.1	74.5	50.4	37.8	16.3	10.4	5.7	5.3
DA-5-15GS	99.2	96.8	91.9	85.8	68.8	38.4	26.3	9.7	5.4	2.9	2.7
DA-5-16GS	83.4	65.9	47.3	37.2	22.8	9.3	6.2	2.0	1.5	1.2	1.2
DA-5-17GS	99.5	97.4	94.7	93.0	90.3	86.4	84.7	79.4	76.2	67.9	61.6
Reach 6:											
DA-6-18GS	86.6	71.7	56.1	51.3	46.2	38.7	35.1	24.3	21.8	18.6	16.9
DA-6-19GS	99.8	98.5	92.1	81.9	64.1	39.0	28.3	6.0	3.2	2.1	1.9
DA-6-20GS	99.9	97.8	92.9	84.1	66.5	37.3	25.7	6.9	4.3	3.1	2.8
DA-6-21GS	99.7	91.8	81.5	73.9	62.0	40.6	31.3	13.1	9.3	6.8	6.1
DA-6-22GS	99.8	98.3	94.7	87.7	70.2	38.2	24.3	4.8	2.9	2.3	2.2
DA-6-23GS	98.7	97.0	93.9	90.1	81.5	59.0	44.8	14.3	8.3	5.1	4.4
DA-6-24GS	99.8	99.3	95.9	90.2	74.4	40.5	26.6	5.7	3.6	2.7	2.5

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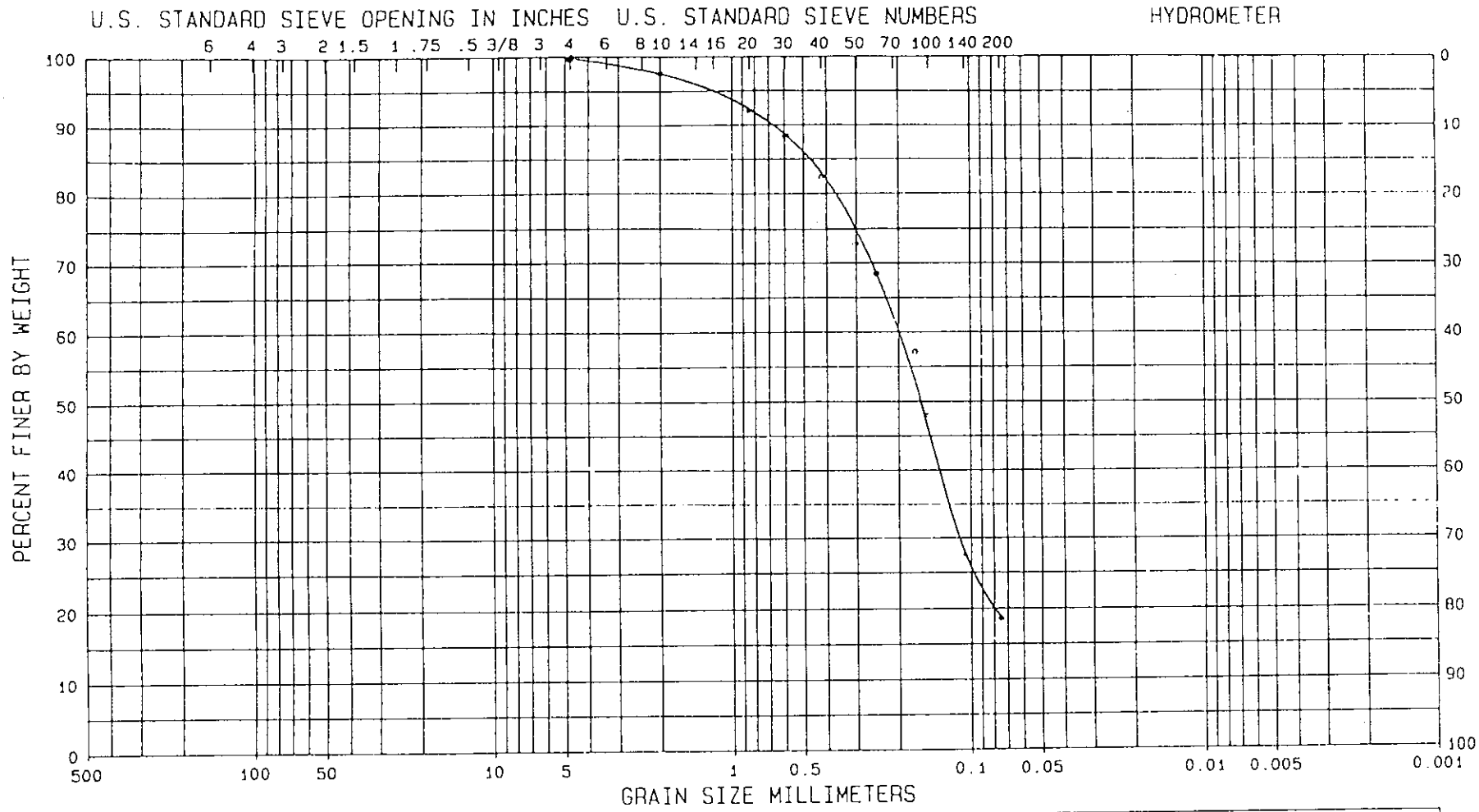


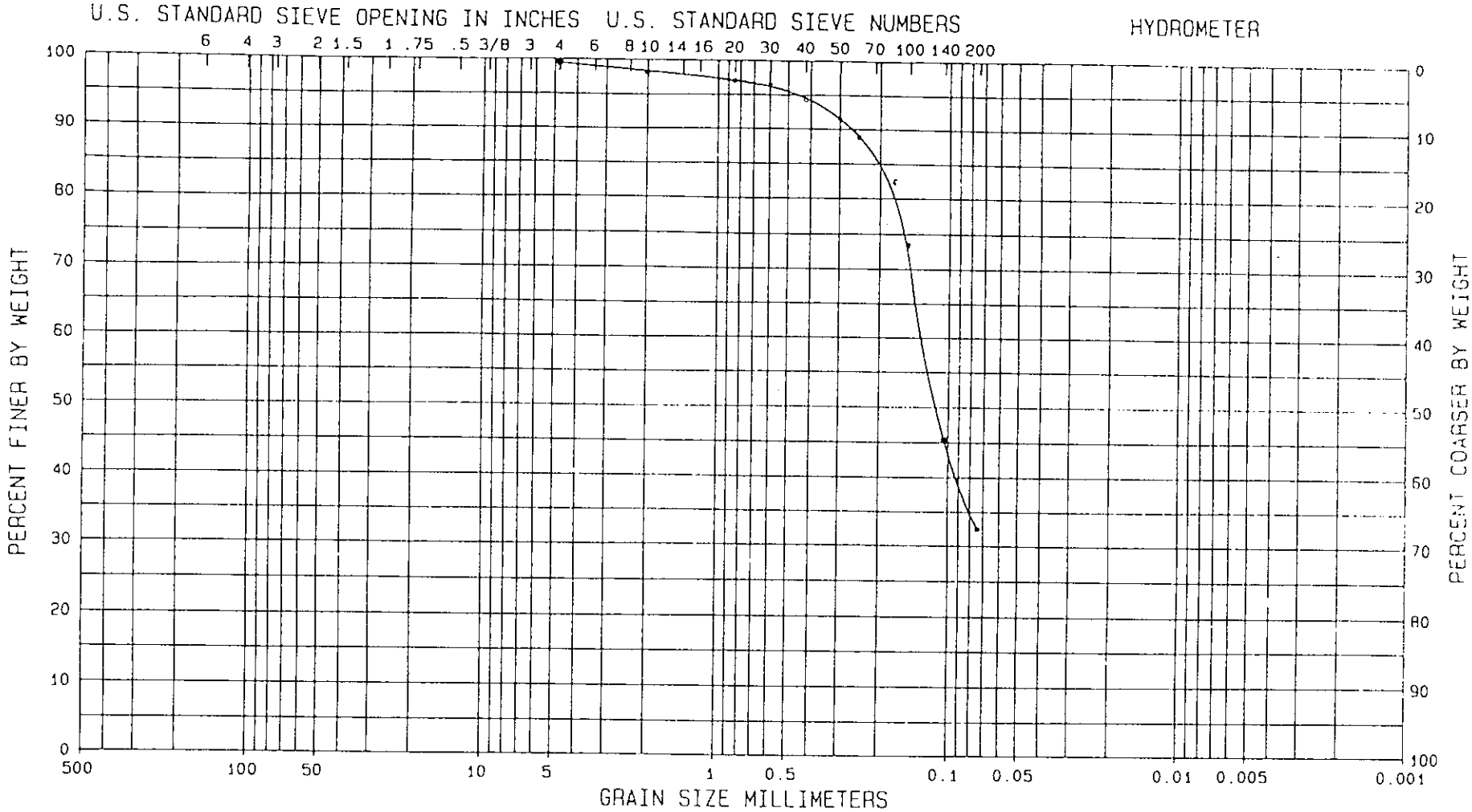
COBBLES	GRAVEL		SAND			SILT OR CLAY
	COARSE	FINE	COARSE	MEDIUM	FINE	

SAMPLE NO.		CLASSIFICATION	NAT w%	LL	PL	PI
DA1 - 1GS						

GRADATION CURVES

Intracoastal Waterway
Dade County, Florida
E&A Project No. 00-1451

ELLIS & ASSOCIATES, INC.



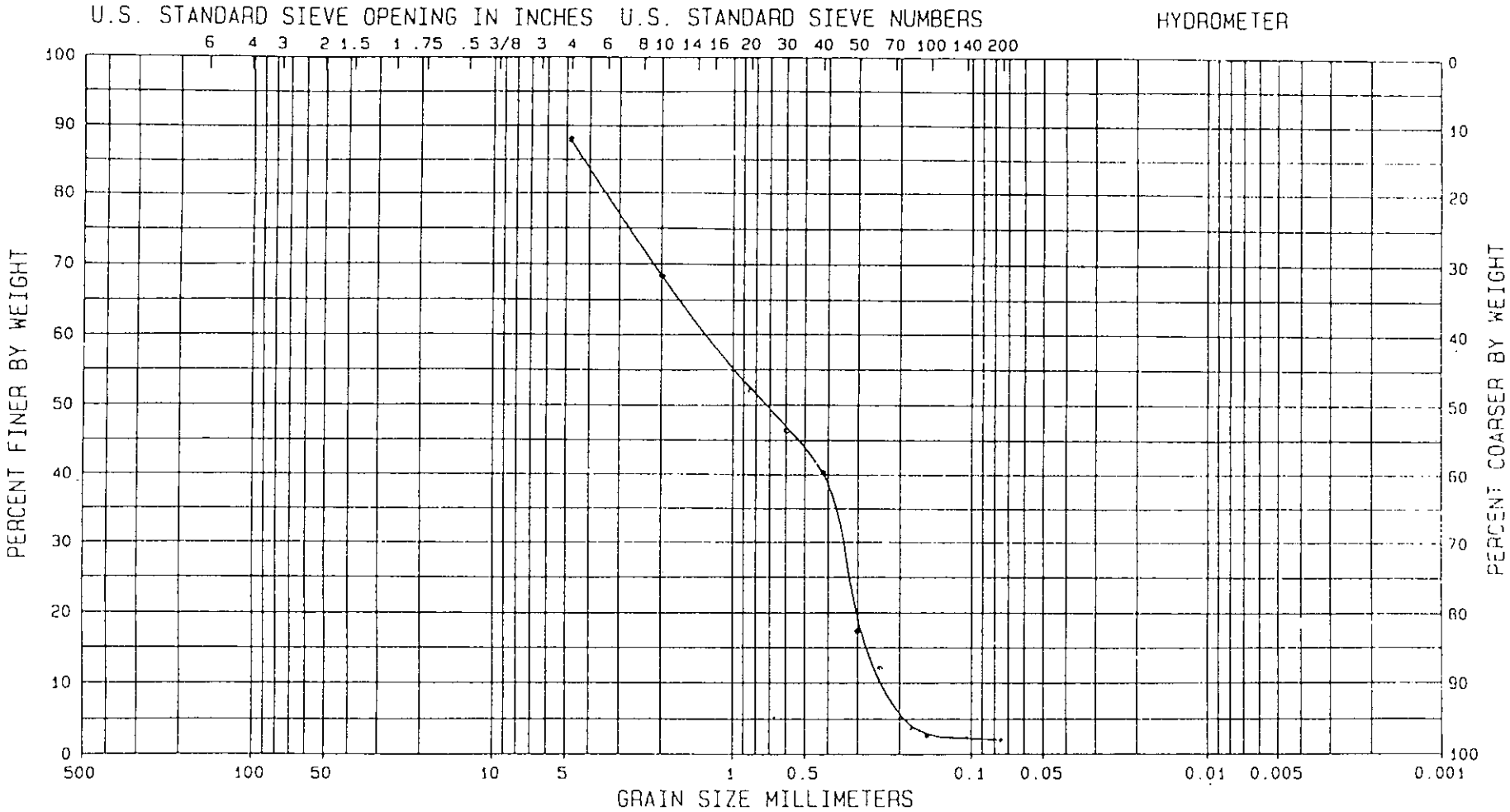
COBBLES	GRAVEL		SAND			SILT OR CLAY
	COARSE	FINE	COARSE	MEDIUM	FINE	

SAMPLE NO.		CLASSIFICATION	NAT W%	LL	PL	PI
DA1-2GS						

GRADATION CURVES

Intracoastal Waterway
Dade County, Florida
E&A Project No. 00-1451

ELLIS & ASSOCIATES, INC.



