

TOWN OF LONGBOAT KEY
FEASIBILITY STUDY OF CANAL DREDGING
PHASE 2

Prepared For:

Town of Longboat Key

November 1998

COASTAL PLANNING & ENGINEERING, INC



Town of Longboat Key
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Prepared By:
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Feasibility Study of Canal Dredging
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A. Introduction

This report on canal dredging in Longboat Key is a continuation of the Phase 1 feasibility study completed by Coastal Planning & Engineering, Inc. in 1995. The focus of this report is to provide additional details regarding the feasibility of dredging the canals and disposing of the dredge spoil. The canals that serve the Jungle Queen, Tarawitt, and St. Judes' neighborhood are reanalyzed to determine if improvements to these canals can be made that will improve the level of service. Cost estimates and recommendations for the entire project are updated based on the new information.

B. Bathymetric Verification and Boat Access

Canals connected to tidal water bodies can be subject to shoaling at the mouth of the canal as a result of bay driven waves transporting sand into the canal and fine sediments settling out in the calmer waters of the canals. In order to determine if shoaling has occurred since the 1995 CPE bathymetric survey, bathymetric data was collected along the centerline of the entrance of each canal in July 1998. This data is shown in the canal survey maps which are attached as a separate appendix to this report.

A comparison was made between the 1995 data and the 1998 data to determine the degree of shoaling that has occurred in the canals. Table 1 identifies those canals which have shoaled at the entrance and the magnitude of the shoaling. If the vertical change was typically less than 0.3 feet (fathometer survey accuracy), the change was assumed to be zero (Table 1). In the north Longboat Key canals (Canals 1 through 32), no shoaling was apparent. Canal 16 experienced a 5 foot decrease in depth as a result of a dredging project conducted by a private owner. Thirteen canals in Country Club Shores showed evidence of shoaling up to 1.0 feet. Since the two centerline surveys were performed in non-identical locations, the apparent shoaling may be due to a spatially varying bathymetry. While shoaling of the entrances has apparently occurred in some of the canals, the rate of shoaling appears low, is limited to within 100 feet of the entrance, and will not significantly increase the canal dredge volumes.

The bathymetric survey also included the surveying of the access from each canal to deepwater within Sarasota Bay. For the purposes of this report, the access channels, by definition, begin at the east end of the canals, even with the adjacent bulkheads. These accesses generally follow old dredge channels or former dredge holes used during the dredge and fill development period of Longboat Key. CPE surveyors followed what was perceived to be routes of navigable water. Nevertheless, some deepwater areas may not have been surveyed. In some areas, additional surveying is required to determine the extent of the shoal or locate adjacent deeper waters. While many of the canals have a navigable access (greater than -5.4 feet NGVD) to deepwater within Sarasota Bay, most of the canals require some access dredging to provide a continuous -5.4 foot NGVD

**TABLE 1
BATHYMETRIC CHANGE, ACCESS RESTRICTIONS, AND DREDGE VOLUMES
IN TOWN OF LONGBOAT KEY CANALS**

CANAL NO.	1995-1998 ENTRANCE DEPTH CHANGE (FFET)	LIMITING BAY ACCESS FT NGVD	DREDGE WIDTH	EST. CANAL DREDGE VOLUME CY	EST. ACCESS DREDGE VOLUME CY	ESTIMATED NO. OF ADJACENT PROPERTY OWNERS(1)	BAY ACCESS AND OTHER NOTES
1	0.0	-2.1	20	978	306	40	
2	0.0	-2.2	20	2347	3300	11	Canal 2 north access restricted
3	0.0	-2.2	20	326	0	4	Canal 2 north access restricted
4	0.0	-2.2	20	733	0	23	Canal 2 north access restricted
5	0.0	-2.2	20	1304	0	27	Canal 2 north access restricted
6	0.0	-1.9	20	2200	1222	15	restriction between canals 5 & 6
7	0.0	-2.9	20	65	727	49	restriction between canals 7 & 8
8	0.0	-4.9	20	269	249	43	restriction east of canal 8
9	0.0	-4.1	20	61	342	37	restriction between canals 8 & 9
10	0.0	-2.5	20	1467	880	8	restriction between canals 9 & 10
11	0.0	-3.4	20	0	244	16	restriction adjacent to IWW at canal 11
12	0.0	-3.4	20	570	15	31	restriction adjacent to IWW at canal 11(2)
13	0.0	-3.4	20	77	215	23	restriction adjacent to IWW at canal 11(2)
14	0.0	-3.4	20	0	226	29	restriction adjacent to IWW at canal 11(2)
15 N	0.0	-3.4	20	314	0	21	restriction adjacent to IWW at canal 11
15 S	0.0	-3.4	20	424	0	25	restriction adjacent to IWW at canal 11
16	-5.0	-3.8	0	0	220	8	triangular channel, box access
17	0.0	-5.7	11.25	2498	61	36	triangular channel, box access
18	0.0	-5.5	6.5	568	0	33	triangular channel, box access
19	0.0	-6.0	10.5	1540	24	26	triangular channel, box access
20	0.0	-2.9	20	627	2139	2	no boat use
21	0.0	-2.4	20	0	5500	3	extensive access dredging at canal 21
22	0.0	-2.3	20	61	5258	3	extensive access dredging
23	0.0	-2.3	20	183	244	2	access between canals 22 and 23
24	0.0	-2.3	20	326	257	1	access between canals 22 and 23
25	0.0	-4.1	20	306	183	1	restriction by canal 25 & 27
26	0.0	-4.1	20	0	318	1	restriction by canal 27
27	0.0	-4.1	20	367	672	2	restriction by canal 27 & 28
28	0.0	-4.5	20	244	550	2	restriction by canal 28
29	0.0	-4.5	20	892	0	20	
30	0.0	-4.8	20	636	92	22	restriction by canal 30
31	0.0	-6.5	20	0	0	0	no dredging required
32	0.0	-6.5	20	1650	0	44	
33	0.0	-6.1	40	0	0	0	no dredging required
34	0.0	-4.2	30	0	171	22	only access requires dredging
35	0.7	-4.8	30	18	183	20	
36	0.7	-4.3	30	86	244	20	
37	0.5	-5.0	30	0	59	22	only access requires dredging
38	0.3	-2.3	30	15	554	22	
39	0.0	-5.4	30	238	91	22	
40	0.9	-5.3	30	689	44	23	
41	0.8	-5.6	30	581	0	27	
42	0.0	-4.3	30	348	81	29	
43	0.0	-5.4	40	372	0	10	
44	0.0	-5.8	40	456	0	16	
45	0.3	-5.2	40	161	0	16	
46	0.4	-4.4	40	244	102	16	
47	0.2	-4.9	40	381	31	18	
48	0.2	-6.0	40	939	43	20	
49	0.4	-4.9	40	1043	51	17	
50	1.0	-4.7	40	469	41	15	
51	0.5	-4.3	40	432	37	12	
52	0.0	-5.8	35	0	0	0	no dredging required
53	0.0	-5.0	30	0	13	1	

TOTALS 28000 25000 956

NOTES:

1. Includes the effect of bay access dredging. Excludes bayfront owners that can utilize bay access. A condominium is counted as one property owner.
2. Possible restriction between canals 12 and 14. Additional surveying is recommended.
3. Blocks of canals sharing a common bay access are separated by lines within the table.

channel. Limiting access depths for each canal are provided in Table 1. The additional bathymetric data collected is included in the survey maps.

C. Survey Map Enhancement

1. Town Atlas Overlay

The initial survey of the Town's canals (CPE, 1995) was plotted with a shoreline digitized from the USGS quadrangle maps. While this met the needs of the survey, it made determining which properties and how many properties were to be affected by the dredging project difficult. To assist the Town in its study of the feasibility of the canal dredging, the digitized Town Atlas was overlaid on top of the survey. It was necessary to scale and adjust the Town's Auto CAD files in order to present the Atlas data. This data is shown in the attached survey maps.

The Town's atlas was utilized to estimate the number of property owners that would benefit from the dredging of the canals and the bay accesses. With the additional bay access shoals, the total number of properties benefiting from a dredging project is approximately 956. The number of benefitting properties for each canal is shown in Table 1. In cases where a common bay access requires dredging, the number of benefitting properties includes all properties in the associated canals.

2. Boat Usage Data

The boat usage study by Antonini and Box (1996) provided a detailed investigation of boat sizes observed in the Longboat Key canals. This data was reviewed and the maximum draft of powerboats and sailboats, observed for each canal or group of canals, was added to the survey maps and Figure 1A & B. Antonini and Box grouped some of the Town's canals since they had a similar access to deepwater in Sarasota Bay. Therefore, boat draft data is not available for each canal. Nevertheless, most of the data is uniform from canal to canal so sufficient data exists for evaluating required canal depths. The implications of this data is discussed in Section D.

3. Stormwater Outfalls

In the phase 1 report, the three primary causes of the canal shoaling were identified as stormwater runoff, leaking bulkheads, and transport from the Sarasota Bay into the canals. The stormwater outfalls for the Country Club Shores subdivision were added to the survey maps so that any relationship between stormwater outflows and canal shoaling could be determined. It appears some of the canals in Country Club Shores have shoaled due to stormwater runoff, but it is not the only cause of the shoaling and some canals have not shoaled at all in the vicinity of the outfalls. Because of the lack of available data, only the Country Club Shores stormwater outfall locations were placed on the

maps. Other stormwater outfalls within the Town may be impacting the canal system.

D. Canal and Access Channel Depth Requirements

Antonini and Box (1996) documented maximum boat drafts for various types of boats in the Longboat Key canal system. For the canals in this study the maximum draft of powerboats and sailboats is shown in Figure 1A & B. For the majority of the canals, the maximum draft of power boats and sailboats is 3 and 5 feet, respectively.

There are several adjustment factors that should be included in the evaluation of a design depth for a channel. As boats proceed along a channel, they are subject to waves, boat pitch, and squat, the lowering of the boat due to its velocity. Most boat owners also prefer to have some "safety factor" below their keel or propeller. For this discussion, we considered all these factors, collectively, as underkeel clearance.

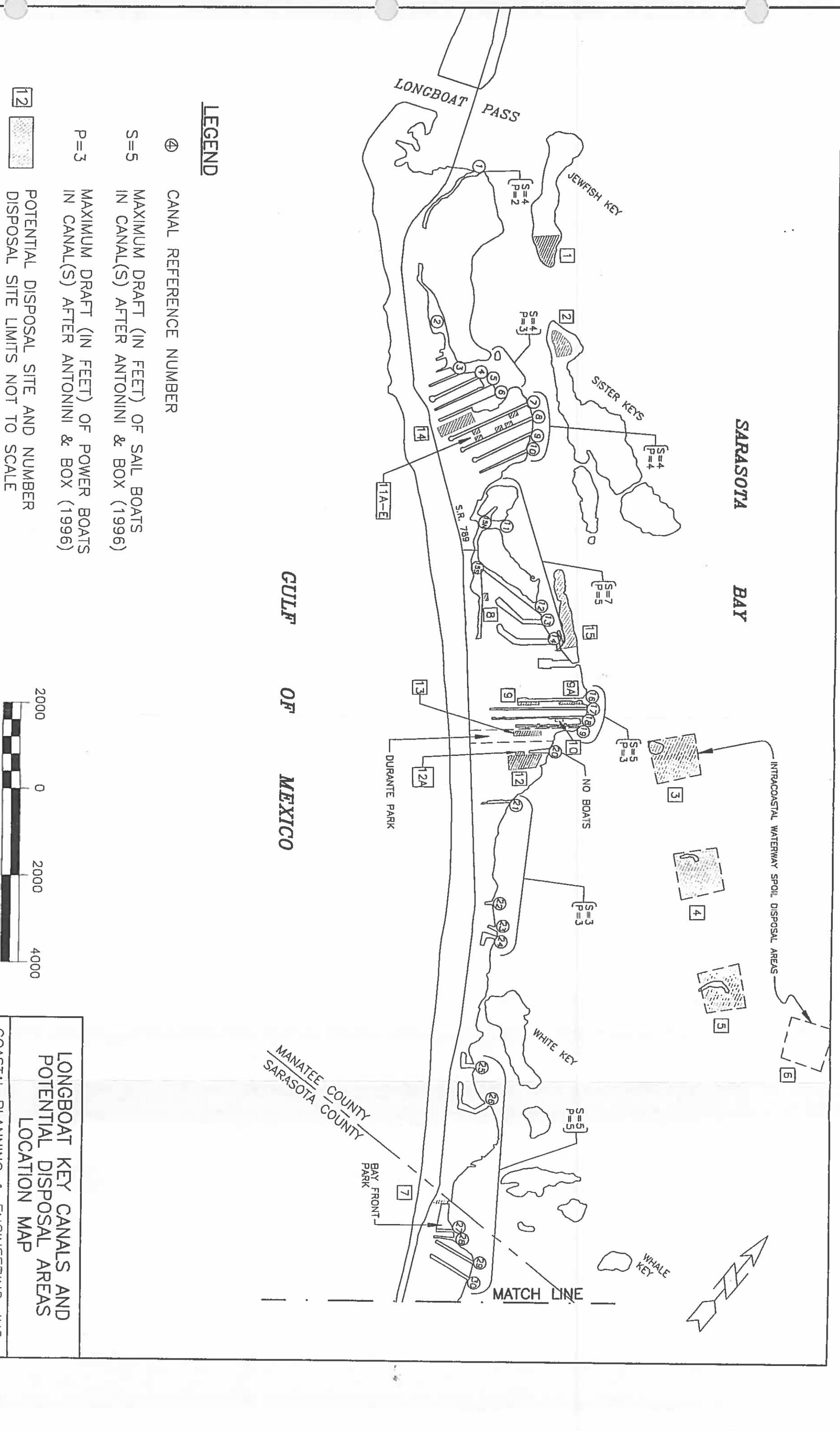
The Phase 1 feasibility study recommended a -5.4 feet NGVD design depth (-5 ft. MLW) because it was the maximum depth allowable under FDEP's permit exemption and it appeared to meet the needs of the boats observed in the canals (CPE, 1995). An estimate of the underkeel clearance at high and low tides for each type of boat identified by Antonini and Box (1996) is presented in Table 2.