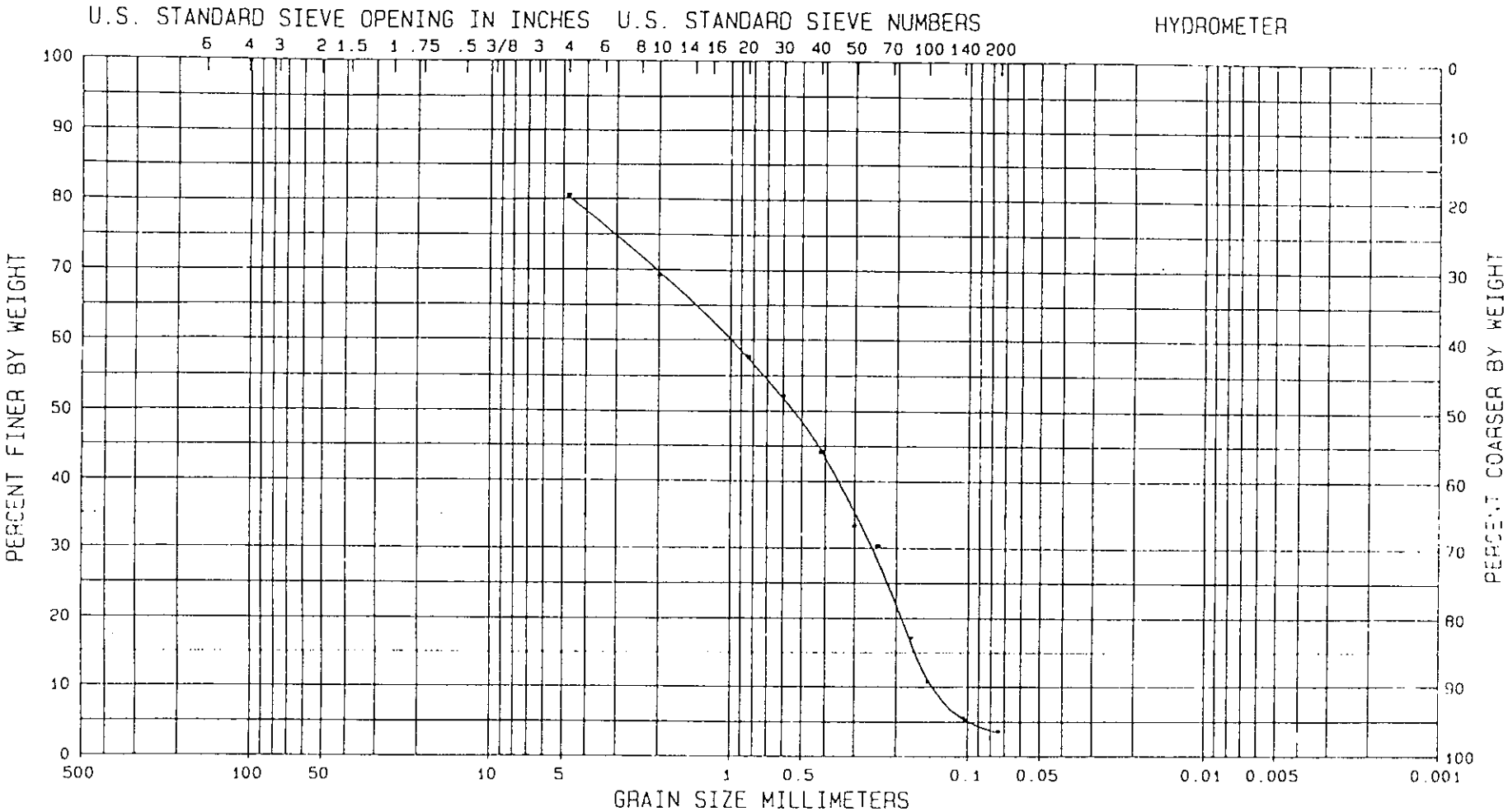
COBBLES	GRAVEL		SAND			SILT OR CLAY
	COARSE	FINE	COARSE	MEDIUM	FINE	

SAMPLE NO.		CLASSIFICATION	NAT W%	LL	PL	PI
DA1-3GS						

GRADATION CURVES

Intracoastal Waterway
Dade County, Florida
E&A Project No. 00-1451

ELLIS & ASSOCIATES, INC.



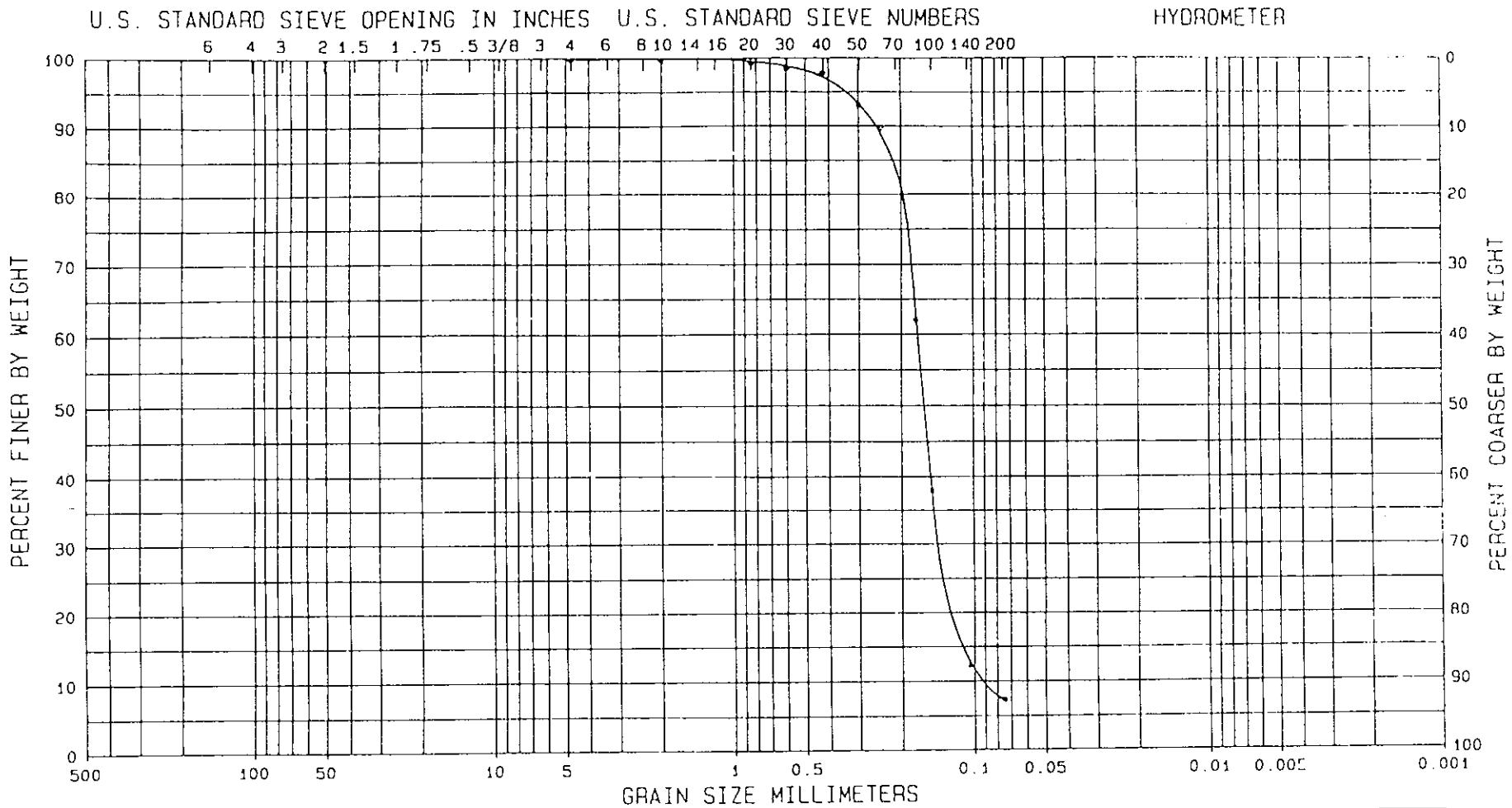
COBBLES	GRAVEL		SAND			SILT OR CLAY
	COARSE	FINE	COARSE	MEDIUM	FINE	

SAMPLE NO.		CLASSIFICATION	NAT W%	LL	PL	PI
DA1-4GS						

GRADATION CURVES

Intracoastal Waterway
Dade County, Florida
E&A Project No. 00-1451

ELLIS & ASSOCIATES, INC.



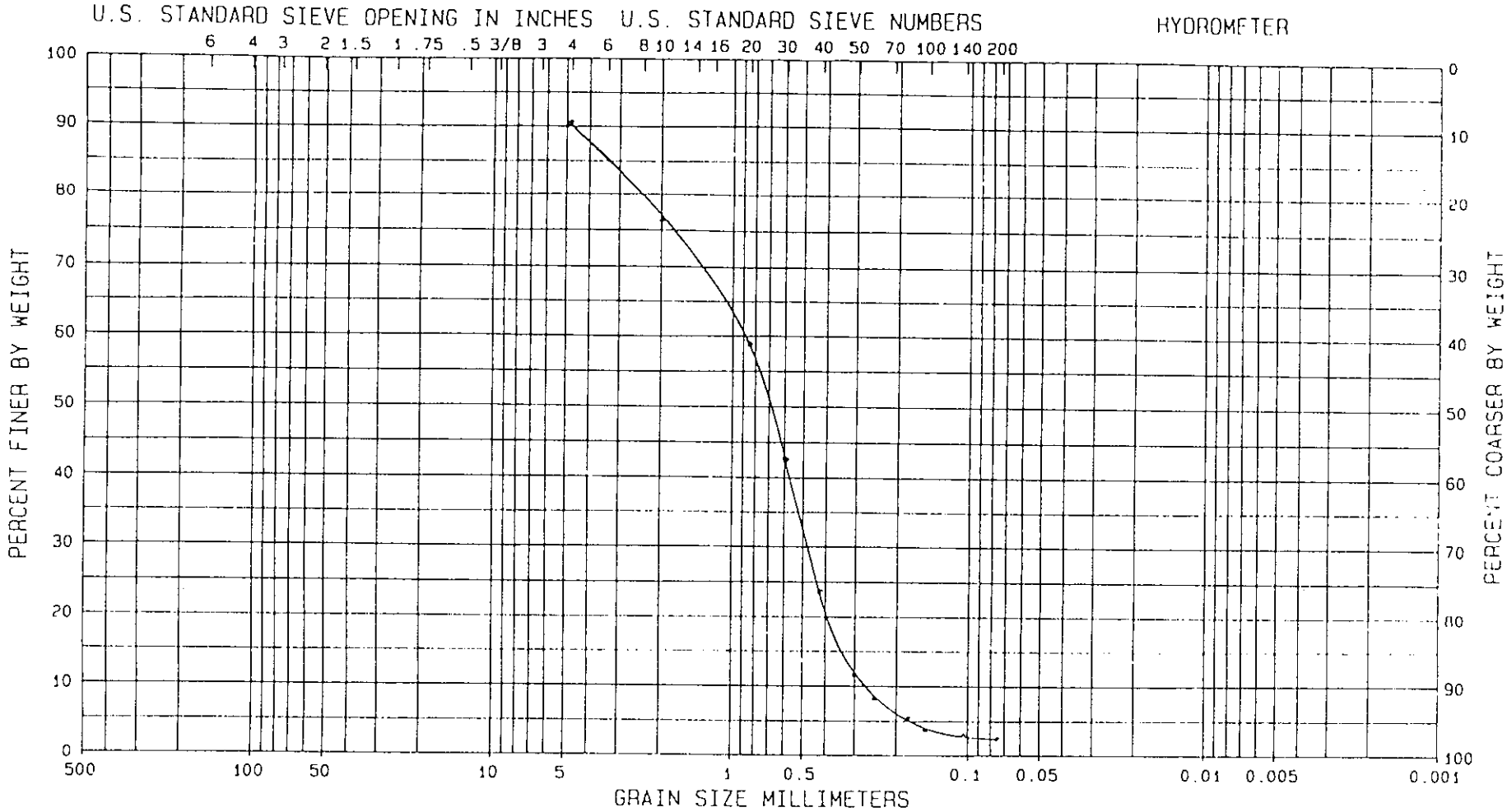
COBBLES	GRAVEL		SAND			SILT OR CLAY
	COARSE	FINE	COARSE	MEDIUM	FINE	

SAMPLE NO.		CLASSIFICATION	NAT w%	LL	PL	PI
DA2-5GS						

GRADATION CURVES

Intracoastal Waterway
Dade County, Florida
E&A Project No. 00-1451

ELLIS & ASSOCIATES, INC.