**Table 2
Design Depth Evaluation**

Estimate of Total Underkeel Clearance¹		
Boat Type	High Tide 1.1 ft. NGVD	Low Tide -.4 ft. NGVD
Power Boats (Draft = 3ft.)	3.5 ft	1.5 ft.
Sailboats (Draft = 5 ft.)	1.5 ft.	0 ft.

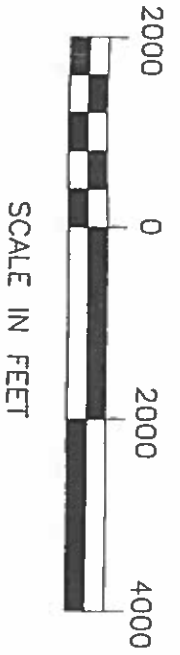
Note ¹ For a -5.4 feet NGVD channel.

Table 2 indicates that a -5.4 feet NGVD channel provides suitable underkeel clearance for power boats, at idle speed, for all tide conditions. At low tide sailboats may not have sufficient water depth to utilize the channel and a reduced level of service results. Nevertheless, we recommend a -5.4 feet NGVD design depth with the understanding that some sailboat owners may not have full use of the channel at all tidal stages with additional underkeel clearance.



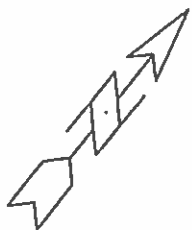
LEGEND

- ④ CANAL REFERENCE NUMBER
- S=5 MAXIMUM DRAFT (IN FEET) OF SAIL BOATS IN CANAL(S) AFTER ANTONINI & BOX (1996)
- P=3 MAXIMUM DRAFT (IN FEET) OF POWER BOATS IN CANAL(S) AFTER ANTONINI & BOX (1996)
- [12] POTENTIAL DISPOSAL SITE AND NUMBER
- [] POTENTIAL DISPOSAL SITE LIMITS NOT TO SCALE

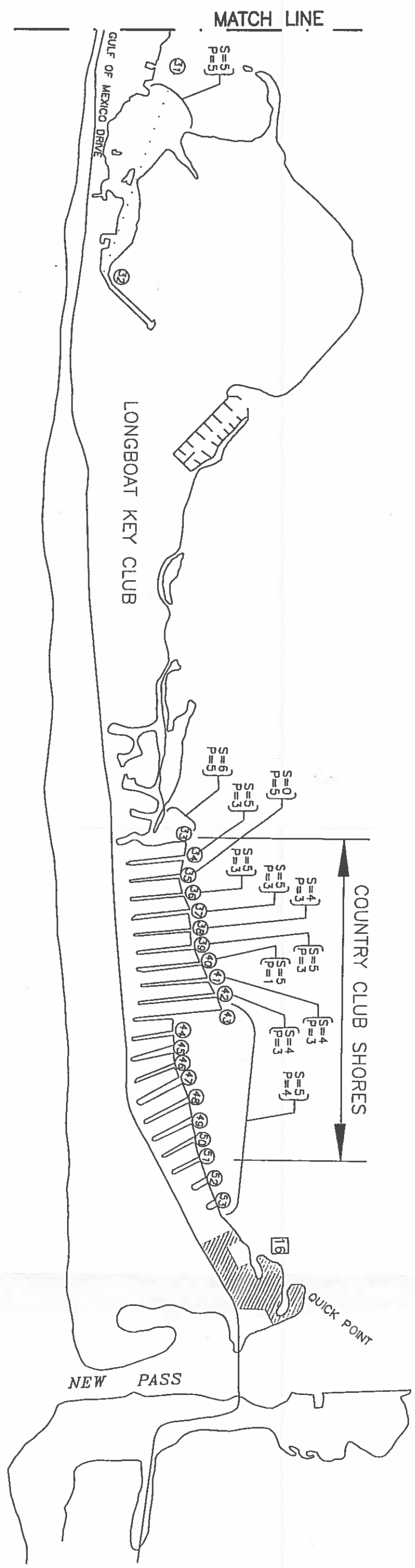


**LONGBOAT KEY CANALS AND
POTENTIAL DISPOSAL AREAS
LOCATION MAP**

COASTAL PLANNING & ENGINEERING, INC.
2481 NW BOCA RATON BLVD.
BOCA RATON, FL 33431



SARASOTA BAY



GULF OF MEXICO

LEGEND

- ④ CANAL REFERENCE NUMBER
- S=5 MAXIMUM DRAFT (IN FEET) OF SAIL BOATS IN CANAL(S) AFTER ANTONINI & BOX (1996)
- P=3 MAXIMUM DRAFT (IN FEET) OF POWER BOATS IN CANAL(S) AFTER ANTONINI & BOX (1996)
- ☐ POTENTIAL DISPOSAL SITE AND NUMBER
- ▨ POTENTIAL DISPOSAL SITE LIMITS NOT TO SCALE



SCALE IN FEET

LONGBOAT KEY CANALS AND
POTENTIAL DISPOSAL AREAS
LOCATION MAP

COASTAL PLANNING & ENGINEERING, INC.
2481 NW BOCA RATON BLVD.
BOCA RATON, FL 33431

FIGURE 1A

E. Canal Design Width

In the Phase 1 study, an analysis was presented which showed the relationship between the width of the canal between the bulkheads, the bulkhead free face, the depth of the channel, and the allowable width of the channel (Figure 2). The results of the analysis are recreated as Table 3. Table 3 has been enhanced to show representative combinations of canal width and bulkhead free face for selected Longboat Key canals. Based on this analysis we recommend the channel design widths shown in Table 4. Channel widths will be individually designed based on documented widths and bulkhead characteristics during final design.

Table 4
Recommended Channel Widths²

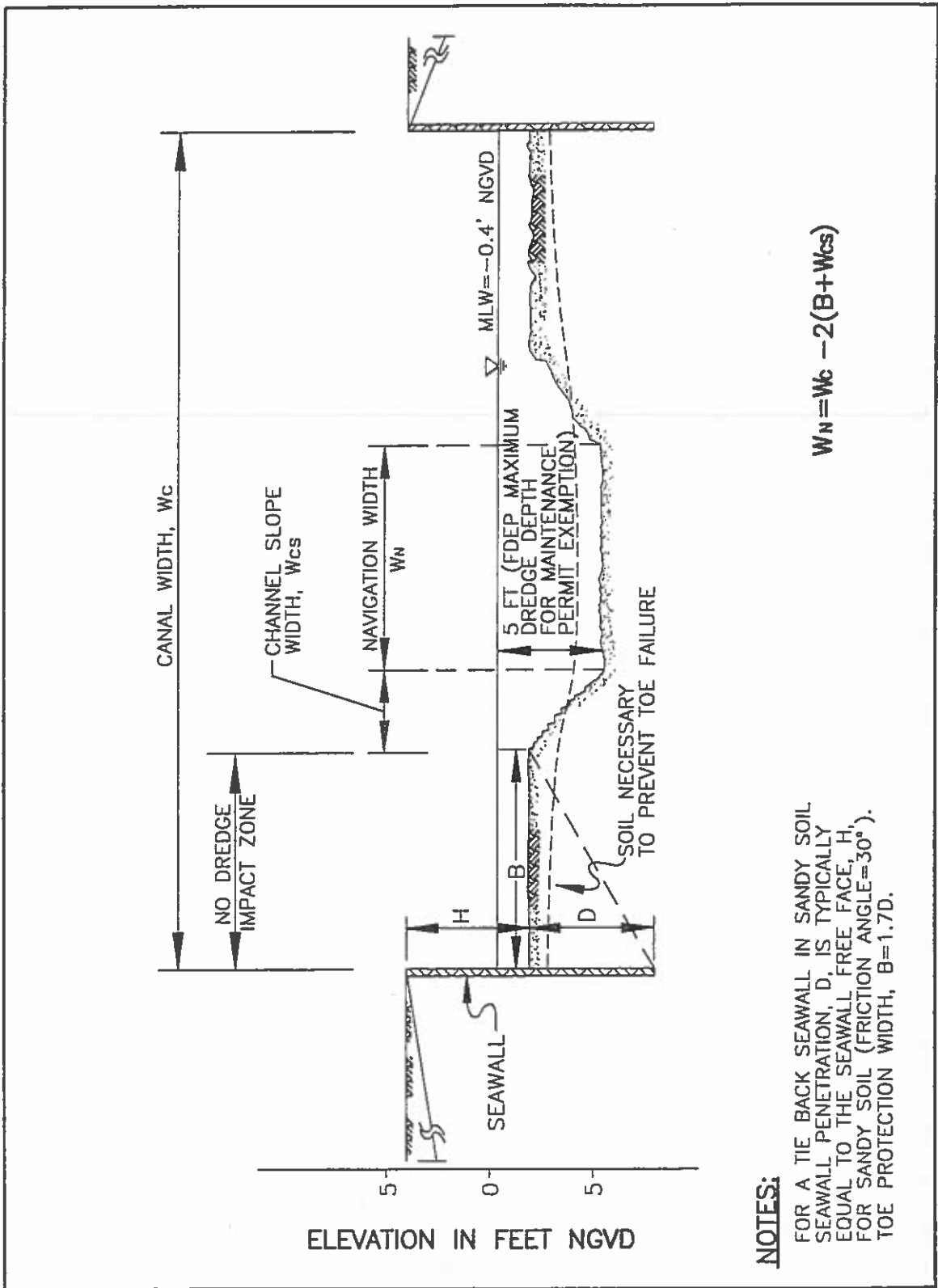
Location	Width (ft)
Canals 1-15, 20-32	20
Canals 16, 17, 18, 19	0 ¹
Canals 34-42	30
Canals 33, 43-51	40
Canal 52	35
Canal 53	30

¹ Feasible widths in Table 3 may lead to bulkhead failure and will not enhance navigation. Dredging less than a 10-foot width is not feasible.

² A width is assigned to each canal regardless of the need for canal dredging.

As indicated in the Phase 1 report, canals 16-19 (Jungle Queen, Tarawitt and St. Judes) are too narrow to dredge a flat bottom -5.4 foot NGVD channel, since bulkhead failure is likely. Alternatives for these canals are discussed in section G. Access channels bayward of the canals can be dredged to the same width or increased to allow for future shoaling. An additional 10 foot width is recommended for the access channels.

In the Phase 1 study, the minimum channel width was estimated to be 22.5 feet based on the width of a barge used for mechanical dredging. Additional contractor capabilities were investigated to determine if smaller equipment was available. If a hydraulic dredging operation is feasible, then minimum channel widths of ten feet are possible. Therefore, the selected design width is not restricted by construction equipment, and bulkhead stability and overall canal width will control the channel width.



LONGBOAT KEY CANALS
 TYPICAL CANAL AND
 SEAWALL CROSS SECTION






FIGURE 2

TABLE 3
 LONGBOAT KEY CANAL DREDGING
 ESTIMATE OF FEASIBLE CHANNEL WIDTHS

FREE FACE HEIGHT FEET	TOE SUPPORT WIDTH, B, FEET	WIDTH OF NAVIGATION CHANNEL (FEET), W _n												
		20	30	40	50	60	70	80	90	100				
1	2	5	15	25	35	45	55	65	75	85				
2	3	1	11	21	31	41	51	61	71	81				
3	5	0	8	18	28	38	48	58	68	78				
4	7	0	4	14	24	34	44	54	64	74				
5	9	0	1	11	21	31	41	51	61	71				
6	10	0	0	8	18	28	38	48	58	68				
7	12	0	0	4	14	24	34	44	54	64				
8	14	0	0	1	11	21	31	41	51	61				
9	15	0	0	0	7	17	27	37	47	57				
10	17	0	0	0	4	14	24	34	44	54				

CHANNEL SLOPE WIDTH (FEET), W_{cs}, = 6
 TOE SUPPORT WIDTH BASED ON COHESIONLESS SOIL, PHI = 30 DEGREES.

LEGEND :
 SELECTED CANAL WIDTH AND FREE FACE HEIGHT COMBINATIONS

-  COUNTRY CLUB SHORES CANALS, NO. 33-51
-  TARAWITT, JUNGLE QUEEN, ST JUDES CANALS, NO. 16-19
-  JESSMYTH DRIVE, CANAL 29
-  LANDS END TO GENERAL HARRIS, CANALS NO. 1-10
-  EMERALD HARBOR, CANALS NO. 12-15

The performance of the dredge channels was evaluated by reviewing the sediment characteristics. The Phase 1 report identified that the typical dredge material contains between 25 and 90 percent silt. If a canal is dredged to -5.4 feet NGVD (Figure 3) and the material contains significant silt, it is expected that as the banks are disturbed (by propeller wash, stormwater outfalls, etc.) that the silt will erode from the banks and deposit in the channel. This causes two problems; a loss of navigation depth and width, and a reduction in bulkhead toe support. While dredging the canals to -5.4 feet NGVD is feasible, a loss of channel depth should be expected with time.