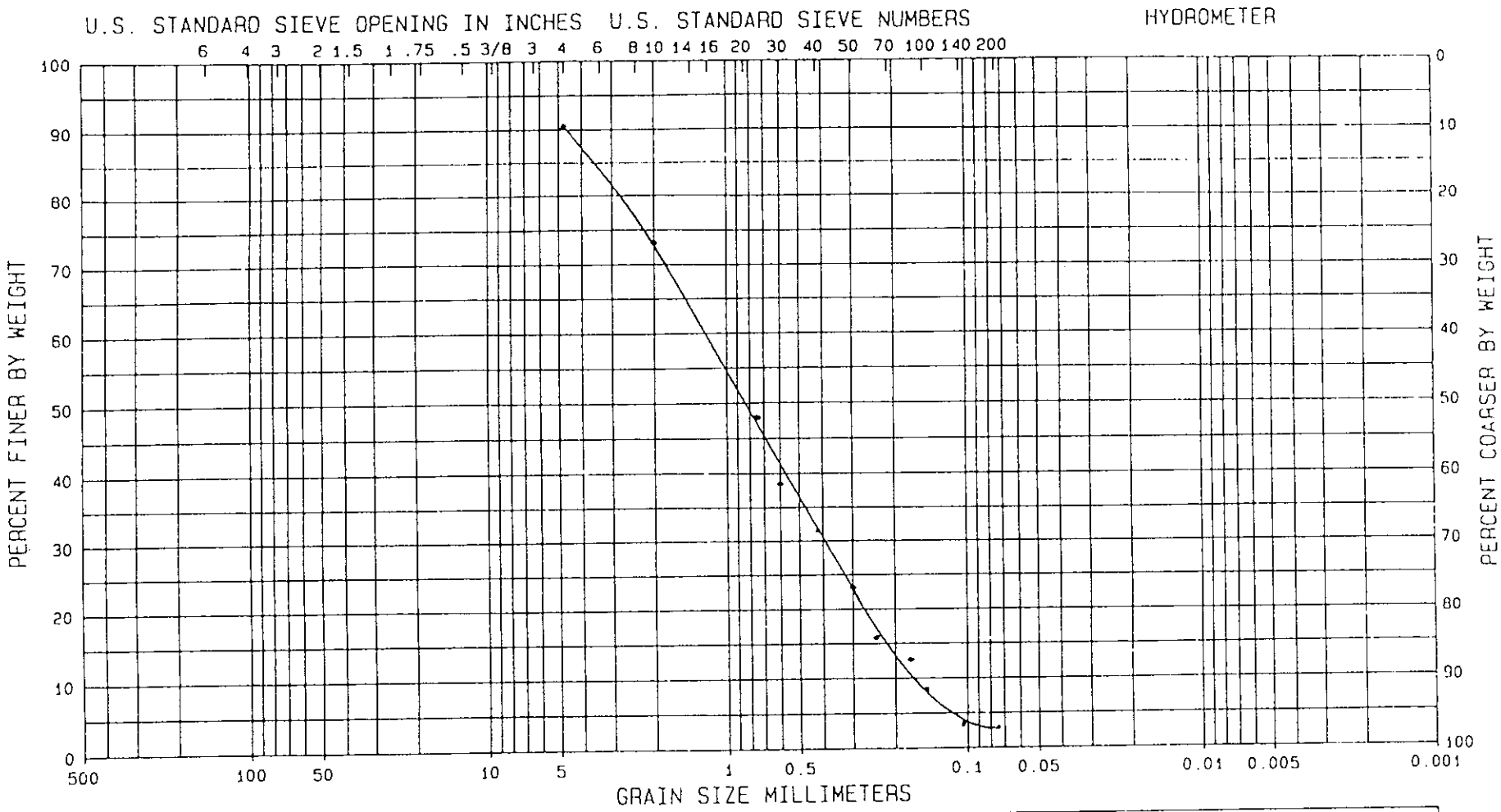
COBBLES	GRAVEL		SAND			SILT OR CLAY
	COARSE	FINE	COARSE	MEDIUM	FINE	

SAMPLE NO.		CLASSIFICATION	NAT W%	LL	PL	PI
DA2-6GS						

GRADATION CURVES

Intracoastal Waterway
Dade County, Florida
E&A Project No. 00-1451

ELLIS & ASSOCIATES, INC.



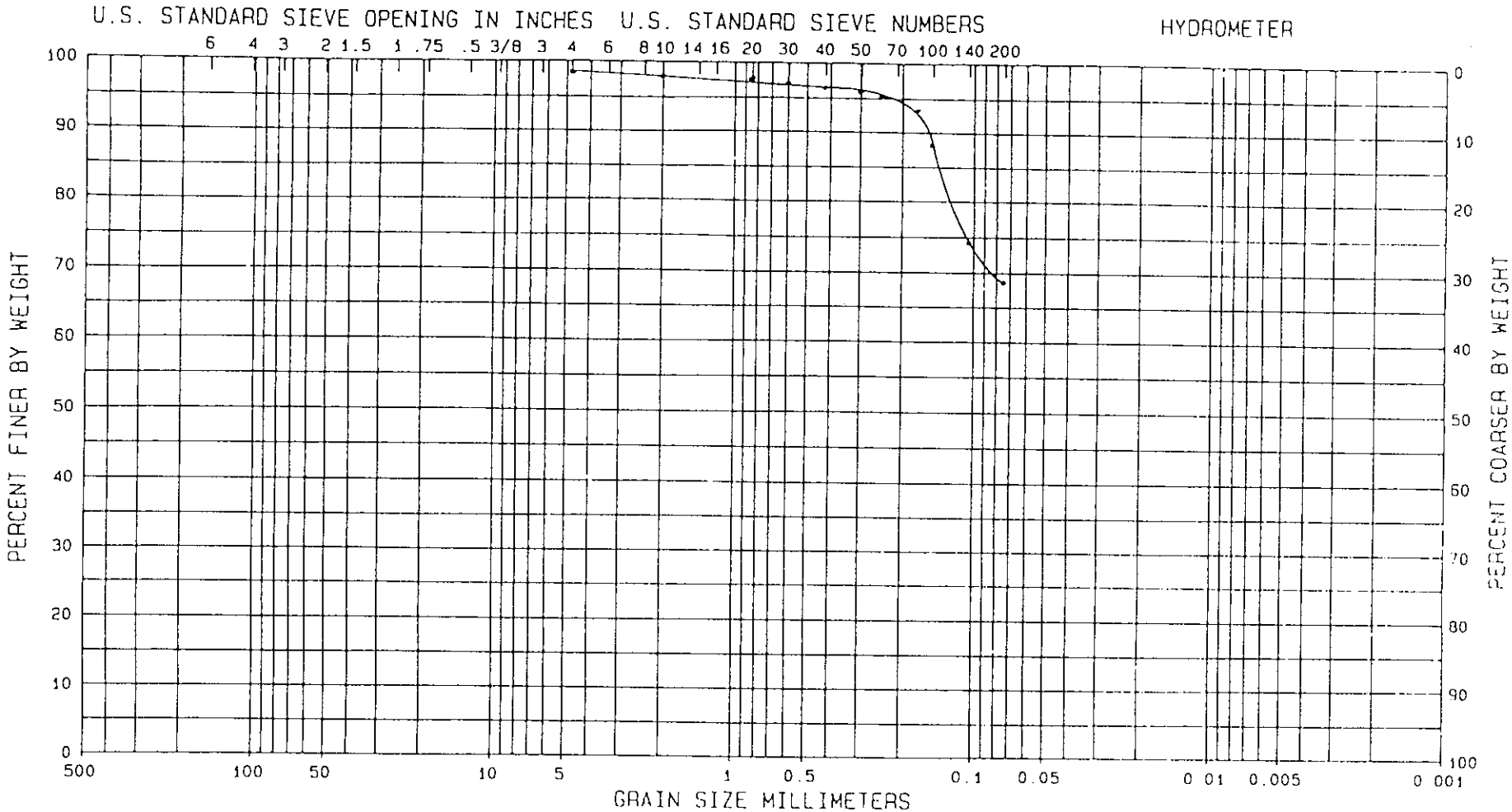
COBBLES	GRAVEL		SAND			SILT OR CLAY
	COARSE	FINE	COARSE	MEDIUM	FINE	

SAMPLE NO.		CLASSIFICATION	NAT W%	LL	PL	PI
DA2-7GS						

GRADATION CURVES

Intracoastal Waterway
Dade County, Florida
E&A Project No. 00-1451

ELLIS & ASSOCIATES, INC.



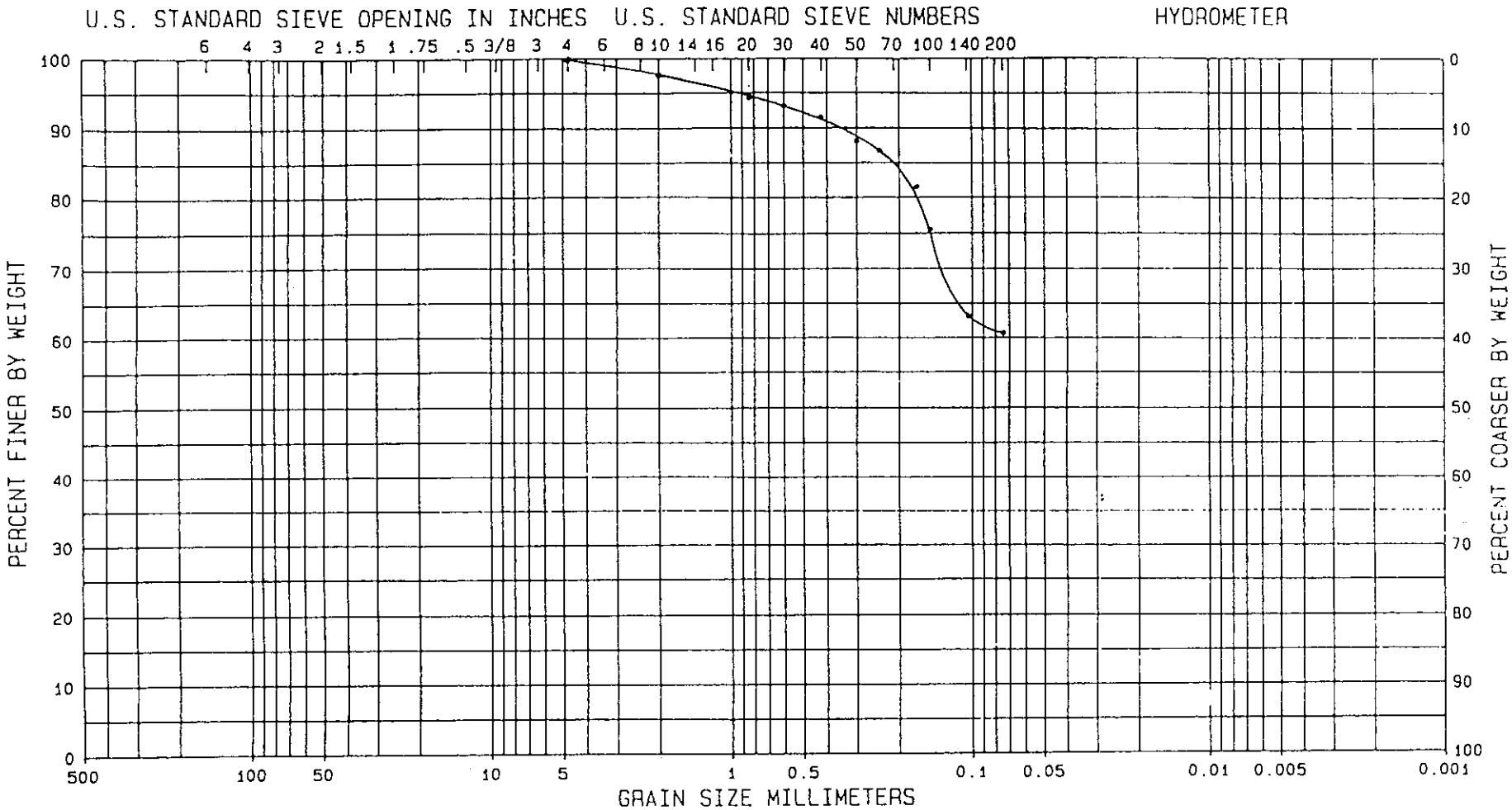
COBBLES	GRAVEL		SAND			SILT OR CLAY
	COARSE	FINE	COARSE	MEDIUM	FINE	

SAMPLE NO.		CLASSIFICATION	NAT W%	LL	PL	PI
DA2-8GS						

GRADATION CURVES

Intracoastal Waterway
Dade County, Florida
E&A Project No. 00-1451

ELLIS & ASSOCIATES, INC.