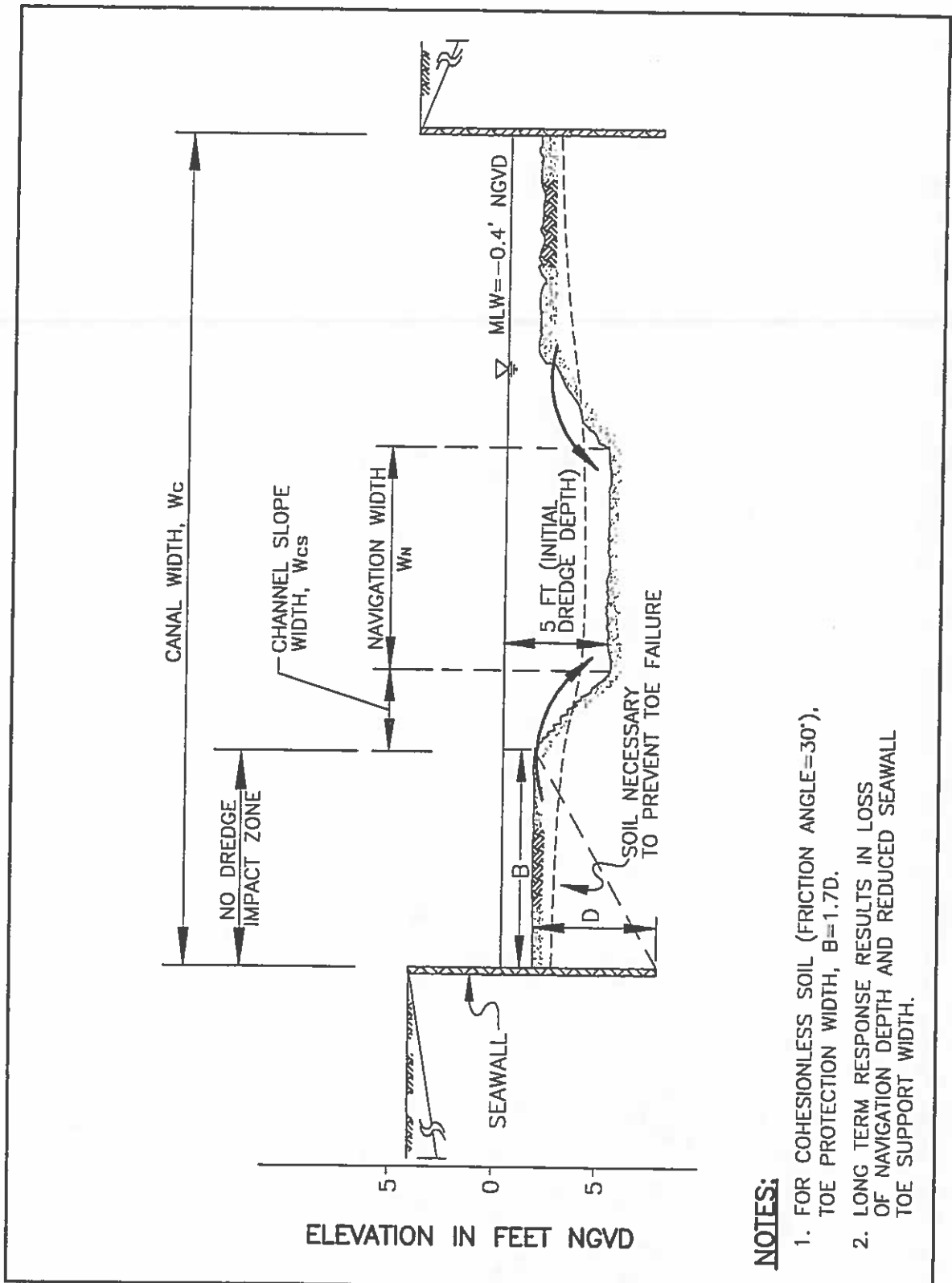
F. Dredge Volumes

Dredge volumes were estimated by determining the length of each shoaled section of each canal, the design channel width, and the depth of cut to create a -5.4 foot NGVD design depth. Dredge volumes were computed for both the canal and the bay access and the results are shown in Table 1. Total dredge volumes are approximately 29,000 c.y. of canal dredging and 25,000 c.y. of bay access dredging. The volumes include a 10 percent volume contingency and a 10 foot increase in width for the bay access channels. On a project wide basis, the total bay access dredging volume is of the same order of magnitude as the total canal dredging volume. On an individual canal basis, some canals require dredging with little access dredging (example, Canal 41), while other canals require no dredging and the access requires extensive dredging (example, Canal 22).

Table 1 shows the estimated bay access volumes for the canals in Longboat Key. In some cases, multiple canals share a common bay access. In those cases the bay access volume is associated with the most representative (or primary) canal. Bay access volumes for associated canals are the volumes required to connect the associated canals to the primary canal and the bay access. Adding the listed access volume to the canal volume does not always represent the volume of dredging to improve service of a particular canal. The access volume associated with a primary canal would have to be distributed (apportioned) to each associated canal.

G. Jungle Queen - Tarawitt - St. Judes Canals (16-19)

In section E, the canals that serve the residents along Jungle Queen Way, Tarawitt Drive, and St. Judes North and South, were identified as being too narrow to dredge a flat bottom channel without the likelihood of bulkhead failure. At the request of the Town, additional investigations were made to determine (1) if selected dredging would improve the level of service in the canals (2) if bulkhead replacement was feasible in order to dredge the canals to -5.4 feet and (3) if other improvements could be made. These alternative canal improvements are discussed below.



LONGBOAT KEY CANALS
LONG TERM CANAL RESPONSE
FOR SILTY SEDIMENTS

FIGURE 3

1. Limited Dredging

The bathymetry of the canals (16, 17, 18, and 19) was reviewed to determine if any limited dredging would improve the level of service in each canal. Approximately 70 feet west of the east end of the canal 17 is a shoal with a peak elevation of -2.5 feet NGVD. The shoal contains approximately 25 cubic yards of sediment above the -3.0 ft. NGVD contour. If this shoal were dredged to -3 feet NGVD, canal 17 would be navigable with elevations of -3 feet NGVD or deeper. Thus, the level of service would improve marginally. Since many sections of Canal 17 are deeper than -3 feet NGVD, dredging the shoal would probably not result in bulkhead failure; nevertheless, failure may still occur. There is insufficient data regarding the existing bulkheads to quantitatively analyze the likelihood of bulkhead failure.

Canal 16 is restricted by a shoal (220 cubic yards) in the bay access. This shoal could be dredged to -5.4 feet NGVD and improve the level of service to the variable depth canal. The selective dredging involves a small quantity of sand which would be relatively inexpensive to remove as part of the Town-wide dredging project.

The bathymetries of Canals 18 and 19 do not show any opportunities for selected dredging that would improve the level of service of these canals. No selective dredging for these canals is recommended.

2. Bulkhead Replacement

In order to provide a flat bottom -5.4 foot NGVD navigable channel in these canals (17-19), the entire bulkhead system would have to be replaced. The replacement bulkhead could be designed so that the entire width of the canal would be -5.4 feet NGVD thus providing both a deep channel and deep areas for boat moorings. A typical cross-section is shown in Figure 4.

An aluminum sheet pile bulkhead could be constructed to replace the existing bulkhead. The new bulkhead would be driven behind the existing bulkhead and the existing bulkhead removed. A review of the inspection photos indicates that the canal side setback for upland construction is small, so widening of these three narrow canals is not feasible.

Canals 16 and 18 contain mangroves along a portion of their length. These mangroves should be professionally trimmed to limit their encroachment into the canal. Removal of the mangroves is probably not permissible, so some sections of these canals would be left unbulkheaded.

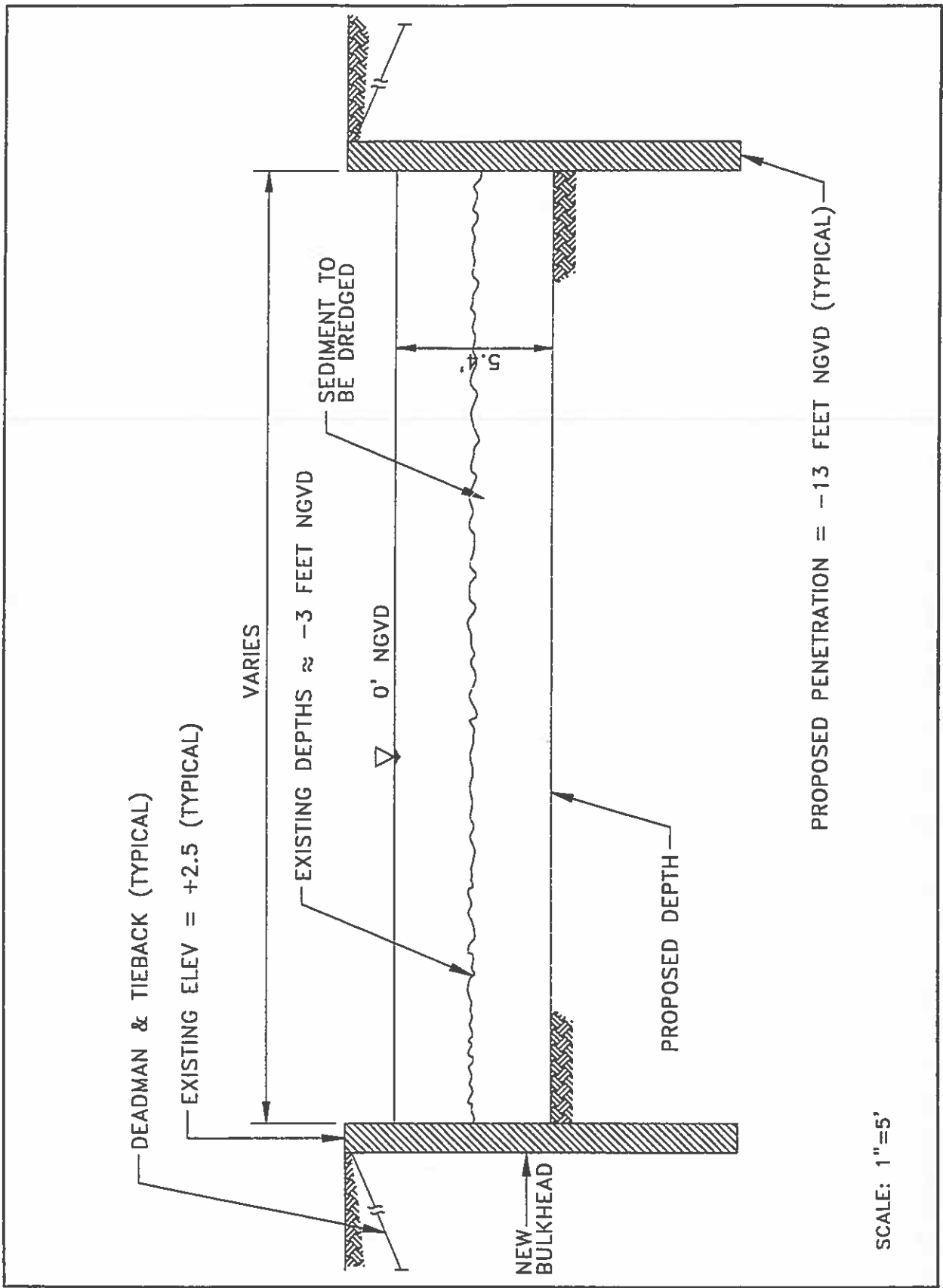


FIGURE 4
 BULKHEAD REPLACEMENT & DREDGE CROSS SECTION
 CANALS 17-19
 LONGBOAT KEY

In Canal 19 and in limited cases Canal 18, the existing bulkheads have been cut landward to form small boat dock areas. This could be replicated in the new bulkhead system.

Approximately 4550 linear feet, 3450 linear feet, and 3800 linear feet of new bulkhead would be required to accomplish the project in Canals 17, 18, and 19, respectively. Bulkheading and further dredging of canal 16 may not be warranted due to limited adjacent development. Dredging the entire canal width to -5.4 feet NGVD would require removal of 6200 cubic yards, 6200 cubic yards, and 5300 cubic yards of dredge material for Canals 17, 18, and 19, respectively. While the deeper canal and new bulkhead would generally enhance the value of the upland properties, one would not expect significantly larger boats to use these canals in the future because of the narrow widths of these three canals. Cost estimates for this bulkhead and dredging project are discussed in the cost estimate section (J) of this report.

3. Other Alternatives

In the previous sections we have recommended two solutions: selected dredging of canals 16 and 17 and dredging with complete bulkhead replacement. The latter option would likely be rejected by the individual property owner due to cost. The following alternatives should be considered by the local owners.

a. Bulkhead Stabilization and Waiver

The Town could dredge a triangular channel within the canals if the owners assume responsibility for their bulkheads and release the Town from liability for damages to the bulkheads and upland properties. Figure 5 shows an example of the cross section. The maximum depths for these channels would be -3.0 feet MLW for canals 16, and 18 and -4.5 feet MLW for canals 17 and 19. This cross section was developed using the same engineering analysis as the remainder of the Town's canals, but offers no measurable safety factor to the upland owners and can not be recommended as an engineered solution to the Town. A 100 percent waiver participation in this scenario would be required. Dredging costs would be included in the Town wide project.

b. Owner Sponsored Project

The Town could exclude the canals from the construction of the Town wide project and let the owners negotiate directly with the Town's selected contractor. The owners would assume the liability for bulkhead failure and could select their own desired

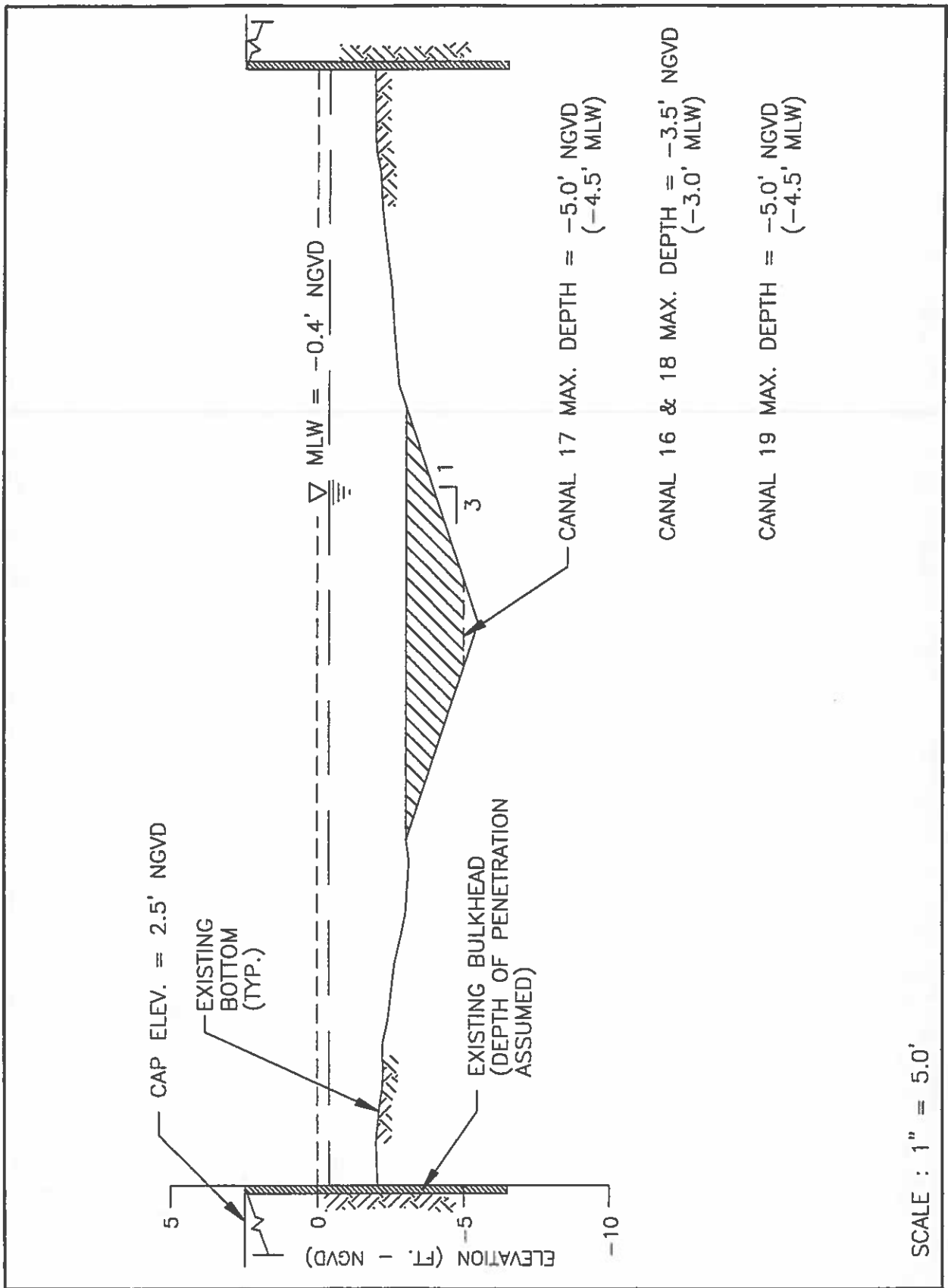


FIGURE 5

TYPICAL DREDGE CROSS-SECTION
FOR CANALS 16-19

channel depth and width. The Town would reimburse the owners for the dredging costs.

c. Owner Stabilized Bulkhead and 10 Foot Channel

The owners could stabilize their bulkheads or document an adequate bulkhead design to the Town such that the bulkheads would not fail when the Town dredges a 10 foot wide, -5 foot MLW channel. The cost of dredging would be included in the Town project. One hundred percent participation by the owners would be required.

H. Spoil Disposal Alternatives

A component to the overall success of the canal dredging project is the disposal of the dredged material. During the Phase 1 study (CPE, 1995) it was determined that upland disposal of the silty materials was required to qualify for a FDEP permit exemption. Any clean, sandy material could be pumped to Lighthouse Point or to the Gulf of Mexico beaches. This section evaluates in greater detail the potential for upland disposal within the Town and further discusses the likelihood of beach disposal of sandy sediments from the Country Club Shores development. The possibility of alternative disposal methodologies is also discussed.

1. Spoil Disposal

Seventeen sites were identified for possible use as disposal sites of the dredge spoil. The sites are schematically shown in Figure 1A and 1B. These sites include privately owned undeveloped lots, town-owned properties, as well as four Intracoastal Waterway spoil sites. The owners of the privately owned lots were not contacted, so any recommendation for their use is contingent upon owner approval.

As part of the evaluation process, each site was inspected by a CPE biologist to determine the type of existing vegetation, the presence of mangroves and seagrass on or adjacent to the site which may require mitigation if damaged, as well as determining the approximate size of the site. Photographs of each site were taken to document conditions. A field report on each site is included in Appendix B. All the sites are summarized in Table 5 and are discussed below.

a. Sites 1 and 2

Sites 1 and 2 are located on Jewfish and Sister Keys, respectively (Figure 1A). The sites offer potentially large volume storage and a remote distance from large developed

TABLE 5
TOWN OF LONGBOAT KEY CANAL DREDGING
POTENTIAL DREDGE SPOIL DISPOSAL SITE EVALUATION SUMMARY

SITE NO. OR STREET ADDRESS	OWNER-SHIP	SPOIL AREA	SPOIL VOLUME OR CY	SEAGRASS OR MANGROVES PRESENT	VEGETATION (REVEGETATION OR OTHER PROBLEMS)	RECOMMENDATION
1 S. end of Jewfish Key	Private	2.7	17000	Not continuous	Extensive Australian pines Native restoration possible.	Pursue owner approval
2 N. end of Sister Key	Town	1	6000	Mangrove fringe	Australian pines present Access to site may be difficult or require mitigation	Delete from consideration
3 IWWW spoil site	State	not est.	0	extensive seagrass	Probably unpermittable	Delete from consideration
4 IWWW spoil site	State	not est.	0	extensive seagrass	Probably unpermittable	Delete from consideration
5 IWWW spoil site	State	not est.	0	extensive seagrass	Probably unpermittable	Delete from consideration
6 IWWW spoil site	State	not est.	0	extensive seagrass	Probably unpermittable	Delete from consideration
7 Bayfront Park	Town	0.8	9000	None observed	No significant problems	Pursue. Consider excavation of clean fill prior to disposal.
4100 Gulf of Mexico Dr.						
8 Lot on Canal 15-S	Private	0	0	n.a.	House under construction	Delete from consideration
9 669-723 Jungle Queen Way	Private	0.5	2500	None observed	No significant problems	Pursue owner approval
9a 777-879 Jungle Queen Way	Private	1.3	6000	None observed	Some Australian pines at west end of site	Pursue owner approval
10 Lot on southside of Canal 18	Private	0	0	n.a.	could not locate site	Delete from consideration
11a 550 & 562 Norton Street	Private	0.4	1750	Mangroves along canal 8	Australian pine and Brazilian pepper on 1/2 of site	Pursue owner approval
11b 726 Norton Street	Private	0.15	800	None observed	No significant problems	Pursue owner approval Limited size may preclude use.
11c 761 Norton Street	Private	0.15	800	None observed	No significant problems	Pursue owner approval Limited size may preclude use.
11d 702 Norton Street	Private	0.15	800	None observed	No significant problems	Pursue owner approval Limited size may preclude use.
11e 549 Norton Street	Private	0.15	800	None observed	No significant problems	Pursue owner approval Limited size may preclude use.
12 South of Gulf Bay Road	Private	12.4	80000	None observed	Typ. upland vegetation present. No sig. problems.	Proposed park. Delete from consideration
12a 550 & 560 Gulf Bay Road	Private	0.6	2800	Mangroves present	Dense Brazilian pepper and scattered palms.	Pursue owner approval
13 Durante Park	Town	0.6	2500	Adjacent mangroves	No significant problems	Evaluate Town's plans for construction storage area. Pursue
5560 Gulf of Mexico Drive						
14 N. E. corner of Lyons Lane and Gulf of Mexico Drive	Town	1.8	11000	Sig. mangrove fringe	Dense Australian pines.	
15 Binnacle Point	Town & Private	8	3000	Dense mangroves	Potential mangrove impacts	Dredge spoil spraying not likely to be permitted.
16 Quick Point	Town	27.3	11000	Dense mangroves	Potential mangrove impacts	Dredge spoil spraying not likely to be permitted.
16 Quick Point	Town	0.5	2500	Town water tank facility		Dike, dewater, and truck spoil offsite.
17 Quick Point parking area	FDOT	0.8	4000	None	Vegetation island to be protected.	Dike, dewater, and truck spoil offsite.

areas. The distance from developed areas is important because the dredge spoil will be aromatic. These sites are covered in Australian pines which will be removed prior to use. Native revegetation would be planted after construction. Parts of Jewfish Key are privately owned and obtaining owner approval is not likely. Deed restrictions on Sister Key generally preclude the further use of Sister Key as a disposal area.

b. Sites 3, 4, 5, and 6

Sites 3 through 6 are former Intracoastal Waterway spoil sites and are presumed to be State owned. Only site 5 is emergent with no existing upland vegetation. All four sites are surrounded by a seagrass meadow which will restrict their use as a spoil disposal site. Permitting open water disposal at these sites is unlikely. These sites are not recommended for use.

c. Site 7

Site 7 is the undeveloped section of Bayfront Park at 4100 Gulf of Mexico Drive. The Town could elect to excavate clean fill from the site for other Town uses and place dredge spoil on the site. Approximately 9,000 cubic yards of spoil could be placed at this site. Access from Sarasota Bay appears to be feasible.

The developed section of Bayfront Park, the baseball diamond, could be utilized for temporary storage of dredge material but would require disruption to users and reconstruction following the temporary use. The costs to recreate the baseball facility will not be offset by dredge cost savings; therefore, the baseball diamond is not recommended for use as a temporary disposal area.

d. Site 8

Site 8 was an undeveloped lot identified during the Phase 1 study (CPE, 1995). A house is currently being built on this lot. No further consideration of this site is warranted.

e. Sites 9 and 9A

Sites 9 and 9A are privately owned lots along Jungle Queen Way and could potentially store 2,500 and 6,000 cubic

yards of spoil, respectively. Removal of Australian pines on site 9A would be required. Owner approval must be secured. The canals along Jungle Queen Way are not deep which could limit barge access to the sites. A hydraulic disposal may be required if these sites are utilized.

f. Site 10

Site 10, an empty lot on the south side of Canal 18, was identified in the Phase 1 study. The site could not be located by field personnel, and it is assumed that the lot was developed. No further consideration is warranted.

g. Sites 11A through 11E

Sites 11A through 11E are five small undeveloped lots along Norton Street. While these sites have no environmental problems associated with them, their size may preclude an efficient disposal operation. The sites are privately owned.

h. Site 12

Site 12 is a large undeveloped lot south of Gulf Bay Road (Figure 1A). The site is the largest disposal area investigated and could contain all of the canal dredge spoil. A hydraulic dredging disposal operation is feasible at this site. The Town is currently planning a park for this site which will preclude its use as a spoil disposal area.

i. Site 12A

Site 12A consists of two undeveloped lots on Gulf Bay Road which could be utilized, with owner approval, to store up to 2,800 cubic yards of dredge spoil. There are mangroves present and the existing property has existing Brazilian pepper and scattered palms that would have to be removed prior to use. The Town should seek owner approval of these lots.

j. Site 13

Site 13 is an unrestored section of Durante Park. While much of the park has been developed as an environmental restoration project, a 0.6 acre section of the park was not restored and appeared to have been used for construction

storage or as a staging area. No significant problems were identified that would prevent stockpiling of dredge spoil on this site. The Town should evaluate its plans for the previous storage/staging areas.

k. Site 14

Site 14 is the Town-owned parcel on the northeast corner of Lyons Lane and Gulf of Mexico Drive. While the parcel is fringed with mangroves, a 1.8 acre area in the center of the parcel contains a dense stand of Australian pines. The Australian pines could be removed and up to 11,000 cubic yards of spoil could be stockpiled on the site. The mangrove fringe would have to be protected during construction and a small restoration/ mitigation project should be anticipated to compensate for any minor construction impacts. A review of the bathymetric data in Gull Bayou (Canal 6) indicates shallow access and canal depths. This may restrict access to a hydraulic pipeline if the canal is not dredged. The limited development adjacent to this site should reduce complaints regarding the aromatic nature of the dredge spoil. The Town should pursue the use of this site as a disposal area.

l. Site 15.

Site 15 is the Town and privately owned land at Binnacle Point. The majority of the property is covered with mangroves and a dike and fill operation would not be feasible. An alternative would be to spray the dredge spoil over the land in a 3 inch average thickness. Approximately 3,000 cubic yards could be placed on this land. This disposal operation would generate runoff into Sarasota Bay and would not qualify under FDEP's exemption. An extensive permitting and monitoring effort would be required and it is not likely to be permitted by FDEP.

m. Site 16.

Site 16 is the Town owned Quick Point nature preserve. This site is mostly mangroves. Excluding those areas that are zoned as open space (conservation), the remainder of the land could be utilized for spoil disposal if a thin layer of spoil was sprayed onto the mangroves. Again, extensive permitting and monitoring would be required and it is not likely to be permitted by FDEP. Approximately 11,000

cubic yards could be placed on this site by this method which is sufficient to address the disposal needs of the Country Club Shores subdivision.

Alternatively, site 16 contains a 0.5 acre area immediately adjacent to the Town's water tower facility which could be diked and filled. Dewatered dredge spoil would have to be trucked offsite multiple times to handle the disposal needs of the Country Club Shores subdivision.

n. Site 17.

The parking lot for the Quick Point Nature Preserve (Overlook Park) has been utilized for the staging of limited construction activities previously. The parking area is located adjacent to and within the Florida Department of Transportation right of way and offers both access from the water and Gulf of Mexico Drive. Dredge spoil could be hydraulically pumped from Country Club Shores or mechanically offloaded at this site. The 0.75 acre site could be used to temporarily store 4,000 cubic yards of spoil. Dewatered spoil could be loaded into trucks for offsite disposal. The island of native vegetation in the center of the parking lot would have to be preserved or restored. The site could be used in lieu of the Town's water tank site (16). FDOT approval should be obtained by the town.

2. Spoil Disposal Alternatives Summary

Based on the data collected, the spoil disposal sites were ranked as to their recommendation for use in this project. The top four sites are listed in Table 6.

**Table 6
Recommended Dredge Spoil Sites**

Rank	Site No.	Location	Notes
A	14	Lyons Lane & Gulf of Mexico Drive	Work around mangroves. Offsite trucking required.
B	7	Bayfront Park	Requires excavation of clean fill.
C	17	Overlook Park parking lot	FDOT approval required. Offsite trucking required.
D	16	Quick Point	Offsite trucking required.

3. Gulf Beach or Lighthouse Point Disposal

In the Phase 1 study, the bottom sediments in the Country Club Shores subdivision canal appeared to be clean sandy sediments. This was based on limited observations in the middle of canals. Approximately 5000 cubic yards of dredge material was proposed to be pumped to the Gulf beach or Lighthouse Point for disposal. To evaluate the feasibility of this alternative, two surface grab samples were collected at the entrances to canals 34 and 39 (Figure 1B).