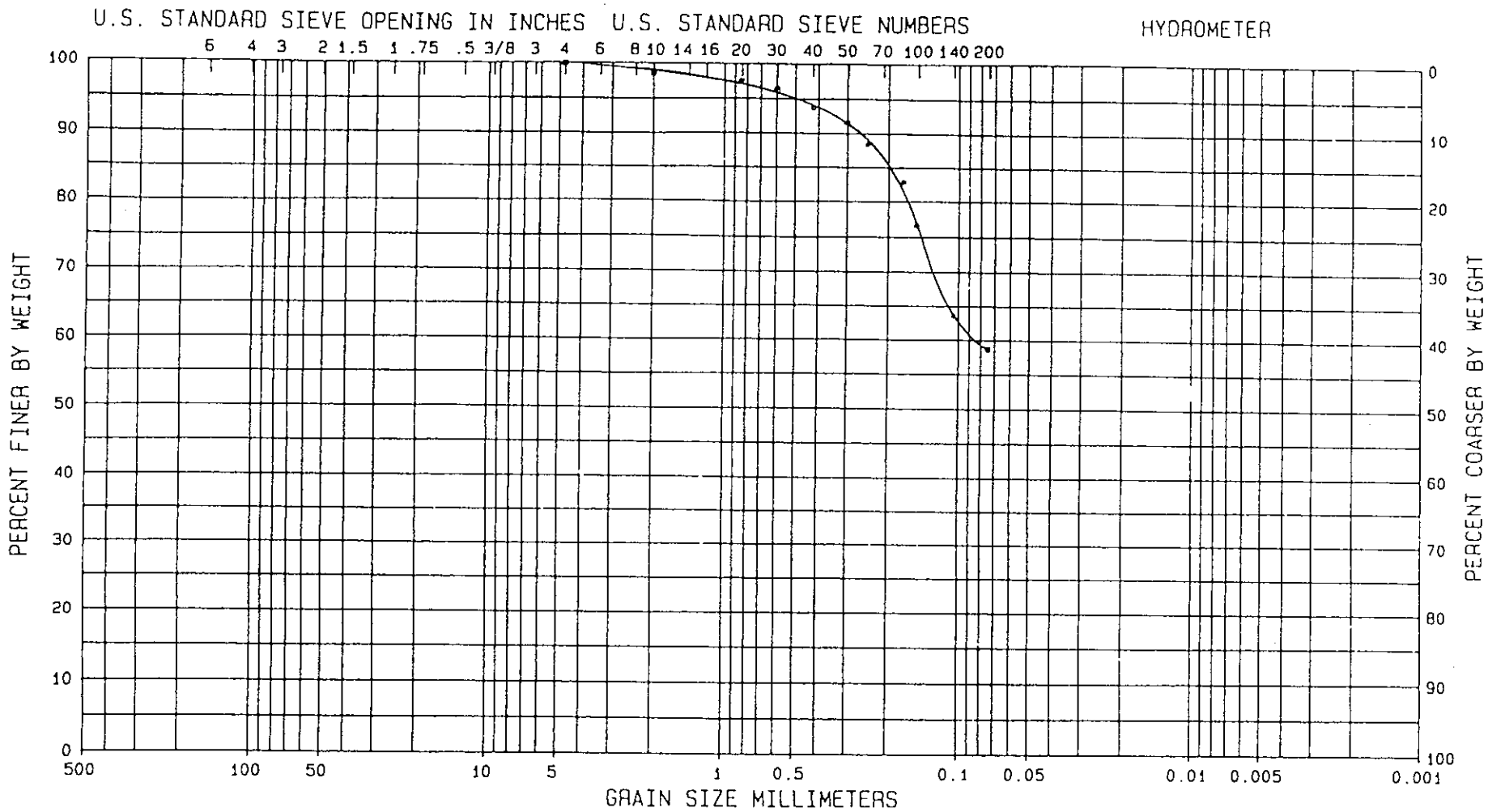
COBBLES	GRAVEL		SAND			SILT OR CLAY
	COARSE	FINE	COARSE	MEDIUM	FINE	

SAMPLE NO.		CLASSIFICATION	NAT W%	LL	PL	PI
DA2-9GS						

GRADATION CURVES

Intracoastal Waterway
Dade County, Florida
E&A Project No. 00-1451

ELLIS & ASSOCIATES, INC.



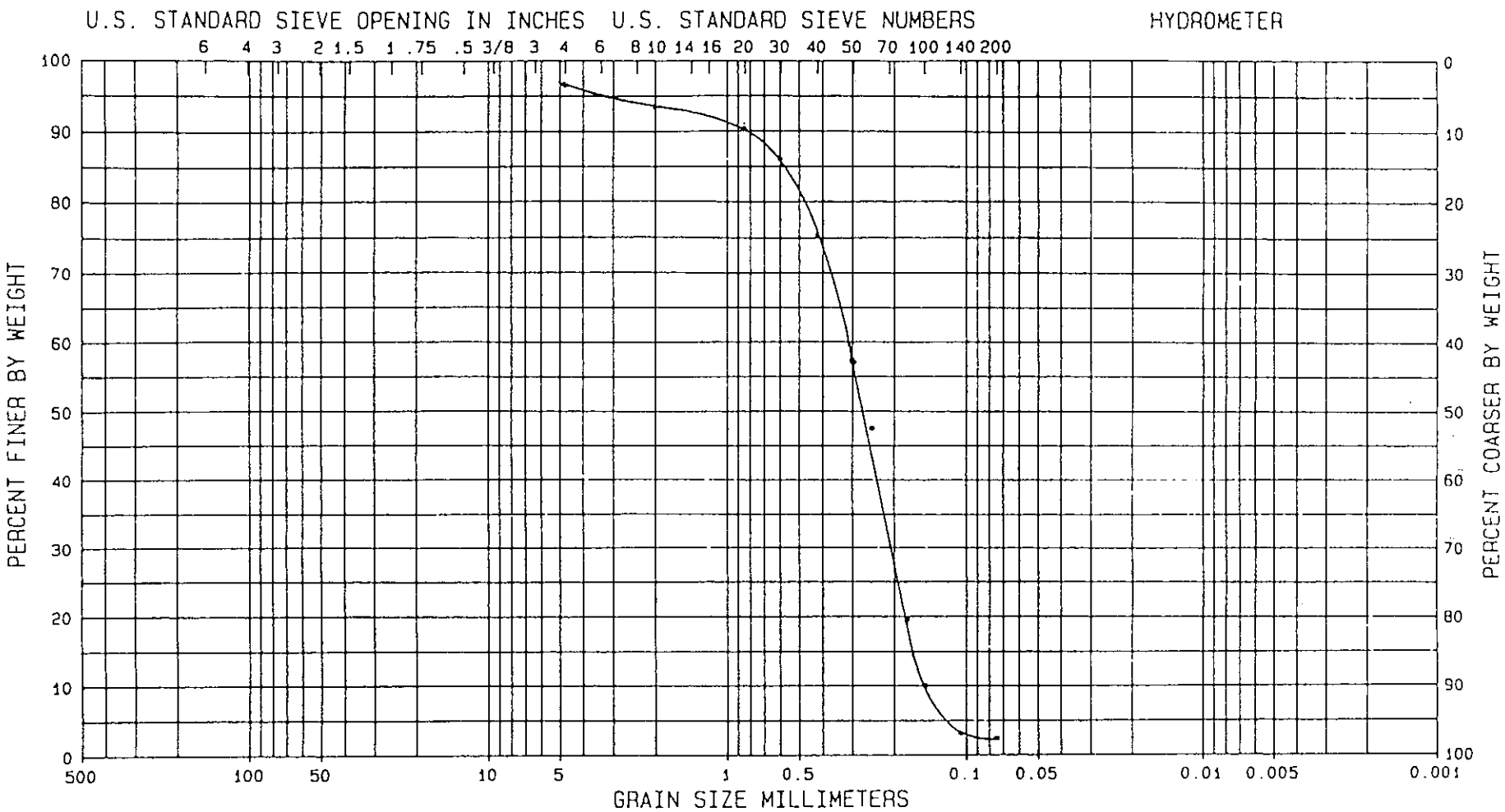
COBBLES	GRAVEL		SAND			SILT OR CLAY
	COARSE	FINE	COARSE	MEDIUM	FINE	

SAMPLE NO.		CLASSIFICATION	NAT w%	LL	PL	PI
DA3-10GS						

GRADATION CURVES

Intracoastal Waterway
Dade County, Florida
E&A Project No. 00-1451

ELLIS & ASSOCIATES, INC.



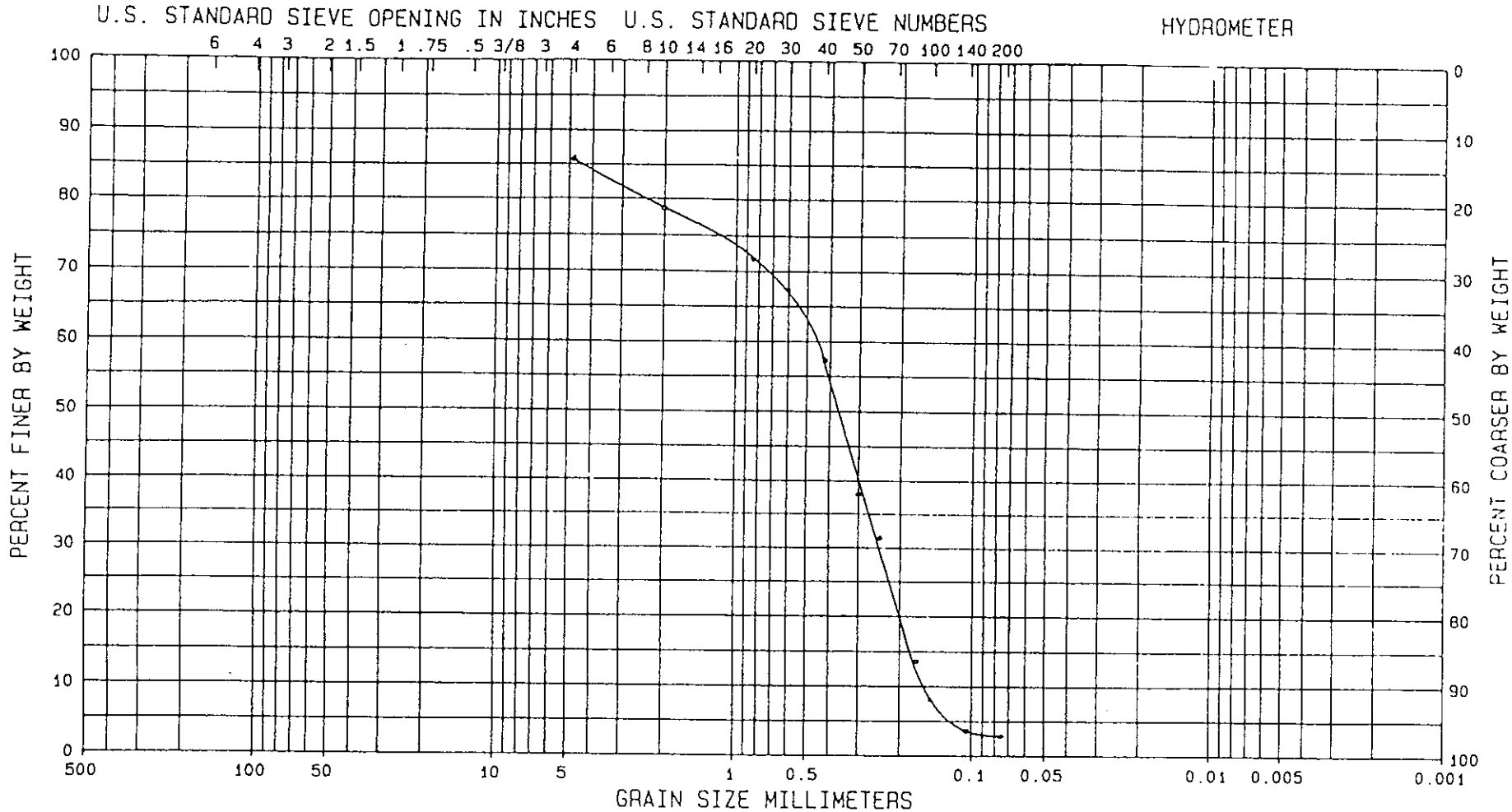
COBBLES	GRAVEL		SAND			SILT OR CLAY
	COARSE	FINE	COARSE	MEDIUM	FINE	

SAMPLE NO.		CLASSIFICATION	NAT W%	LL	PL	PI
DA3-12GS						

GRADATION CURVES

Intracoastal Waterway
Dade County, Florida
E&A Project No. 00-1451

ELLIS & ASSOCIATES, INC.