The samples were analyzed by placing the samples in glass jars, adding water to cover the sample, shaking the sample, and allowing the sample to settle. The percentages of sand and silt were then estimated. The results, along with the sediment results presented in the Phase 1 study, are shown in Table 7. The samples collected at the entrances of canals 34 and 39 reflect approximately 50 to 60 percent silt which will preclude the use of the Gulf beach or Lighthouse Point as a disposal area. The sediment samples are reflective of the Sarasota Bay bottom that existed in the area prior to the Country Club Shores development. The development plans for Country Club Shore indicated that the eastern half of the subdivision was originally submerged lands.

Table 7
Town of Longboat Key Canals
Sediment Analysis

Canal No.	Location	Depth of Sample	Description	Est. Silt Content	Presence of Visible Organics
3	Mid Canal	4 ft.	Silty, fine sand	25%	Yes, a few unidentified organics
6	Interior Shoal	2.5 ft.	Fine, sandy silt	>90%	Yes, some mangrove detritus
16	Entrance	2.8 ft.	Fine, sandy silt	>90%	Yes, some mangrove detritus
25	Entrance	5.7 ft.	Silty, fine sand	25%	Yes, some mangrove detritus
30	Interior Shoal	5.5 ft.	Fine, sandy silt	>90%	No
34	Entrance	-6.0 ft.	Fine, sandy silt	60%	No
39	Entrance	-2.7 ft.	Silty, fine sand	50%	No

With the exclusion of the Gulf beaches as a viable disposal area, spoil disposal for Country Club Shores at the Quick Point parking lot appears to be the most cost efficient method. Other options include:

- A. Hydraulic pumping (4 miles) to the Bayfront Park disposal area with offsite trucking of the material.
- B. Excavation of clean sandy fill deeper than -5.4 feet NGVD. Placing the dredge material in the excavated hole and cap the spoil with clean sand. Additional soil borings are required to determine the viability of this alternative.

4. Disposal Summary

Figure 6 is an estimate of how the canal dredge spoil can be allocated to the previously described disposal areas. Canals 1-19 would be disposed of at site 14 with 13,000 cubic yards being dewatered and trucked offsite. Canal 20 would not be dredged because there are no boats utilizing the canal. Canal 21 would not be dredged due to lack of a clear user and the extensive dredging required in Sarasota Bay. Canals 22 to 32 would be disposed of at site 7 with existing clean sand removed for other Town users and 7,000 cubic yards trucked offsite. Country Club Shores would be disposed of at the Quick Point parking area, site 17, with the material dewatered and trucked offsite.

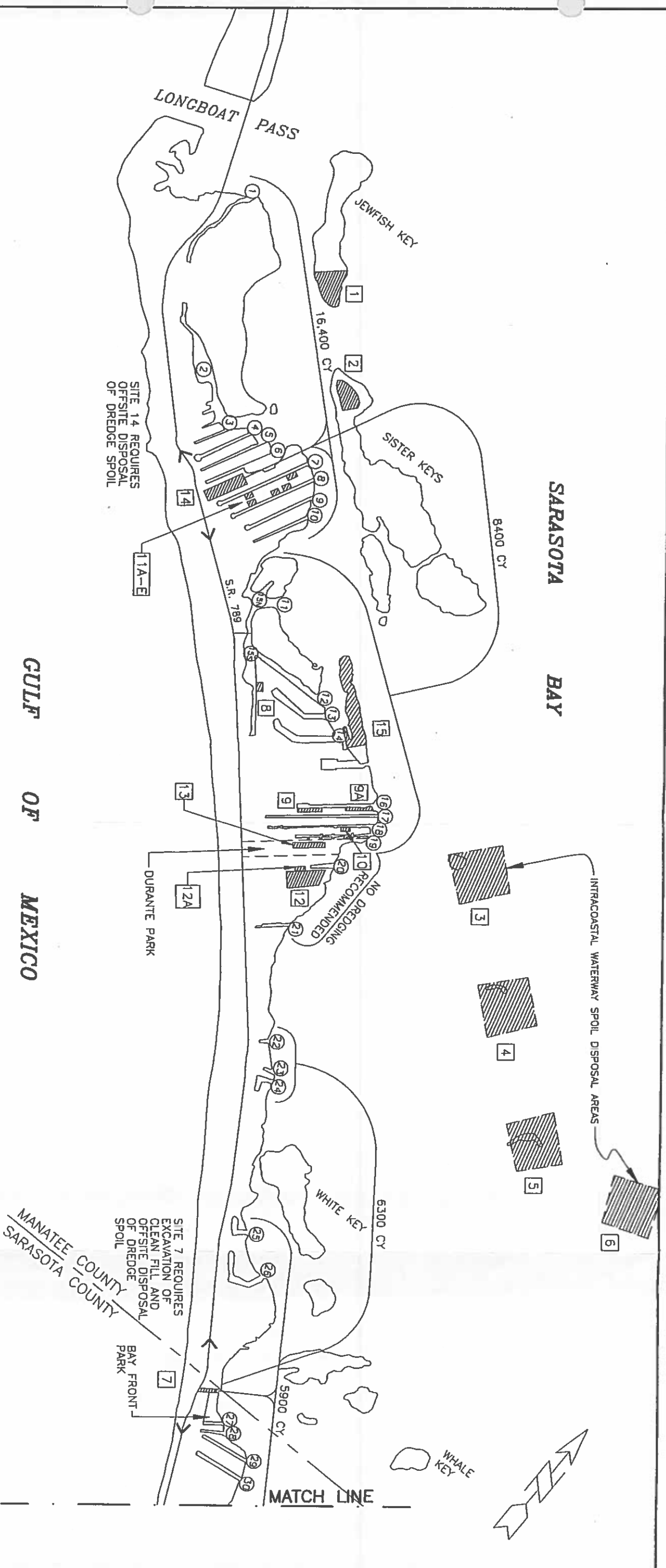
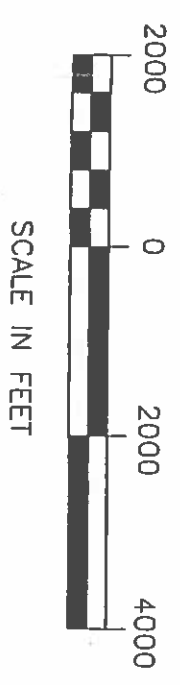
I. Update on Regulatory Constraints

The waters within Sarasota Bay are designated as an Outstanding Florida Water (OFW) and those waters west of the Intracoastal Waterway are classified as Class II Waters (Chapter 17-302, F.A.C.). The canals of Longboat Key that were created by dredge and fill activities are exempt from the OFW designation (Chapter 17-302.700(9)(i), F.A.C.). Without the OFW designation, the Town will not have to justify that the project is clearly in the public interest. FDEP will probably consider part or all of Canals 2, 6, and 31 (Bishop Bayou, Gull Bayou, and Buttonwood Harbor) as natural and require public interest criteria to be met.

The FDEP may consider the bay access channels separately from the canals. Therefore, despite being dredged historically, the access channels, will be considered part of the OFW, and require public interest criteria to be met. In addition many of the bay access channels are located adjacent to seagrass beds. The FDEP and the U.S. Army Corps of Engineers will be cautious about permitting dredging adjacent to the seagrass beds. Permitting the bay access channels will be more difficult than the canals.

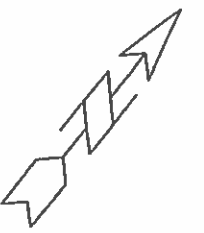
When dredging occurs, the canals and access channels will have to be isolated from the adjacent OFW through the use of silt curtains which will prevent turbidity from reaching the OFW. This will prohibit the use of the canals by boaters. The Town should notify the upland owners prior to dredging so the owners can move their boats if they choose to do so.

- LEGEND**
- ④ CANAL REFERENCE NUMBER
 - ▨ POTENTIAL DISPOSAL SITE AND NUMBER
 - ▭ POTENTIAL DISPOSAL SITE LIMITS NOT TO SCALE

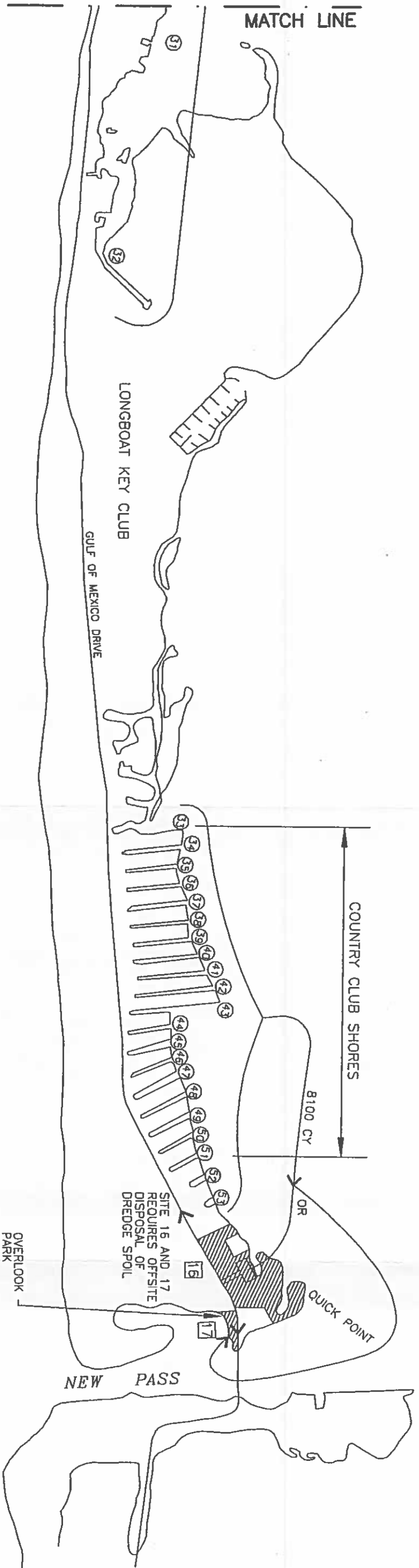


**LONGBOAT KEY CANALS
DREDGE SPOIL
DISPOSAL DISTRIBUTION**

COASTAL PLANNING & ENGINEERING, INC.
2481 NW BOCA RATON BLVD.
BOCA RATON, FL 33431



SARASOTA BAY



GULF OF MEXICO

LEGEND

④ CANAL REFERENCE NUMBER

12  POTENTIAL DISPOSAL SITE AND NUMBER
DISPOSAL SITE LIMITS NOT TO SCALE



SCALE IN FEET

**LONGBOAT KEY CANALS
DREDGE SPOIL
DISPOSAL DISTRIBUTION**

COASTAL PLANNING & ENGINEERING, INC.
2481 NW BOCA RATON BLVD.
BOCA RATON, FL 33431

FDEP's Tampa office was contacted regarding the potential to spray dredge spoil into the large mangrove areas at sites 15 and 16. FDEP indicated that no similar project had been permitted by their office. They indicated that the Tallahassee office had permitted a project on Tidy Island (east side of Sarasota Bay) for maintenance dredging of mosquito ditches with a spray disposal. Anecdotal reports indicate turbidity control problems occurred during the project. FDEP discouraged the submittal of a permit application for this type of disposal.

J. Cost Estimates

1. Townwide Projects

The cost of the project can be broken down into the following components: mobilization, unit dredging, offsite trucking and disposal and site restoration costs. A mobilization cost of \$50,000 is recommended each disposal area. Unit dredging costs are estimated at \$10 per cubic yard. Unit dredging costs include the actual dredging costs, environmental monitoring, surveying, disposal site preparation and management. Offsite trucking is estimated at an additional \$15 per cubic yard. A site restoration cost of \$75,000 is estimated for each disposal area. Project costs are summarized in Table 8.

Table 8
Longboat Key Canal Dredging
Cost Estimate

Item	Cost
Mobilization	\$150,000
Dredging and Offsite Disposal Lyons Lane Site	\$417,000
Dredging and Offsite Disposal Bayfront Park Site	\$195,000
Dredging and Offsite Disposal Overlook Park Site	\$205,000
Contingency (15%)	\$145,000
Site Restoration	\$225,000
Construction Total	\$1,337,000
Engineering and Permitting (15%)	\$201,000
Project Total	\$1,538,000

The total project cost is \$1.5 million which is consistent with the Phase 1 study estimate when the changes in dredge volumes and disposal alternatives are included. A canal by canal estimate of mobilization and

dredging costs is presented in Table 9. As indicated in section F, the access volumes and subsequently the costs, are not equitably apportioned among associated canals.

2. Jungle Queen, Tarawitt, St. Judes Canal Bulkhead Replacement and Complete Dredging Cost Estimate

Cost estimates for the bulkhead removal, replacement and dredging were developed for the three small canals (17, 18, and 19). Aluminum bulkheads were estimated at \$220 per linear foot which included disposal of the old clean concrete bulkheads in an artificial reef site. Project costs are estimated in Table 10.

Table 10

Jungle Queen, Tarawitt, and St. Judes Canal Improvements

Item	No. Of Units	Unit Cost	Subtotal
Dredge Mobilization	1	\$50,000	\$50,000
Dredge Costs	17,700 c.y.	\$10/c.y.	\$177,000
Offsite Trucking Costs	17,700 c.y.	\$15/c.y.	\$265,500
Bulkhead Costs	11,800 l.f.	\$220/ l.f.	\$2,596,000
Subtotal			\$3,088,500
Contingency Costs (10%)			\$308,800
Total			\$3.4 million

The equivalent improvement cost is approximately \$36,000 per property. Improvements should be considered only if the owners support the project.

K. Conclusions and Recommendations

The removal of accumulated sediment from the canals in Longboat Key is feasible. Approximately 47,000 cubic yards of sand and silt need to be removed from the canals and the bay access channels. We recommend dredging a flat bottom channel to -5 feet MLW for all canals except those in the Jungle Queen, Tarawitt, and St. Judes neighborhood. Channel widths will vary throughout the project and are sized with respect to each canal.

In the Jungle Queen, Tarawitt, St Judes neighborhood, the canals are too narrow to dredge a flat bottom channel. We recommend to the Town the following alternatives:

TABLE 9
CANAL DREDGING COST BREAKDOWN

LYONS LANE DISPOSAL AREA										BAYFRONT PARK DISPOSAL AREA										OVERLOOK PARK/WATER TANK DISPOSAL AREA									
CANAL NO.	TOTAL DREDGE VOLUME	MOBILIZATION \$	UNIT COST \$/CY	OFFSITE TRUCKING COST \$/15CY	DREDGE COST PER CANAL \$	CANAL NO.	TOTAL DREDGE VOLUME	MOBILIZATION \$	UNIT COST \$/CY	OFFSITE TRUCKING COST \$/15CY	DREDGE COST PER CANAL \$	CANAL NO.	TOTAL DREDGE VOLUME	MOBILIZATION \$	UNIT COST \$/CY	OFFSITE TRUCKING COST \$/15CY	DREDGE COST PER CANAL \$												
1	1283	\$1,724	\$10	\$9,750	\$24,307	20	2766	\$0	\$0	\$0	\$0	33	0	\$0	\$0	\$0	\$0												
2	5647	\$1,724	\$10	\$9,750	\$67,941	21	5500	\$0	\$0	\$0	\$0	34	171	\$2,632	\$10	\$2,567	\$6,909												
3	326	\$1,724	\$10	\$9,750	\$14,733	22	5317	\$1,724	\$10	\$10,500	\$65,391	35	201	\$2,632	\$10	\$3,013	\$7,653												
4	733	\$1,724	\$10	\$9,750	\$18,807	23	428	\$1,724	\$10	\$10,500	\$16,502	36	330	\$2,632	\$10	\$4,950	\$10,882												
5	1304	\$1,724	\$10	\$9,750	\$24,511	24	583	\$1,724	\$10	\$10,500	\$18,050	37	59	\$2,632	\$10	\$880	\$4,098												
6	3422	\$1,724	\$10	\$9,750	\$45,696	25	489	\$1,724	\$10	\$10,500	\$17,113	38	569	\$2,632	\$10	\$8,540	\$16,865												
7	792	\$1,724	\$10	\$9,750	\$19,388	26	318	\$1,724	\$10	\$10,500	\$15,402	39	330	\$2,632	\$10	\$4,944	\$10,871												
8	518	\$1,724	\$10	\$9,750	\$16,656	27	1039	\$1,724	\$10	\$10,500	\$22,613	40	733	\$2,632	\$10	\$11,000	\$20,965												
9	403	\$1,724	\$10	\$9,750	\$15,507	28	794	\$1,724	\$10	\$10,500	\$20,169	41	581	\$2,632	\$10	\$8,708	\$17,145												
10	2347	\$1,724	\$10	\$9,750	\$34,941	29	892	\$1,724	\$10	\$10,500	\$21,146	42	430	\$2,632	\$10	\$6,447	\$13,377												
11	244	\$1,724	\$10	\$9,750	\$13,919	30	727	\$1,724	\$10	\$10,500	\$19,496	43	372	\$2,632	\$10	\$5,573	\$11,920												
12	585	\$1,724	\$10	\$9,750	\$17,325	31	0	\$0	\$0	\$0	\$0	44	456	\$2,632	\$10	\$6,844	\$14,039												
13	293	\$1,724	\$10	\$9,750	\$14,399	32	1650	\$1,724	\$10	\$10,500	\$28,724	45	161	\$2,632	\$10	\$2,420	\$6,665												
14	226	\$1,724	\$10	\$9,750	\$13,735							46	346	\$2,632	\$10	\$5,194	\$11,289												
15 N	314	\$1,724	\$10	\$9,750	\$14,611							47	412	\$2,632	\$10	\$6,178	\$12,929												
15 S	424	\$1,724	\$10	\$9,750	\$15,711							48	981	\$2,632	\$10	\$14,722	\$27,168												
16	220	\$1,724	\$10	\$9,750	\$13,674							49	1094	\$2,632	\$10	\$16,408	\$29,979												
17	2559	\$1,724	\$10	\$9,750	\$37,064							50	510	\$2,632	\$10	\$7,651	\$15,383												
18	568	\$1,724	\$10	\$9,750	\$17,154							51	469	\$2,632	\$10	\$7,028	\$14,345												
19	1564	\$1,724	\$10	\$9,750	\$27,119							52	0	\$0	\$0	\$0	\$0												
												53	13	\$2,632	\$10	\$196	\$2,958												
SUBTOTAL LYONS LANE DISPOSAL AREA					\$467,000	SUBTOTAL BAYFRONT PARK DISPOSAL AREA					\$245,000	SUBTOTAL OVERLOOK PARK DISPOSAL AREA					\$255,000												
DREDGE AND DISPOSAL CONTINGENCY (15%)					\$145,000																								
DISPOSAL AREA SITE RESTORATIONS					\$225,000																								
CONSTRUCTION TOTAL					\$1,337,000																								
ENGINEERING AND PERMITTING(15%)					\$201,000																								
PROJECT TOTAL					\$1,538,000																								

Offsite trucking costs are distributed uniformly Lyons Lane and Bayfront Park sites. Offsite trucking costs are proportional to dredge volumes per canal at Overlook Park.

- a. Limited dredging of small shoals at the entrance to canals 16 and 17 adjacent to Jungle Queen Drive.
- b. Canal dredging with complete bulkhead replacement.

These two alternatives are likely to be rejected by the local owners. An alternative that may be supported by the local owners is dredging a triangular channel with the owners taking responsibility for stabilizing their bulkheads. This alternative has no quantifiable factor of safety against damage to bulkheads and upland property so it cannot be recommended as an engineered solution. The triangular channels will increase the level of service to these canals. The Town should meet with the owners of these canals and determine which alternative to jointly pursue.

We evaluated seventeen sites for spoil disposal with the Town. Dredge spoil should be placed in three upland disposal sites Lyons Lane, Bayfront Park, and at Overlook Park parking lot where it can be dewatered. The majority of the dredge spoil will require offsite disposal.

The cost of this project is \$1.5 million dollars which includes the dredging of the triangular channels in Jungle Queen, Tarawitt and St. Judes neighborhood. This estimate is consistent with the Phase 1 cost estimate when the dredge volume and disposal changes are considered.

Permitting the project will consist of two phases: Permitting the canals through a FDEP exemption and permitting the bay access channels which are located in the Class II, Outstanding Florida Water. Public interest criteria must be met for the bay access channels. Adjacent seagrass beds will receive protection.

APPENDIX A

**BATHYMETRIC SURVEY
(Under Separate Cover)**

APPENDIX B

DISPOSAL SITE OBSERVATION REPORTS

**LONGBOAT KEY CANAL DREDGING FEASIBILITY STUDY - PHASE 2
PRELIMINARY DISPOSAL SITE EVALUATIONS**

DISPOSAL SITE NUMBER: 1

DATE OF INVESTIGATION: JULY 29, 1998

DISPOSAL SITE LOCATION:

South end of Jewfish Key.

STREET ADDRESS IF APPLICABLE:

N/A.

OWNERSHIP (PUBLIC/PRIVATE):

Undetermined.

SPOIL AREA:

Triangular shaped site - Approximately 2.87 acres.

LENGTH OF AREA:

500 feet. Estimated from aerial photograph

WIDTH OF AREA:

500 feet. Estimated from aerial photograph

ESTIMATED HEIGHT OF SPOIL:

4 feet

DESCRIPTION OF EXISTING VEGETATION ON SITE:

Australian Pines covering almost entire site from the central portion of the island to the waterline except as noted below.

Sparse Brazilian Pepper at waterline and interior.

MANGROVES OR SEAGRASSES ADJACENT TO SITE:

Sparse pockets of mangrove on SW and NE shorelines.

Limited Spartina on NE shoreline.

Limited seagrass (Halodule ?) around perimeter of island.

METHOD OF SPOIL DELIVERY:

Barge accessible at SW shoreline.

Pipeline access at remainder of island.

MITIGATION REQUIREMENTS:

Minimal if spoil is placed in Australian Pine area.

REVEGETATION RECOMMENDATIONS:

Native species revegetation likely to be required - Site revegetation could be considered a restoration project due to the extensive nature of Australian Pine coverage.

PHOTOGRAPHS:

See attached.

USE POTENTIAL [1] (LIMITATIONS):

High if seagrass and mangrove impacts can be avoided or minimized during site clearing and disposal process.

[1] - Use potential is a subjective assessment based on site location; size; ease and method of disposal; exotic vegetation removal; presence of protected or native vegetative species; proximity to dredge site; and proximity to developed property.

**LONGBOAT KEY CANAL DREDGING FEASIBILITY STUDY - PHASE 2
PRELIMINARY DISPOSAL SITE EVALUATIONS**

DISPOSAL SITE NUMBER: 2

DATE OF INVESTIGATION: JULY 29, 1998

DISPOSAL SITE LOCATION:

North central end of Sister Keys.

STREET ADDRESS IF APPLICABLE:

N/A.

OWNERSHIP (PUBLIC/PRIVATE):

Public.

SPOIL AREA:

Triangular shaped area. Approximately 0.99 acres.

LENGTH OF AREA:

320 feet estimated from aerial photography.

WIDTH OF AREA:

270 feet estimated from aerial photography.

ESTIMATED HEIGHT OF SPOIL:

4 feet.

DESCRIPTION OF EXISTING VEGETATION ON SITE:

Spartina along a portion of eastern shoreline.
Dense Australian Pine coverage in center of island.
Occasional palms interspersed with Australian Pines.

MANGROVES OR SEAGRASSES ADJACENT TO SITE:

Relatively continuous fringe of red and black mangroves at shoreline.
Seagrass meadows along entire island's northern perimeter.

METHOD OF SPOIL DELIVERY:

Limited water depth adjacent to site likely limits access to pipeline disposal. Landing a barge may be feasible to offload heavy equipment for site clearing.

MITIGATION REQUIREMENTS:

Dependent on potential (or actual) seagrass and mangrove impacts during site clearing and disposal process.

REVEGETATION RECOMMENDATIONS:

Native species revegetation likely to be required - Site revegetation could be considered a restoration project due to the extensive nature of Australian Pine coverage at the proposed disposal site.

PHOTOGRAPHS:

See attached.

USE POTENTIAL [1] (LIMITATIONS):

High if seagrass and mangrove impacts can be avoided or minimized during site clearing and disposal process.

[1] - Use potential is a subjective assessment based on site location; size; ease and method of disposal; exotic vegetation removal; presence of protected or native vegetative species; proximity to dredge site; and proximity to developed property.

**LONGBOAT KEY CANAL DREDGING FEASIBILITY STUDY - PHASE 2
PRELIMINARY DISPOSAL SITE EVALUATIONS**

DISPOSAL SITE NUMBERS: 3, 4, 5, 6

DATE OF INVESTIGATION: JULY 29, 1998

DISPOSAL SITE LOCATION:

Intracoastal Waterway Spoil Sites as described on the plan view drawing.

STREET ADDRESS IF APPLICABLE:

N/A.

OWNERSHIP (PUBLIC/PRIVATE):

Public.

SPOIL AREA:

Undetermined.

LENGTH OF AREA:

Undetermined.

WIDTH OF AREA:

Undetermined.

ESTIMATED HEIGHT OF SPOIL:

Undetermined.

DESCRIPTION OF EXISTING VEGETATION ON SITE:

Sites 3, 4, and 6 were submerged. Site 5 was exposed with no emergent vegetation.

MANGROVES OR SEAGRASSES ADJACENT TO SITE:

No mangroves.

Extensive seagrasses adjacent to all sites.

METHOD OF SPOIL DELIVERY:

Pipeline or barge.

MITIGATION REQUIREMENTS:

Extensive - probable damage to seagrasses during disposal operations.

REVEGETATION RECOMMENDATIONS:

Dependent on height of spoil..

PHOTOGRAPHS:

Site 5 photographs attached.

USE POTENTIAL [1] (LIMITATIONS):

High assuming use of these sites is allowed by Navigation District and USACE.

- [1] - Use potential is a subjective assessment based on site location; size; ease and method of disposal; exotic vegetation removal; presence of protected or native vegetative species; proximity to dredge site; and proximity to developed property.

**LONGBOAT KEY CANAL DREDGING FEASIBILITY STUDY - PHASE 2
PRELIMINARY DISPOSAL SITE EVALUATIONS**

DISPOSAL SITE NUMBER: 7 (Bayfront Park)

DATE OF INVESTIGATION: JULY 30, 1998

DISPOSAL SITE LOCATION:

Vacant property located north of the tennis courts.

STREET ADDRESS IF APPLICABLE:

4100 Gulf of Mexico Drive.

OWNERSHIP (PUBLIC/PRIVATE):

Public.

SPOIL AREA:

Approximately 0.82 acres.

LENGTH OF AREA:

324 feet from approximately Gulf Drive to the bulkhead at the waterline (west to east).

WIDTH OF AREA:

110 feet from chain link fence north of tennis courts (south) to wooden fence at northern boundary.

ESTIMATED HEIGHT OF SPOIL:

4 feet.

DESCRIPTION OF EXISTING VEGETATION ON SITE:

Primarily grass and low growth shrubs including Brazilian Pepper.

Occasional palms scattered throughout site.

Sea Grape, Locust (?) and Brazilian Pepper growth fairly dense along northern boundary.

MANGROVES OR SEAGRASSES ADJACENT TO SITE:

No mangroves observed.

Seagrasses likely to be present in close proximity to the site.

METHOD OF SPOIL DELIVERY:

Truck, barge or pipeline feasible. Relatively deep water adjacent to site with bulkhead at waterline.

MITIGATION REQUIREMENTS:

None evident.

REVEGETATION RECOMMENDATIONS:

As determined by Town of Longboat Key and / or permitting agencies.

PHOTOGRAPHS:

See attached.

USE POTENTIAL [1] (LIMITATIONS):

High - No limitations noted.

- [1] - Use potential is a subjective assessment based on site location; size; ease and method of disposal; exotic vegetation removal; presence of protected or native vegetative species; proximity to dredge site; and proximity to developed property.

**LONGBOAT KEY CANAL DREDGING FEASIBILITY STUDY - PHASE 2
PRELIMINARY DISPOSAL SITE EVALUATIONS**

DISPOSAL SITE NUMBER: 8

DATE OF INVESTIGATION: JULY 30, 1998

DISPOSAL SITE LOCATION:

West of canal 15-S, east of Gulf of Mexico Drive (S.R. 789) - Previously undeveloped lot.