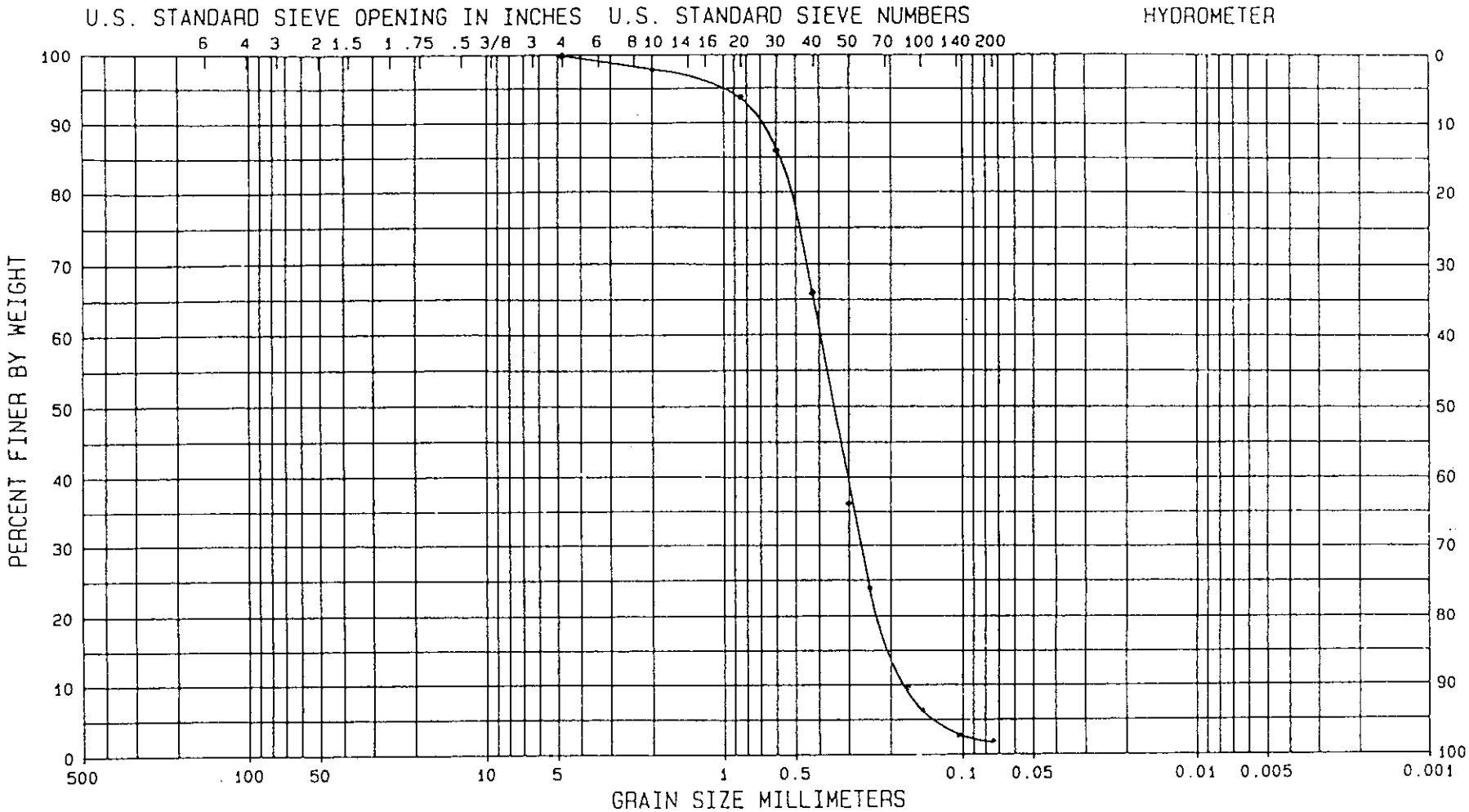
COBBLES	GRAVEL		SAND			SILT OR CLAY
	COARSE	FINE	COARSE	MEDIUM	FINE	

SAMPLE NO.		CLASSIFICATION	NAT W%	LL	PL	PI
DA3-11GS						

GRADATION CURVES

Intracoastal Waterway
Dade County, Florida
E&A Project No. 00-1451

ELLIS & ASSOCIATES, INC.



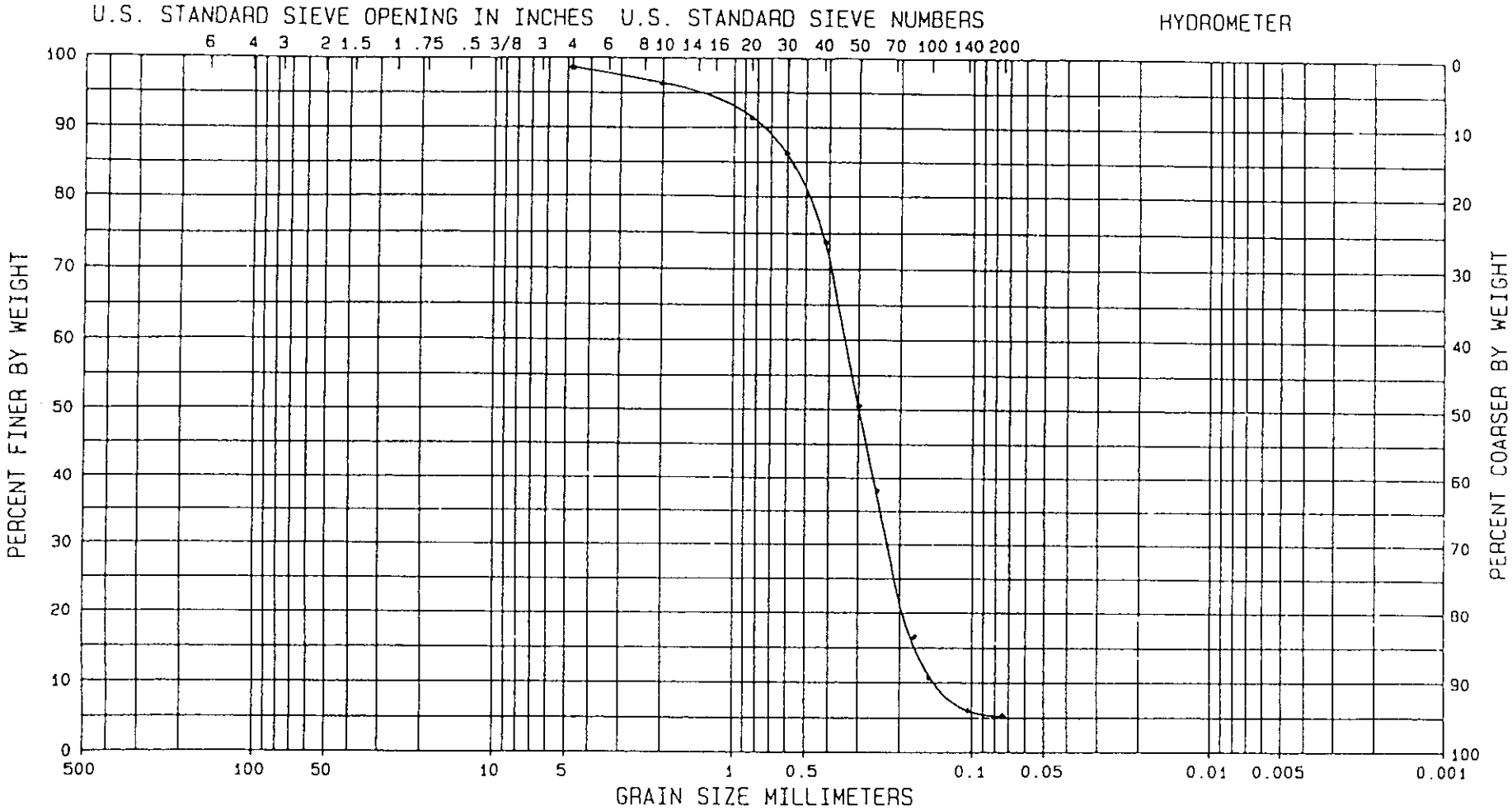
COBBLES	GRAVEL		SAND			SILT OR CLAY
	COARSE	FINE	COARSE	MEDIUM	FINE	

SAMPLE NO.		CLASSIFICATION	NAT w%	LL	PL	PI
DA3-13GS						

GRADATION CURVES

Intracoastal Waterway
Dade County, Florida
E&A Project No. 00-1451

ELLIS & ASSOCIATES, INC.



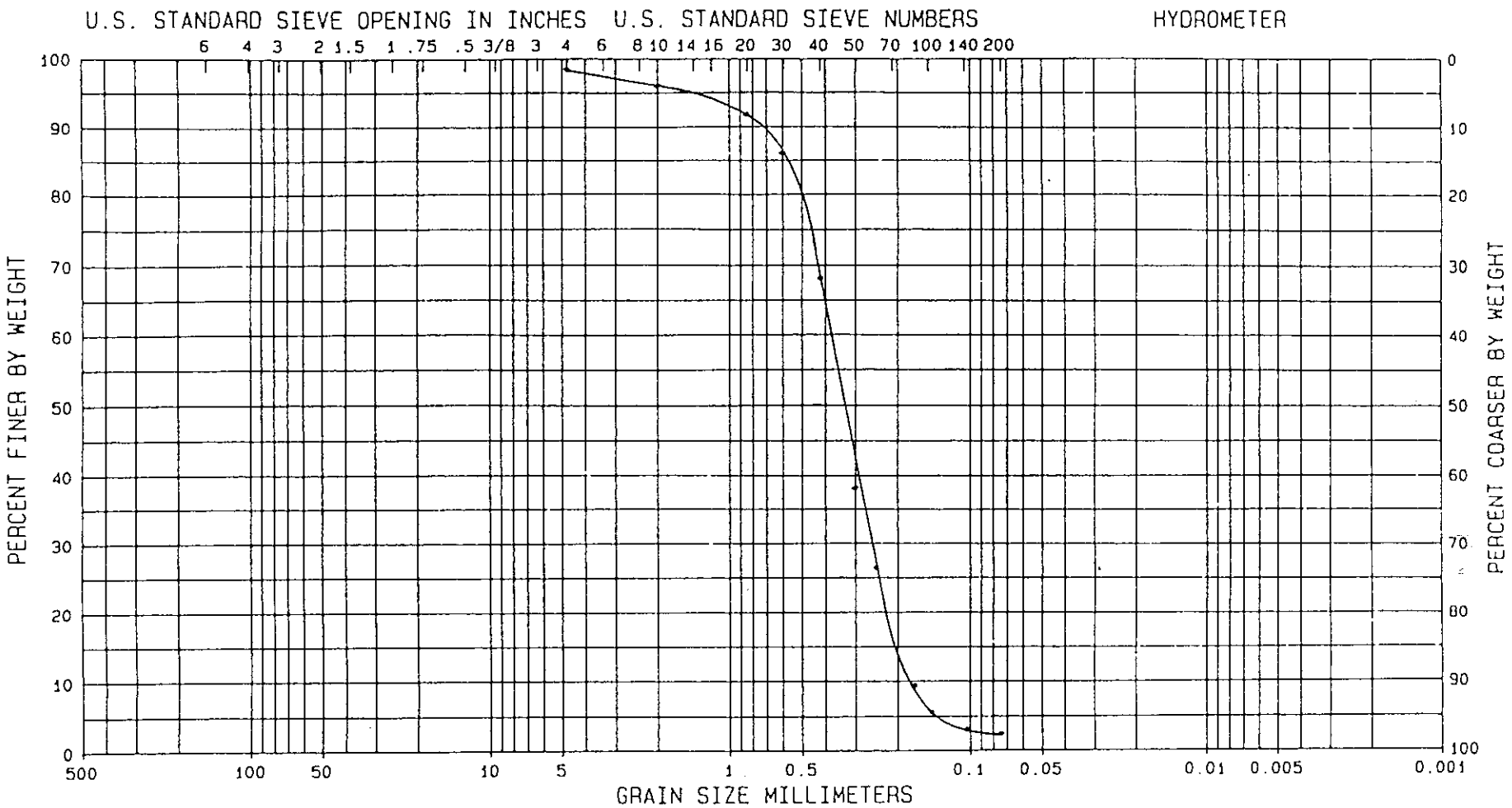
COBBLES	GRAVEL		SAND			SILT OR CLAY
	COARSE	FINE	COARSE	MEDIUM	FINE	

SAMPLE NO.		CLASSIFICATION	NAT w%	LL	PL	PI
DA5-14GS						

GRADATION CURVES

Intracoastal Waterway
Dade County, Florida
E&A Project No. 00-1451

ELLIS & ASSOCIATES, INC.