STREET ADDRESS IF APPLICABLE:

N/A.

OWNERSHIP (PUBLIC/PRIVATE):

Private.

SPOIL AREA:

N/A.

LENGTH OF AREA:

N/A.

WIDTH OF AREA:

N/A.

ESTIMATED HEIGHT OF SPOIL:

N/A.

DESCRIPTION OF EXISTING VEGETATION ON SITE:

N/A.

MANGROVES OR SEAGRASSES ADJACENT TO SITE:

N/A.

METHOD OF SPOIL DELIVERY:

N/A.

MITIGATION REQUIREMENTS:

N/A.

REVEGETATION RECOMMENDATIONS:

N/A.

PHOTOGRAPHS:

None.

USE POTENTIAL [1] (LIMITATIONS):

None - House Under Construction.

[1] - Use potential is a subjective assessment based on site location; size; ease and method of disposal; exotic vegetation removal; presence of protected or native vegetative species; proximity to dredge site; and proximity to developed property.

**LONGBOAT KEY CANAL DREDGING FEASIBILITY STUDY - PHASE 2
PRELIMINARY DISPOSAL SITE EVALUATIONS**

DISPOSAL SITE NUMBER: 9

DATE OF INVESTIGATION: JULY 30, 1998

DISPOSAL SITE LOCATION:

Vacant lots located between the two houses noted below, adjacent to south side of Canal 16.

STREET ADDRESS IF APPLICABLE:

Subject properties are located at 669, 687, 705 and 723 Jungle Queen Way.

651 Jungle Queen Way (House to west).

741 Jungle Queen Way (House to east).

OWNERSHIP (PUBLIC/PRIVATE):

Private.

SPOIL AREA:

Approximately 0.52 acres.

LENGTH OF AREA:

300 feet parallel to roadway (east to west).

WIDTH OF AREA:

Approximately 75 feet from roadway to Canal 16.

ESTIMATED HEIGHT OF SPOIL:

Limited by site size.

DESCRIPTION OF EXISTING VEGETATION ON SITE:

Grass to bulkhead at Canal 16.

MANGROVES OR SEAGRASSES ADJACENT TO SITE:

None observed.

METHOD OF SPOIL DELIVERY:

Truck or pipeline down Canal 16.

Concrete bulkhead runs along western 200 feet of property, natural slope to waterline remaining boundary.

MITIGATION REQUIREMENTS:

None evident.

REVEGETATION RECOMMENDATIONS:

As dictated by owners and / or permitting agencies.

PHOTOGRAPHS:

See attached.

USE POTENTIAL [1] (LIMITATIONS):

Moderate given apparent private ownership.

- [1] - Use potential is a subjective assessment based on site location; size; ease and method of disposal; exotic vegetation removal; presence of protected or native vegetative species; proximity to dredge site; and proximity to developed property.

**LONGBOAT KEY CANAL DREDGING FEASIBILITY STUDY - PHASE 2
PRELIMINARY DISPOSAL SITE EVALUATIONS**

DISPOSAL SITE NUMBER: 9-A

DATE OF INVESTIGATION: JULY 30, 1998

DISPOSAL SITE LOCATION:

Vacant property on south side of Canal 16, at eastern end of canal.

STREET ADDRESS IF APPLICABLE:

Subject properties include 777 to 879 Jungle Queen Way.
765 Jungle Queen Way (House on west end of property).

OWNERSHIP (PUBLIC/PRIVATE):

Private

SPOIL AREA:

Approximately 1.29 acres.

LENGTH OF AREA:

Approximately 750 feet from east to west along Canal 16.

WIDTH OF AREA:

Approximately 75 feet from roadway to Canal 16.

ESTIMATED HEIGHT OF SPOIL:

3 feet.

DESCRIPTION OF EXISTING VEGETATION ON SITE:

Eastern 1/2 of site is grassed, western 1/2 of site has moderate Australian Pine coverage.

MANGROVES OR SEAGRASSES ADJACENT TO SITE:

Infrequent mangroves adjacent to Australian Pine growth area.
Seagrasses observed at the eastern end of Canal 16 during hydrographic survey.

METHOD OF SPOIL DELIVERY:

Limited draft barge access from ICWW.
Unlimited truck and pipeline access.

MITIGATION REQUIREMENTS:

None evident

REVEGETATION RECOMMENDATIONS:

As dictated by owners and / or permitting agencies.

PHOTOGRAPHS:

See attached.

USE POTENTIAL [1] (LIMITATIONS):

Moderate to high - size of site with few neighbors, and relatively unlimited access could make this a viable site.

[1] - Use potential is a subjective assessment based on site location; size; ease and method of disposal; exotic vegetation removal; presence of protected or native vegetative species; proximity to dredge site; and proximity to developed property.

**LONGBOAT KEY CANAL DREDGING FEASIBILITY STUDY - PHASE 2
PRELIMINARY DISPOSAL SITE EVALUATIONS**

DISPOSAL SITE NUMBER: 10

DATE OF INVESTIGATION: JULY 30, 1998

DISPOSAL SITE LOCATION:

Previously undeveloped lot on the south side of Canal 18 - Investigators could not locate this site.

STREET ADDRESS IF APPLICABLE:

OWNERSHIP (PUBLIC/PRIVATE):

SPOIL AREA:

LENGTH OF AREA:

WIDTH OF AREA:

ESTIMATED HEIGHT OF SPOIL:

DESCRIPTION OF EXISTING VEGETATION ON SITE:

MANGROVES OR SEAGRASSES ADJACENT TO SITE:

METHOD OF SPOIL DELIVERY:

MITIGATION REQUIREMENTS:

REVEGETATION RECOMMENDATIONS:

PHOTOGRAPHS:

USE POTENTIAL [1] (LIMITATIONS):

None - property has been developed since the 1995 study.

[1] - Use potential is a subjective assessment based on site location; size; ease and method of disposal; exotic vegetation removal; presence of protected or native vegetative species; proximity to dredge site; and proximity to developed property.

**LONGBOAT KEY CANAL DREDGING FEASIBILITY STUDY - PHASE 2
PRELIMINARY DISPOSAL SITE EVALUATIONS**

DISPOSAL SITE NUMBER: 11-A

DATE OF INVESTIGATION: JULY 30, 1998

DISPOSAL SITE LOCATION:

Norton Street, north side of Canal 8.

STREET ADDRESS IF APPLICABLE:

Subject properties located at 550 and 562 Norton Street.
House to the west of the site is 538 Norton Street.
House to the east of the site is 574 Norton Street.

OWNERSHIP (PUBLIC/PRIVATE):

Private.

SPOIL AREA:

Approximately 0.41 acres.

LENGTH OF AREA:

Approximately 149 feet in roadway parallel direction.

WIDTH OF AREA:

Approximately 120 feet from roadway to Canal 8.

ESTIMATED HEIGHT OF SPOIL:

3 feet.

DESCRIPTION OF EXISTING VEGETATION ON SITE:

Moderate Australian Pine and Brazilian Pepper coverage on eastern 1/2 of site.
Dock at rear of property - Length is approximately 50 feet in a shore parallel direction.

MANGROVES OR SEAGRASSES ADJACENT TO SITE:

Mangrove fringe at Canal 8.
Seagrass presence in Canal 8 is undetermined.

METHOD OF SPOIL DELIVERY:

Pipeline or truck access.
No barge access appears feasible.

MITIGATION REQUIREMENTS:

Minimal depending on mangrove impacts.

REVEGETATION RECOMMENDATIONS:

As dictated by owners and / or permitting agencies.

PHOTOGRAPHS:

See attached.

USE POTENTIAL [1] (LIMITATIONS):

Moderate - exotic vegetation will have to be removed to use this site.

[1] - Use potential is a subjective assessment based on site location; size; ease and method of disposal; exotic vegetation removal; presence of protected or native vegetative species; proximity to dredge site; and proximity to developed property.

**LONGBOAT KEY CANAL DREDGING FEASIBILITY STUDY - PHASE 2
PRELIMINARY DISPOSAL SITE EVALUATIONS**

DISPOSAL SITE NUMBER: 11-B

DATE OF INVESTIGATION: JULY 30, 1998

DISPOSAL SITE LOCATION:

Norton Street, north of Canal 8.

STREET ADDRESS IF APPLICABLE:

Subject property is located at 726 Norton Street.
House at 725 Norton Street is located across the street.

OWNERSHIP (PUBLIC/PRIVATE):

Undetermined

SPOIL AREA:

Approximately 0.17 acres.

LENGTH OF AREA:

Approximately 100 feet parallel to roadway.

WIDTH OF AREA:

Approximately 75 feet from roadway to Canal 8.

ESTIMATED HEIGHT OF SPOIL:

3 feet.

DESCRIPTION OF EXISTING VEGETATION ON SITE:

Moderate Australian Pine and Brazilian Pepper coverage on western 1/2 of site.
Maintained grass on eastern 1/2 of site.

MANGROVES OR SEAGRASSES ADJACENT TO SITE:

Scattered rock revetment at shoreline. Adjacent properties have bulkheads at waterline.

METHOD OF SPOIL DELIVERY:

Barge access possible. Pipeline and truck accessible.

MITIGATION REQUIREMENTS:

None evident.

REVEGETATION RECOMMENDATIONS:

As determined by owners and / or permitting agencies.

PHOTOGRAPHS:

See attached.

USE POTENTIAL [1] (LIMITATIONS):

Moderate to low due to size.

[1] - Use potential is a subjective assessment based on site location; size; ease and method of disposal; exotic vegetation removal; presence of protected or native vegetative species; proximity to dredge site; and proximity to developed property.

**LONGBOAT KEY CANAL DREDGING FEASIBILITY STUDY - PHASE 2
PRELIMINARY DISPOSAL SITE EVALUATIONS**

DISPOSAL SITE NUMBER: 11-C

DATE OF INVESTIGATION: JULY 30, 1998

DISPOSAL SITE LOCATION:

Norton Street, south of Canal 7.

STREET ADDRESS IF APPLICABLE:

Subject property is located at 761 Norton Street.
House at 762 Norton Street is located across the street.

OWNERSHIP (PUBLIC/PRIVATE):

Private.

SPOIL AREA:

Approximately 0.17 acres.

LENGTH OF AREA:

Approximately 100 feet parallel to roadway.

WIDTH OF AREA:

Approximately 75 feet from roadway to Canal 7.

ESTIMATED HEIGHT OF SPOIL:

3 feet.

DESCRIPTION OF EXISTING VEGETATION ON SITE:

Moderate Australian Pine and Brazilian Pepper coverage on eastern 1/2 of site.
Maintained grass on western 1/2 of site.

MANGROVES OR SEAGRASSES ADJACENT TO SITE:

Bulkhead (with boat and dock) at Canal 7 waterline.

METHOD OF SPOIL DELIVERY:

Barge access possible. Pipeline and truck accessible.

MITIGATION REQUIREMENTS:

None evident.

REVEGETATION RECOMMENDATIONS:

As determined by owners and / or permitting agencies.

PHOTOGRAPHS:

See attached.

USE POTENTIAL [1] (LIMITATIONS):

Moderate to low due to size.

[1] - Use potential is a subjective assessment based on site location; size; ease and method of disposal; exotic vegetation removal; presence of protected or native vegetative species; proximity to dredge site; and proximity to developed property.

**LONGBOAT KEY CANAL DREDGING FEASIBILITY STUDY - PHASE 2
PRELIMINARY DISPOSAL SITE EVALUATIONS**

DISPOSAL SITE NUMBER: 11-D

DATE OF INVESTIGATION: JULY 30, 1998

DISPOSAL SITE LOCATION:

Norton Street, north side of Canal 8.

STREET ADDRESS IF APPLICABLE:

Subject property is located at 702 Norton Street.
House at 686 Norton Street is located west of this site.

OWNERSHIP (PUBLIC/PRIVATE):

Private.

SPOIL AREA:

Approximately 0.17 acres.

LENGTH OF AREA:

Approximately 100 feet parallel to roadway.

WIDTH OF AREA:

Approximately 75 feet from roadway to Canal 8.

ESTIMATED HEIGHT OF SPOIL:

3 feet.

DESCRIPTION OF EXISTING VEGETATION ON SITE:

Sparse Australian Pine (6 trees) and Brazilian Pepper coverage throughout site.
Maintained grass on 90% of site.

MANGROVES OR SEAGRASSES ADJACENT TO SITE:

No mangroves or seagrasses observed.

METHOD OF SPOIL DELIVERY:

Barge access possible. Pipeline and truck accessible.

MITIGATION REQUIREMENTS:

None evident.

REVEGETATION RECOMMENDATIONS:

As determined by owners and / or permitting agencies.

PHOTOGRAPHS:

See attached.

USE POTENTIAL [1] (LIMITATIONS):

Moderate to low due to size.

[1] - Use potential is a subjective assessment based on site location; size; ease and method of disposal; exotic vegetation removal; presence of protected or native vegetative species; proximity to dredge site; and proximity to developed property.

**LONGBOAT KEY CANAL DREDGING FEASIBILITY STUDY - PHASE 2
PRELIMINARY DISPOSAL SITE EVALUATIONS**

DISPOSAL SITE NUMBER: 11-E

DATE OF INVESTIGATION: JULY 30, 1998

DISPOSAL SITE LOCATION:

Norton Street, south side of Canal 7.

STREET ADDRESS IF APPLICABLE:

Subject property is located at 549 Norton Street.

OWNERSHIP (PUBLIC/PRIVATE):

Private.

SPOIL AREA:

Approximately 0.17 acres.

LENGTH OF AREA:

Approximately 100 feet parallel to roadway.

WIDTH OF AREA:

Approximately 75 feet from roadway to Canal 8.

ESTIMATED HEIGHT OF SPOIL:

3 feet.

DESCRIPTION OF EXISTING VEGETATION ON SITE:

Maintained grass on entire site.

MANGROVES OR SEAGRASSES ADJACENT TO SITE:

No mangroves or seagrasses observed.

METHOD OF SPOIL DELIVERY:

Barge access possible. Pipeline and truck accessible.