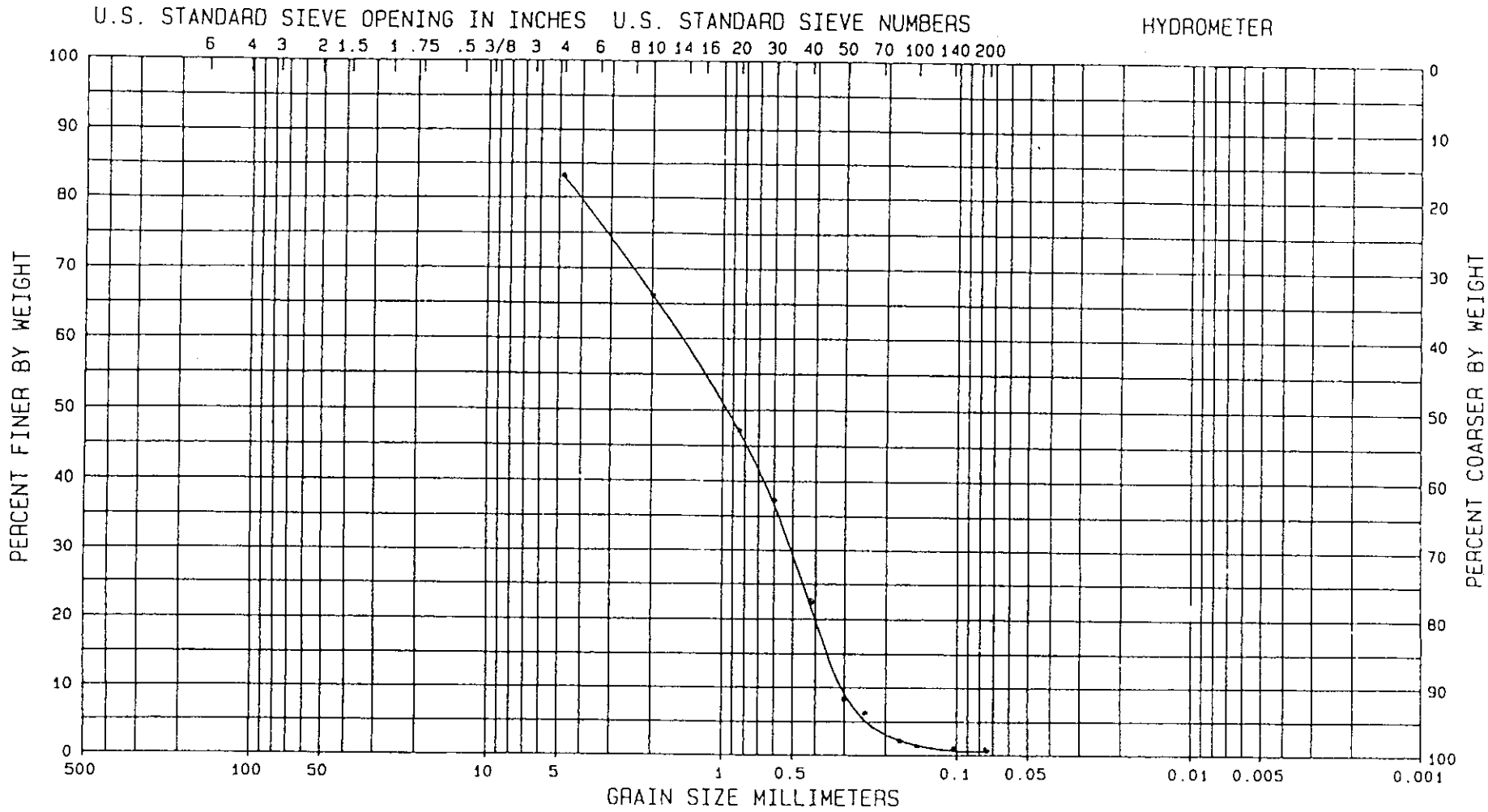
COBBLES	GRAVEL		SAND			SILT OR CLAY
	COARSE	FINE	COARSE	MEDIUM	FINE	

SAMPLE NO.		CLASSIFICATION	NAT W%	LL	PL	PI
DA5-15GS						

GRADATION CURVES

Intracoastal Waterway
Dade County, Florida
E&A Project No. 00-1451

ELLIS & ASSOCIATES, INC.



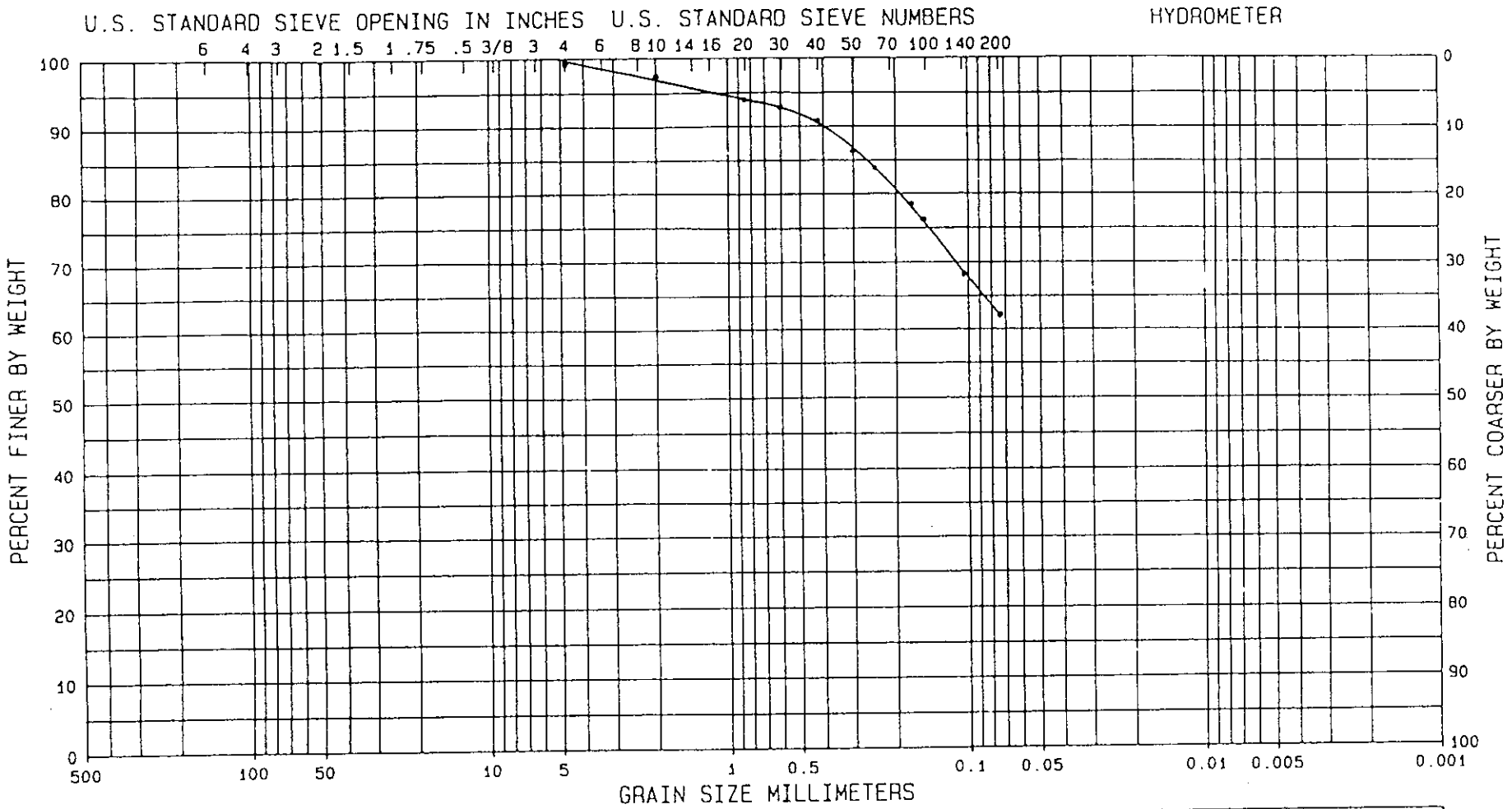
COBBLES	GRAVEL		SAND			SILT OR CLAY
	COARSE	FINE	COARSE	MEDIUM	FINE	

SAMPLE NO.		CLASSIFICATION	NAT W%	LL	PL	PI
DA5-16GS						

GRADATION CURVES

Intracoastal Waterway
Dade County, Florida
E&A Project No. 00-1451

ELLIS & ASSOCIATES, INC.



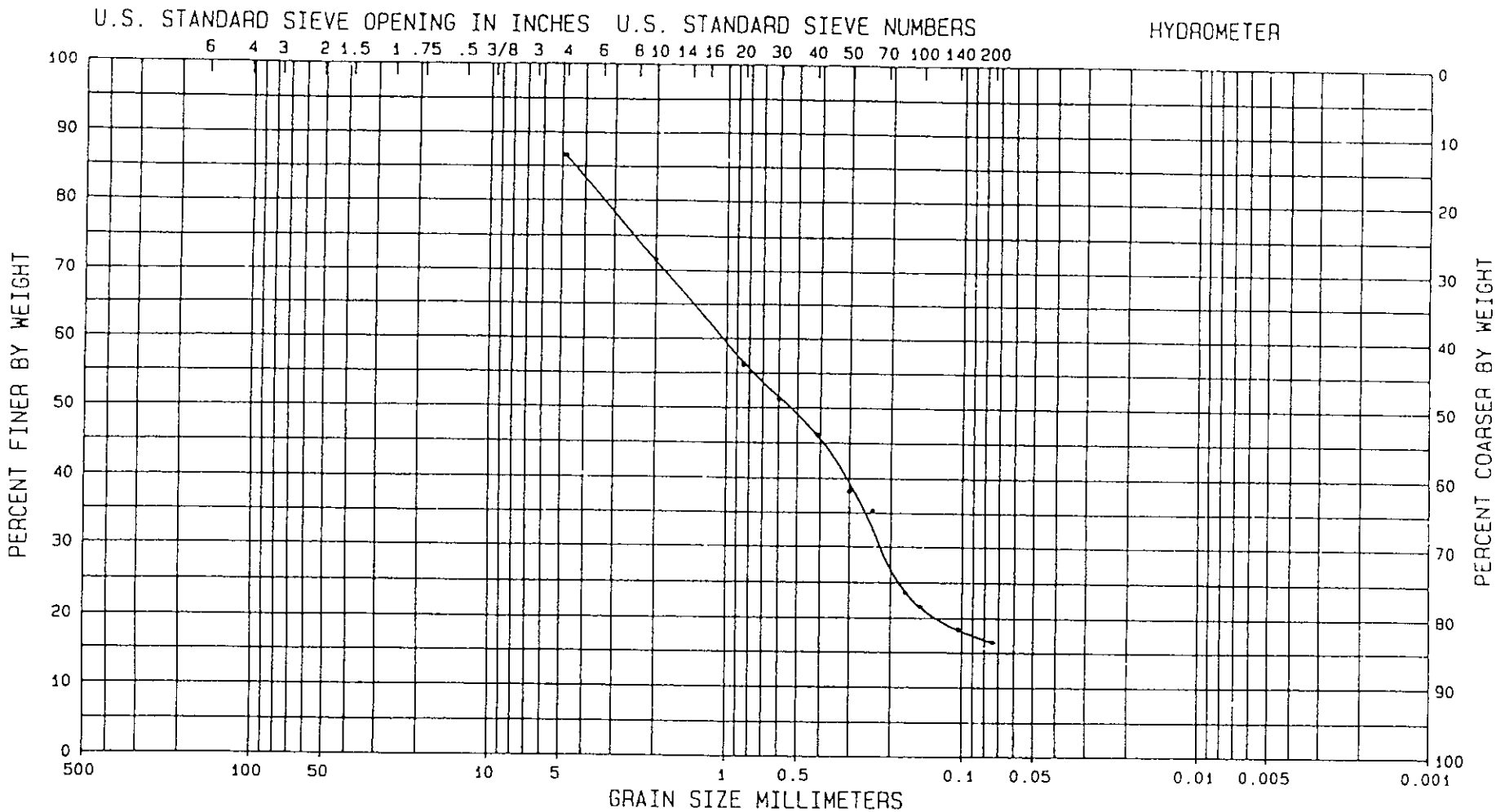
COBBLES	GRAVEL		SAND			SILT OR CLAY
	COARSE	FINE	COARSE	MEDIUM	FINE	

SAMPLE NO.		CLASSIFICATION	NAT W%	LL	PL	PI
DA5-17GS						

GRADATION CURVES

Intracoastal Waterway
Dade County, Florida
E&A Project No. 00-1451

ELLIS & ASSOCIATES, INC.