MITIGATION REQUIREMENTS:

None evident.

REVEGETATION RECOMMENDATIONS:

As determined by owners and / or permitting agencies.

PHOTOGRAPHS:

None.

USE POTENTIAL [1] (LIMITATIONS):

Moderate to low due to size.

- [1] - Use potential is a subjective assessment based on site location; size; ease and method of disposal; exotic vegetation removal; presence of protected or native vegetative species; proximity to dredge site; and proximity to developed property.

**LONGBOAT KEY CANAL DREDGING FEASIBILITY STUDY - PHASE 2
PRELIMINARY DISPOSAL SITE EVALUATIONS**

DISPOSAL SITE NUMBER: 12

DATE OF INVESTIGATION: JULY 30, 1998

DISPOSAL SITE LOCATION:

East end of Gulf Bay Road, turn south on dirt road and travel south . Site is located behind homes on the south side of Gulf Bay Drive.

STREET ADDRESS IF APPLICABLE:

N/A.

OWNERSHIP (PUBLIC/PRIVATE):

Private.

SPOIL AREA:

Approximately 12.40 acres west of mangroves.

Two cleared areas are located on the site and are connected by a dirt road.

Area 1 - approximately 100 feet (east to west) and 600 feet (north to south), located at east edge of site, west of the mangrove area adjacent to the bay.

Area 2 - approximately 75 feet (east to west) and 200 feet (north to south), located at west edge of site.

LENGTH OF AREA:

Approximately 900 feet (east to west), west of mangroves.

WIDTH OF AREA:

Approximately 600 feet north to south.

ESTIMATED HEIGHT OF SPOIL:

4 - 5 feet.

DESCRIPTION OF EXISTING VEGETATION ON SITE:

Uncleared areas have typical upland vegetation including Australian Pine, Brazilian Pepper, Myrtle, Cedar (?).

MANGROVES OR SEAGRASSES ADJACENT TO SITE:

Significant areas of mangroves noted on eastern and western (lower elevation) portions of site.

No seagrasses observed in close proximity to potential spoil site.

METHOD OF SPOIL DELIVERY:

Dirt road on the south side of Canal 20 has nearly unlimited access to waterline.

Barge access may be possible at eastern end of Canal 20. Canal 20 will require dredging if barge access is required to western terminus of waterway. Pipeline and truck accessible

MITIGATION REQUIREMENTS:

None evident if cleared sites are used.

REVEGETATION RECOMMENDATIONS:

As determined by owners and / or permitting agencies.

PHOTOGRAPHS:

See attached.

USE POTENTIAL [1] (LIMITATIONS):

High with minimal limitations observed.

[1] - Use potential is a subjective assessment based on site location; size; ease and method of disposal; exotic vegetation removal; presence of protected or native vegetative species; proximity to dredge site; and proximity to developed property.

**LONGBOAT KEY CANAL DREDGING FEASIBILITY STUDY - PHASE 2
PRELIMINARY DISPOSAL SITE EVALUATIONS**

DISPOSAL SITE NUMBER: 12-A & 12-B

DATE OF INVESTIGATION: JULY 30, 1998

DISPOSAL SITE LOCATION:

Two (or three) vacant properties located on the south side of Gulf Bay Road.

STREET ADDRESS IF APPLICABLE:

Site 12-A is located at 550 Gulf Bay Road.

Site 12-B is located at 560 Gulf Bay Road.

OWNERSHIP (PUBLIC/PRIVATE):

Private.

SPOIL AREA:

Approximately 0.59 acres north of mangroves in drainage ditch at rear (south side) of property.

LENGTH OF AREA:

Approximately 294 feet (east to west).

WIDTH OF AREA:

Approximately 88 feet (north to south).

ESTIMATED HEIGHT OF SPOIL:

3 feet.

DESCRIPTION OF EXISTING VEGETATION ON SITE:

Site 12-A is cleared and mowed grass.

Site 12-B has dense vegetation including Brazilian Pepper, scattered palms, Cedar (?).

MANGROVES OR SEAGRASSES ADJACENT TO SITE:

Significant areas of mangroves observed on southern portion of property near drainage ditch.

No seagrasses.

METHOD OF SPOIL DELIVERY:

Truck accessible. Pipeline would have to be run down Gulf Bay Road or through drainage ditch.

Use of drainage ditch access will likely impact mangroves.

MITIGATION REQUIREMENTS:

None evident if mangroves are avoided.

REVEGETATION RECOMMENDATIONS:

As determined by owners and / or permitting agencies.

PHOTOGRAPHS:

See attached.

USE POTENTIAL [1] (LIMITATIONS):

Moderate to low given densely vegetated nature of Site 12-B which is nearly 200 feet from east to west.

[1] - Use potential is a subjective assessment based on site location; size; ease and method of disposal; exotic vegetation removal; presence of protected or native vegetative species; proximity to dredge site; and proximity to developed property.

**LONGBOAT KEY CANAL DREDGING FEASIBILITY STUDY - PHASE 2
PRELIMINARY DISPOSAL SITE EVALUATIONS**

DISPOSAL SITE NUMBER: 13

DATE OF INVESTIGATION: JULY 30, 1998

DISPOSAL SITE LOCATION:

Joan M. Durante Community Park.

STREET ADDRESS IF APPLICABLE:

5560 Gulf of Mexico Drive.

OWNERSHIP (PUBLIC/PRIVATE):

Public.

SPOIL AREA:

Only available site for spoil placement is located near center of the site at the northern boundary. Approximately 0.6 acres appears to have been construction storage / staging as the Park was being restored.

LENGTH OF AREA:

Approximately 225 feet (east to west).

WIDTH OF AREA:

Approximately 120 feet (north to south).

ESTIMATED HEIGHT OF SPOIL:

Dependent on site size. Mounding (up to 15 feet) may be feasible given topography of completed Park area.

DESCRIPTION OF EXISTING VEGETATION ON SITE:

Staging area is vacant and cleared. Native (restored) vegetation in close proximity to staging area. Sprinkler system appears to have been installed on a portion of the cleared staging area.

MANGROVES OR SEAGRASSES ADJACENT TO SITE:

Significant areas of mangroves and restored native vegetation in close proximity to the staging area. No seagrasses near staging area.

METHOD OF SPOIL DELIVERY:

Truck accessible. Pipeline would have to be run through several restored areas.

MITIGATION REQUIREMENTS:

None evident if mangroves are avoided.

REVEGETATION RECOMMENDATIONS:

As determined by Town of Longboat Key and / or permitting agencies.

PHOTOGRAPHS:

See attached.

USE POTENTIAL [1] (LIMITATIONS):

Moderate given the restored nature of the site surrounding the staging area.

- [1] - Use potential is a subjective assessment based on site location; size; ease and method of disposal; exotic vegetation removal; presence of protected or native vegetative species; proximity to dredge site; and proximity to developed property.

**LONGBOAT KEY CANAL DREDGING FEASIBILITY STUDY - PHASE 2
PRELIMINARY DISPOSAL SITE EVALUATIONS**

DISPOSAL SITE NUMBER: 14

DATE OF INVESTIGATION: JULY 30, 1998

DISPOSAL SITE LOCATION:

Northeast corner of Gulf of Mexico Drive (S.R. 789) and Lyons Lane.

STREET ADDRESS IF APPLICABLE:

6640 Gulf of Mexico Drive.

OWNERSHIP (PUBLIC/PRIVATE):

Public.

SPOIL AREA:

Only available site for spoil placement is located near center of the site.

Approximately 1.84 acres of the site has dense Australian Pine coverage that would be acceptable for use.

LENGTH OF AREA:

Approximately 1050 feet (east to west). Australian Pine area is approximately 400 feet in length.

WIDTH OF AREA:

Approximately 300 feet (north to south). Australian Pine area is approximately 200 feet in width.

ESTIMATED HEIGHT OF SPOIL:

4 - 5 feet.

DESCRIPTION OF EXISTING VEGETATION ON SITE:

At the center of the site is a dense stand of Australian Pine with sparse Brazilian Pepper intermixed.

MANGROVES OR SEAGRASSES ADJACENT TO SITE:

Significant areas of mangroves form a nearly continuous fringe around the site. The mangrove areas vary in width and density. The mangrove fringe along Lyons Lane is approximately 75 feet wide and runs nearly continuously along the length of the roadway. A significant stand of mangroves approximately 300 feet wide (north to south) was observed between Gull Bayou and the Australian Pine area of the site.

Along Canal 6 is a bulkhead and the mangroves thin to a point where access may be feasible with minimum impact to the mangroves.

Significant seagrasses were observed in Gull Bayou (Canal 6).

METHOD OF SPOIL DELIVERY:

Truck accessible. Pipeline would have to be run along Canal 6. There is a bulkhead along a portion of the site adjacent to the western terminus of Canal 6. Limited navigation depths in Gull Bayou likely limit barge access to the site.

MITIGATION REQUIREMENTS:

None evident if mangroves are avoided.

REVEGETATION RECOMMENDATIONS:

As determined by Town of Longboat Key and / or permitting agencies.

PHOTOGRAPHS:

See attached.

USE POTENTIAL [1] (LIMITATIONS):

Moderate considering the number of Australian Pines (> 100) that will have to be removed to use the site.

[1] - Use potential is a subjective assessment based on site location; size; ease and method of disposal; exotic vegetation removal; presence of protected or native vegetative species; proximity to dredge site; and proximity to developed property.

**LONGBOAT KEY CANAL DREDGING FEASIBILITY STUDY - PHASE 2
PRELIMINARY DISPOSAL SITE EVALUATIONS**

DISPOSAL SITE NUMBER: 15

DATE OF INVESTIGATION: SEPT 8, 1998

DISPOSAL SITE LOCATION:

Binnacle Point

STREET ADDRESS IF APPLICABLE:

At the end of Binnacle Point Drive

OWNERSHIP (PUBLIC/PRIVATE):

Public and private.

SPOIL AREA:

Sandy beach along Intracoastal Waterway reported by Cliff Truit. Could not access to verify.
No other areas for disposal.

LENGTH OF AREA:

Site is 1800 feet long.

WIDTH OF AREA:

Site is 200 feet wide.

ESTIMATED HEIGHT OF SPOIL:

0.25 feet (spray disposal over mangroves, only).

DESCRIPTION OF EXISTING VEGETATION ON SITE:

Extensive mangroves with a small open water area in interior.

MANGROVES OR SEAGRASSES ADJACENT TO SITE:

Extensive mangroves.

METHOD OF SPOIL DELIVERY:

Hydraulic pipeline and spray from Intracoastal Waterway.

MITIGATION REQUIREMENTS:

REVEGETATION RECOMMENDATIONS:

PHOTOGRAPHS:

See attached.

USE POTENTIAL [1] (LIMITATIONS):

Low. FDEP discouraged spray application of spoil on mangroves.

[1] - Use potential is a subjective assessment based on site location; size; ease and method of disposal; exotic vegetation removal; presence of protected or native vegetative species; proximity to dredge site; and proximity to developed property.

**LONGBOAT KEY CANAL DREDGING FEASIBILITY STUDY - PHASE 2
PRELIMINARY DISPOSAL SITE EVALUATIONS**

DISPOSAL SITE NUMBER: 16

DATE OF INVESTIGATION: SEPT 8, 1998

DISPOSAL SITE LOCATION:

Quick Point

STREET ADDRESS IF APPLICABLE:

280 Gulf of Mexico Drive

OWNERSHIP (PUBLIC/PRIVATE):

Public.

SPOIL AREA:

Area other than that zoned open space (conservation).

LENGTH OF AREA:

Site is 100 feet long.

WIDTH OF AREA:

Site is 100 feet wide.

ESTIMATED HEIGHT OF SPOIL:

3 feet.

DESCRIPTION OF EXISTING VEGETATION ON SITE:

Overall site consists of mangroves with irregular waterways. Town's water tank area was previously filled and is generally open with occasional Australian pines and debris.

MANGROVES OR SEAGRASSES ADJACENT TO SITE:

Extensive mangroves adjacent to tank site.
Seagrass extent in waterways is unknown.

METHOD OF SPOIL DELIVERY:

Hydraulic pipeline through irregular waterway to tank site.

MITIGATION REQUIREMENTS:

None apparent as mangroves are avoided.

REVEGETATION RECOMMENDATIONS:

As required by the Town.

PHOTOGRAPHS:

See attached.

USE POTENTIAL [1] (LIMITATIONS):

High if dewatered dredge spoil is removed from site and impacts to water tank facility are avoided.

- [1] - Use potential is a subjective assessment based on site location; size; ease and method of disposal; exotic vegetation removal; presence of protected or native vegetative species; proximity to dredge site; and proximity to developed property.

**LONGBOAT KEY CANAL DREDGING FEASIBILITY STUDY - PHASE 2
PRELIMINARY DISPOSAL SITE EVALUATIONS**

DISPOSAL SITE NUMBER: 17

DATE OF INVESTIGATION: SEPT 16, 1998

DISPOSAL SITE LOCATION:

Quick Point parking area

STREET ADDRESS IF APPLICABLE:

101 Gulf of Mexico Drive

OWNERSHIP (PUBLIC/PRIVATE):

Public. Within FDOT right of way.

SPOIL AREA:

0.75 acres (existing parking area).

LENGTH OF AREA:

Site is 650 feet long.

WIDTH OF AREA:

Site is 50 feet wide.

ESTIMATED HEIGHT OF SPOIL:

3 feet.

DESCRIPTION OF EXISTING VEGETATION ON SITE:

Landscaped island in parking area would require protection.

MANGROVES OR SEAGRASSES ADJACENT TO SITE:

Seagrass extent in New Pass is unknown.

METHOD OF SPOIL DELIVERY:

Hydraulic pipeline or mechanical offloading.

MITIGATION REQUIREMENTS:

None apparent if mangroves are avoided.

REVEGETATION RECOMMENDATIONS:

As required by the Town.

PHOTOGRAPHS:

USE POTENTIAL [1] (LIMITATIONS):

High if dewatered dredge spoil is removed from site.

- [1] - Use potential is a subjective assessment based on site location; size; ease and method of disposal; exotic vegetation removal; presence of protected or native vegetative species; proximity to dredge site; and proximity to developed property.