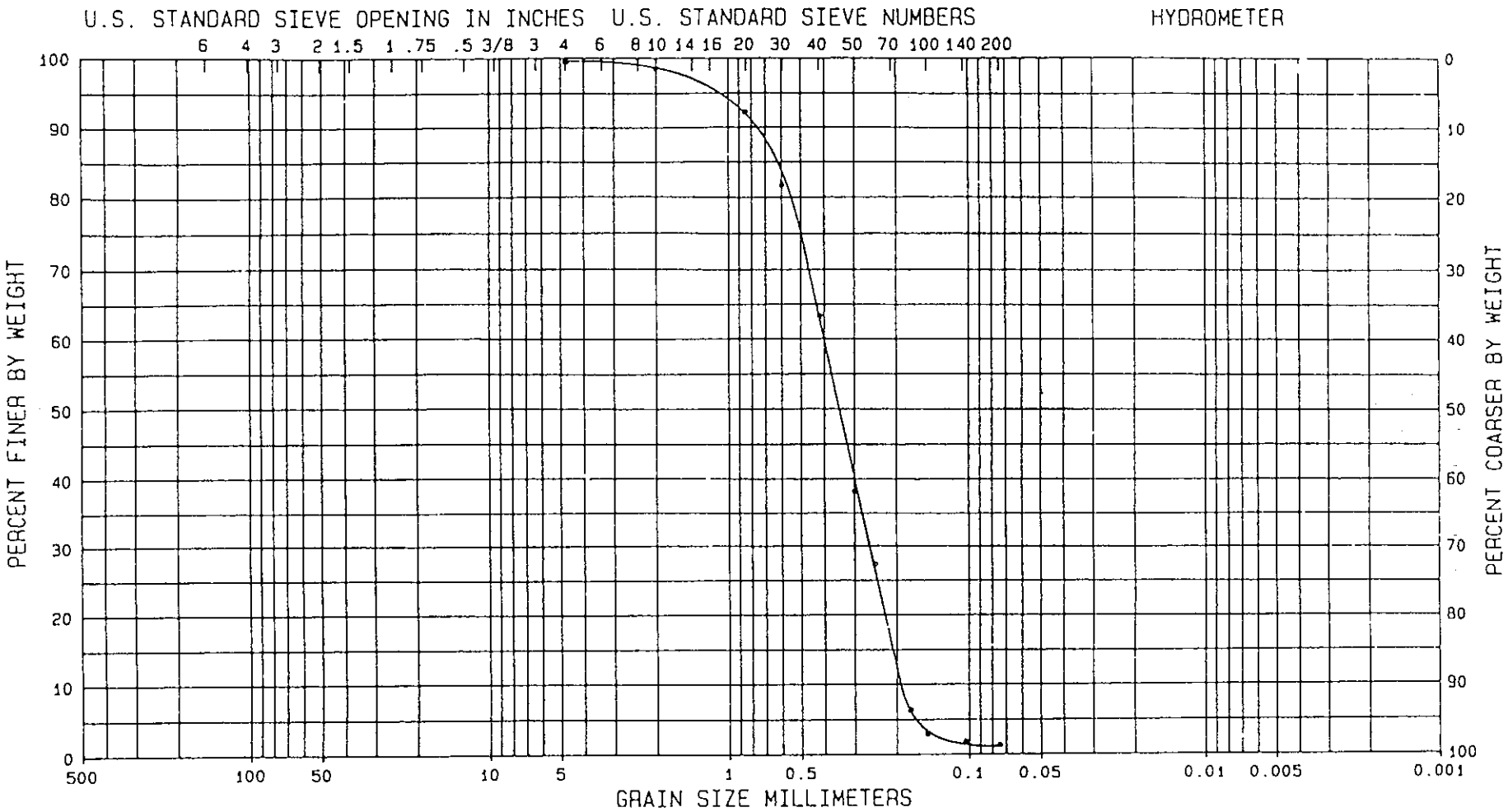
COBBLES	GRAVEL		SAND			SILT OR CLAY
	COARSE	FINE	COARSE	MEDIUM	FINE	

SAMPLE NO.		CLASSIFICATION	NAT W%	LL	PL	PI
DA6-18GS						

GRADATION CURVES

Intracoastal Waterway
Dade County, Florida
E&A Project No. 00-1451

ELLIS & ASSOCIATES, INC.



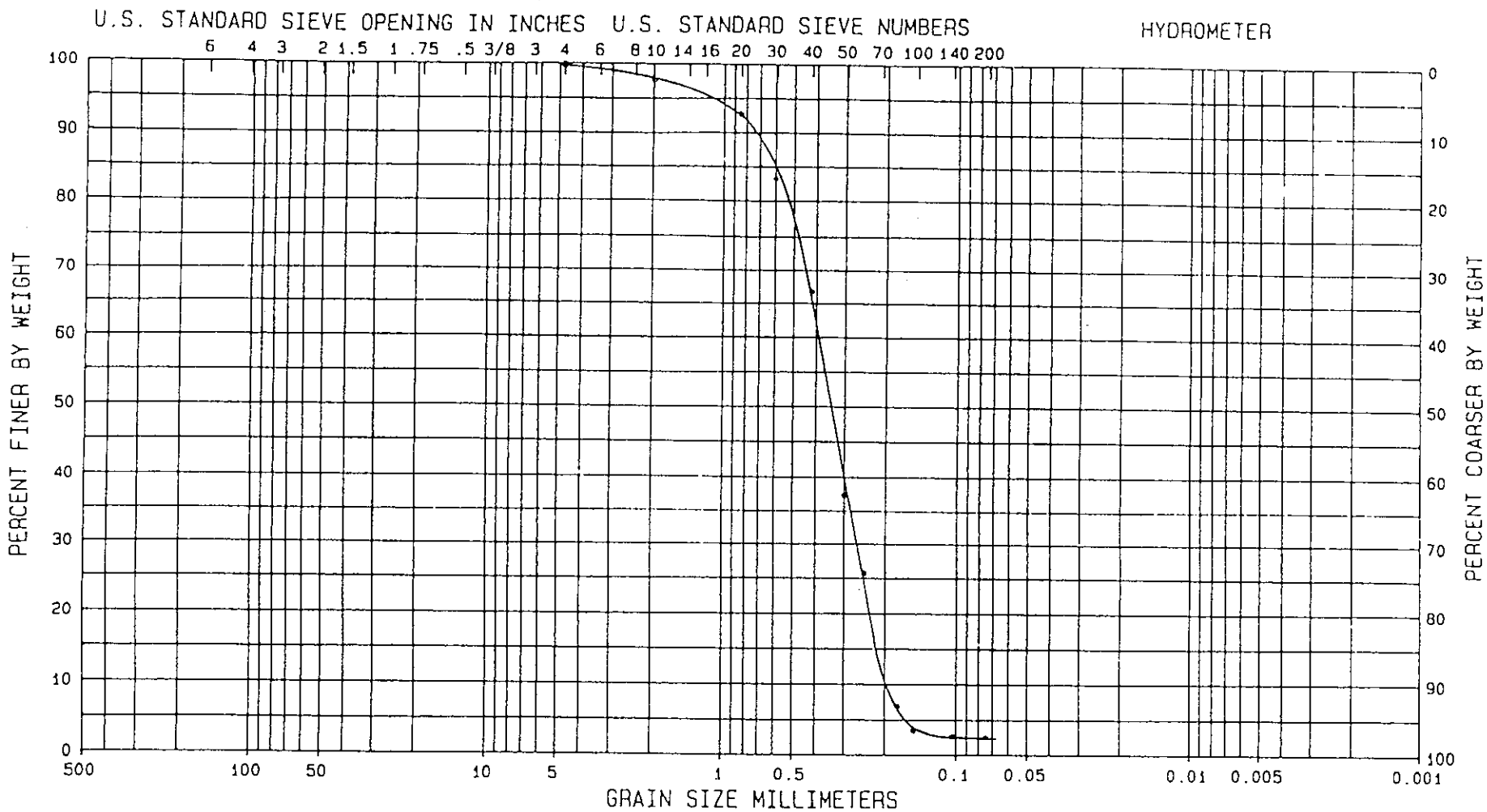
COBBLES	GRAVEL		SAND			SILT OR CLAY
	COARSE	FINE	COARSE	MEDIUM	FINE	

SAMPLE NO.		CLASSIFICATION	NAT w%	LL	PL	PI
DA6-19GS						

GRADATION CURVES

Intracoastal Waterway
Dade County, Florida
E&A Project No. 00-1451

ELLIS & ASSOCIATES, INC.



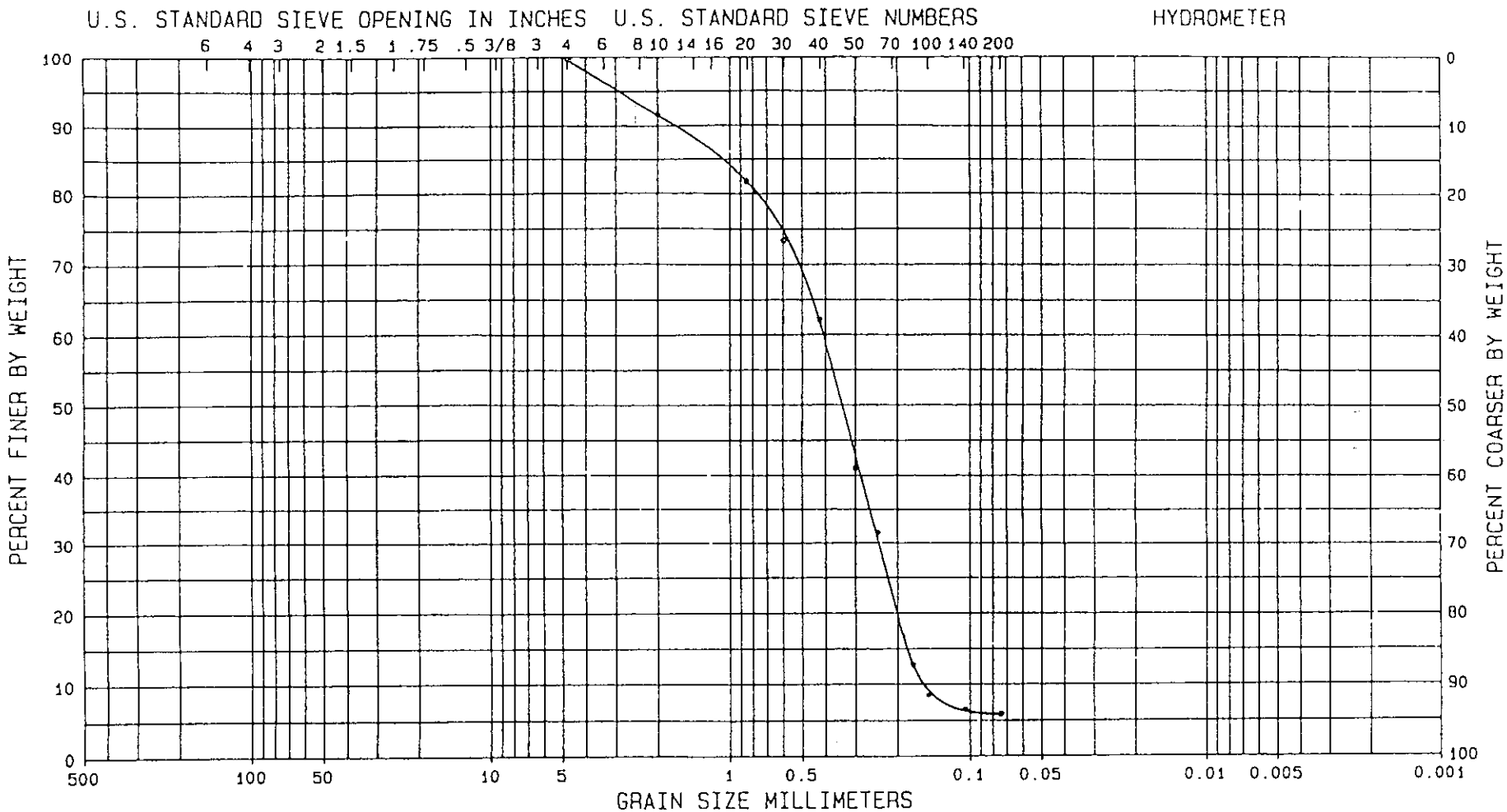
COBBLES	GRAVEL		SAND			SILT OR CLAY
	COARSE	FINE	COARSE	MEDIUM	FINE	

SAMPLE NO.		CLASSIFICATION	NAT W%	LL	PL	PI
DA6-20GS						

GRADATION CURVES

Intracoastal Waterway
Dade County, Florida
E&A Project No. 00-1451

ELLIS & ASSOCIATES, INC.



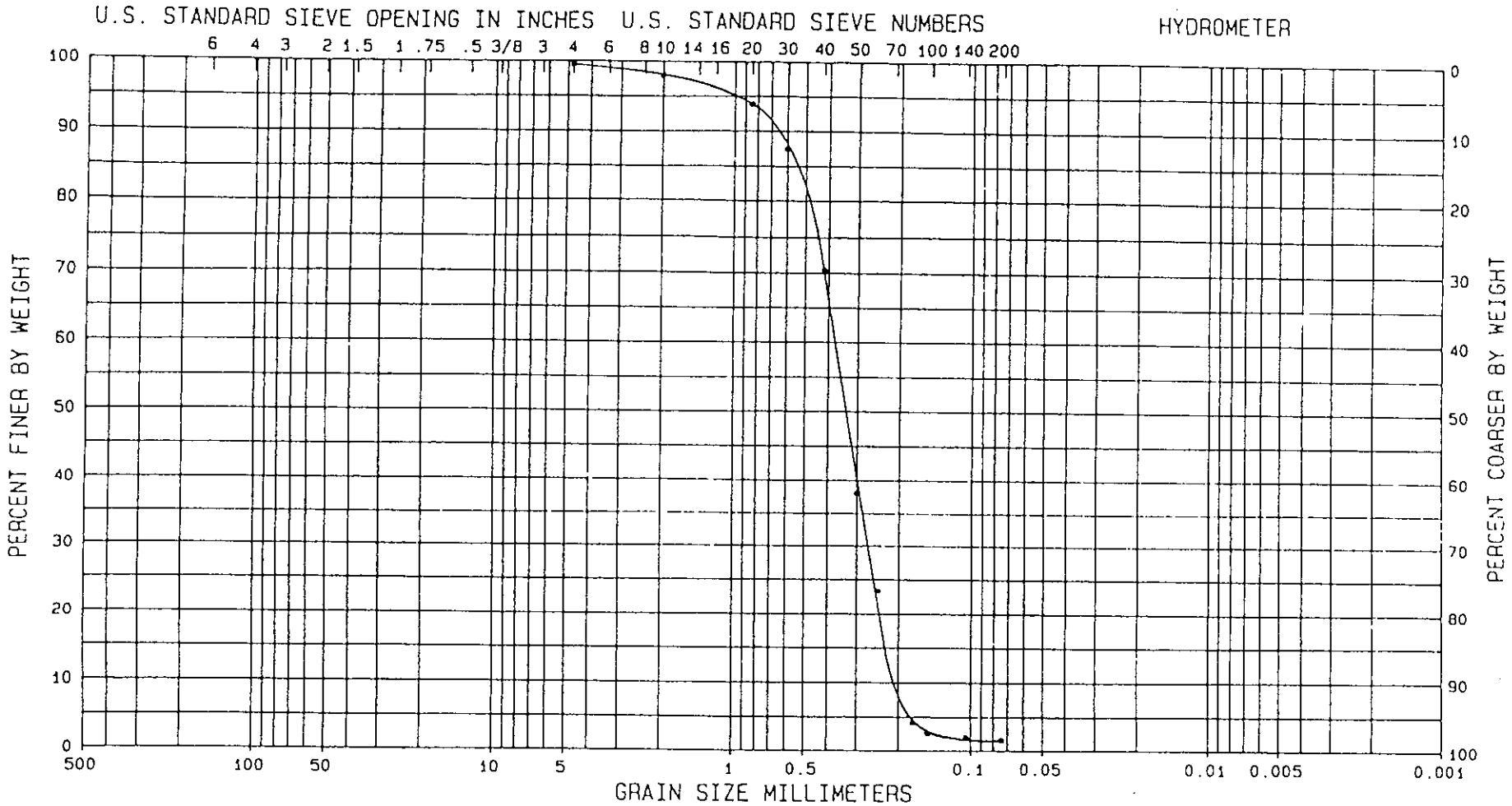
COBBLES	GRAVEL		SAND			SILT OR CLAY
	COARSE	FINE	COARSE	MEDIUM	FINE	

SAMPLE NO.		CLASSIFICATION	NAT W%	LL	PL	PI
DA6-21GS						

GRADATION CURVES

Intracoastal Waterway
Dade County, Florida
E&A Project No. 00-1451

ELLIS & ASSOCIATES, INC.



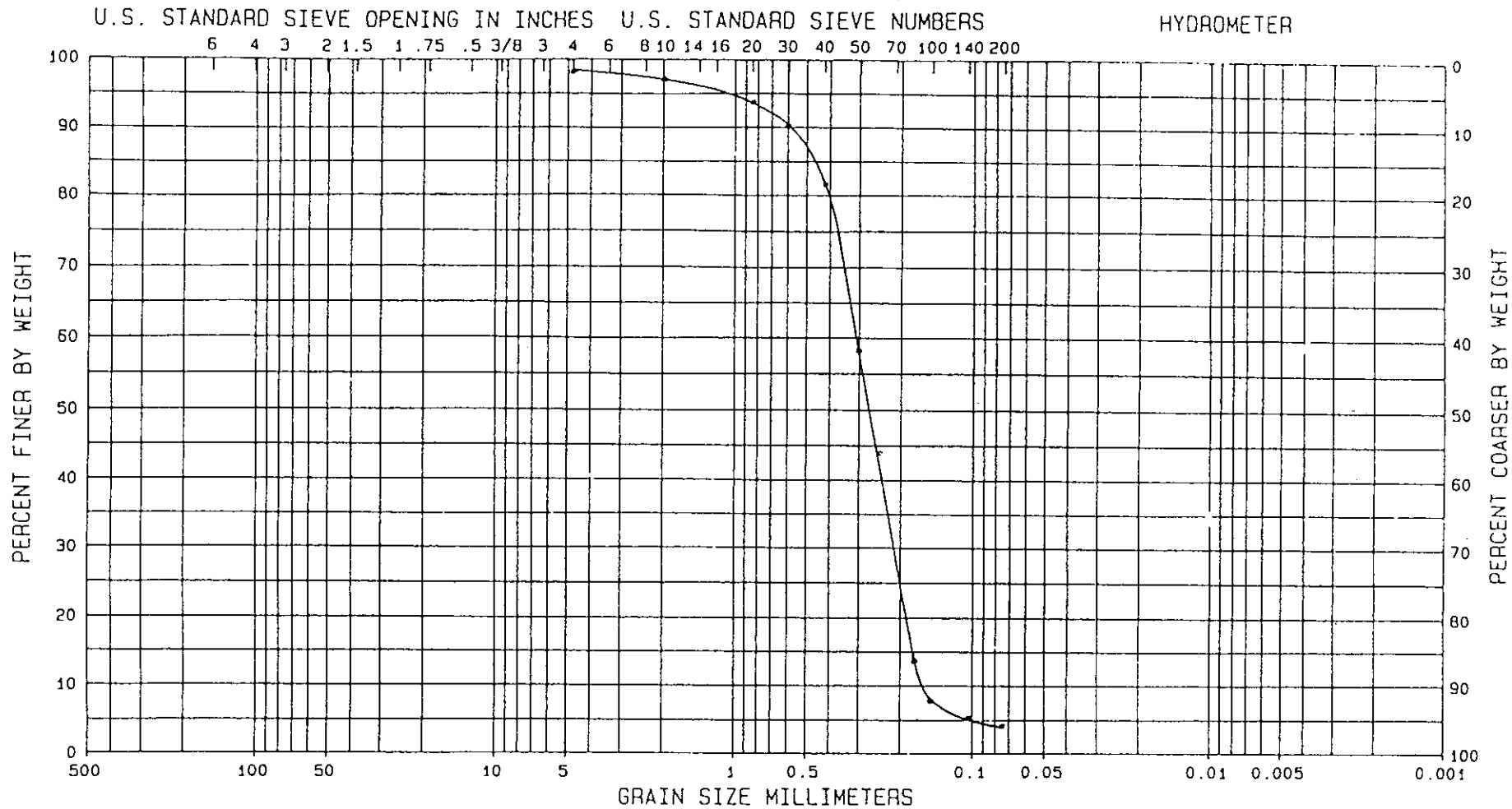
COBBLES	GRAVEL		SAND			SILT OR CLAY
	COARSE	FINE	COARSE	MEDIUM	FINE	

SAMPLE NO.		CLASSIFICATION	NAT W%	LL	PL	PI
DA6-22GS						

GRADATION CURVES

Intracoastal Waterway
Dade County, Florida
E&A Project No. 00-1451

ELLIS & ASSOCIATES, INC.



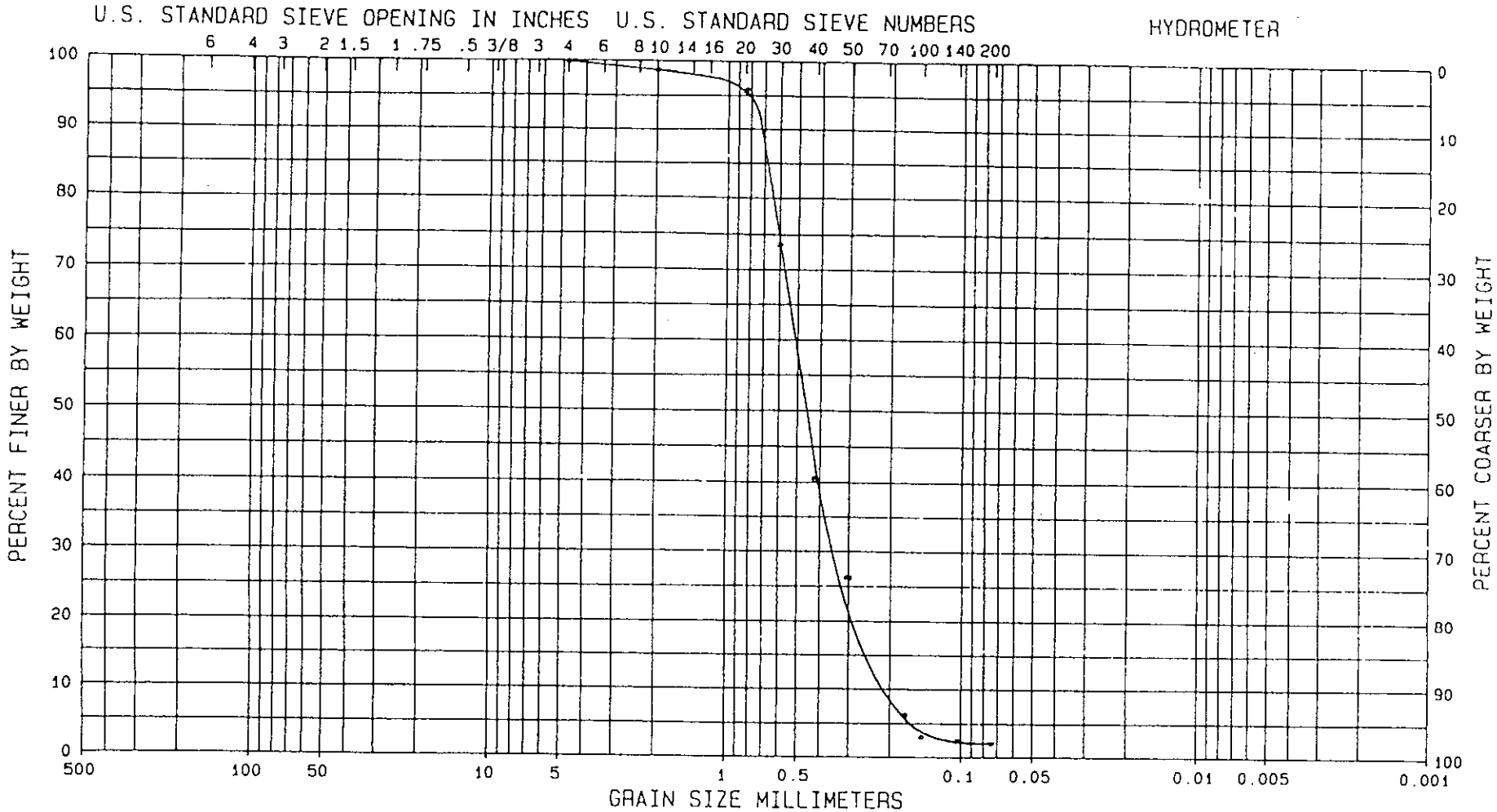
COBBLES	GRAVEL		SAND			SILT OR CLAY
	COARSE	FINE	COARSE	MEDIUM	FINE	

SAMPLE NO.		CLASSIFICATION	NAT w%	LL	PL	PI
DA6-23GS						

GRADATION CURVES

Intracoastal Waterway
Dade County, Florida
E&A Project No. 00-1451

ELLIS & ASSOCIATES, INC.



COBBLES	GRAVEL		SAND			SILT OR CLAY
	COARSE	FINE	COARSE	MEDIUM	FINE	

SAMPLE NO.		CLASSIFICATION	NAT W%	LL	PL	PI
DA6-24GS						

GRADATION CURVES

Intracoastal Waterway
Dade County, Florida
E&A Project No. 00-1451

APPENDIX F

Technical Advisory Committee and Interested Party Mailing Lists

September 24, 1999

TECHNICAL ADVISORY COMMITTEE (TAC)
Long Range Dredge Material Management Plan for the Atlantic Intracoastal Waterway in Florida
Broward and Miami-Dade Counties

Phil Coram, P.E., Chief
Bureau of Submerged Lands & Env. Resources
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Mayor
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Mayor
Florida City
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Florida City, FL 33030

Mayor
Town of Golden Beach
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Mayor
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Mayor
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Mayor
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Mayor
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Mayor
City of Islandia
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Mayor
City of Miami Springs
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Mayor
City of North Bay Village
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City of North Miami Beach
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Mayor
City of North Miami
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Mayor
City of South Miami
6130 Sunset Drive
South Miami, FL 33143

Mayor
Town of Surfside
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Surfside, FL 33154

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Superintendent
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Craig K. Grossenbacher, Chief
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Ruth Ellis Meyers
Shoreline Development Review Coordinator
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NOAA
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Miami, FL 33149

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Regional Director
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West Palm Beach, FL 33412

Terrence (Rock) Salt
Executive Director
South Florida Ecosystem Restoration Task Force
University Park Campus, OE Bldg., #148
Miami, FL 33199

No. 5505 Engineer's Computation Pad

Name	Tel #	
Bill McFetridge	731-7040	Taylor Eng.
Ken Craig	"	"
BRADD SCHWICHTENBERG	899-5180	COE - Proj. Mgt.
JIM McADAMS	90232 2117	PD-EA
BRIAN BRODEHL	3600	CO-OM
PAUL STODOLA	232-3271	PD-EA
Grady CAULK	232-1786	PD-EA
AARON C Kelly	232-2531	EN-DL
Joe Wagner		Taylor Eng.
DAVID ROACH	561-627-3386	FIND
Bruce Taylor	904-731-7040	Taylor Eng.

TAC Mtg @ Jax - CoE (Pavilion Ln 4th floor)