

M E M O R A N D U M

**Date:** April 28, 2003 (Rev. 1)  
**To:** Mike McKenna, Parsons E&C  
**From:** Greg Hearon and Craig Leidersdorf  
**cc:** John Ennis, BP Exploration (Alaska), Inc.  
**Subject: Point Thomson Gas Cycling Project  
East Spit Dredge Spoils Disposal Site**

**Overview**

As currently envisioned, development of the Point Thomson field will include winter dredging north of the dock face to provide a 9-ft water depth for the barges bearing production modules. The neat volume of the winter dredge spoils is estimated to range from 70,000 to 100,000 cubic yards (cy). When the topic of spoils disposal was discussed with the EIS team on April 16<sup>th</sup>, it was suggested that some or all of the material might be used to recreate a natural spit that formerly existed east of the dock site (the "East Spit"). Although the subaerial portion of the East Spit was less than 400 ft long in 2001, the corresponding length in 1955 exceeded 2,000 ft (Coastal Frontiers, 2003). The advantages associated with rebuilding this natural spit to its former configuration include protecting the east side of the Central Well Pad, preemptively nourishing the beach on the east side of the dock, and providing a safe and economical site for spoils disposal.

The remainder of this memorandum describes the criteria adopted for developing the East Spit into a dredge spoils disposal site, and the resulting spit configuration.

**Criteria**

The following criteria were adopted for the conceptual design of the East Spit Dredge Spoils Disposal Site:

1. Sediment Characteristics: The dredge spoils should contain a significant percentage of sand and gravel to support the construction and evolution of a coastal feature that resembles the original spit (which was composed of such materials).
2. Plan Form: The plan form of the reconstructed spit should approximate the historical plan form that existed between 1955 (the date of the earliest aerial photograph) and 1982 (the date of the last aerial photograph preceding drastic natural erosion of the spit).
3. Cross-Section: For the purpose of estimating the volume of the reconstructed spit (i.e., the dredge spoils disposal capacity), the top surface elevation and side slope inclination should approximate those of the only known survey profile on the historical spit. This profile, obtained by Tekmarine, Inc. in 1982, is shown in Figure 1.
4. Volume: The volume of sediment used to reconstruct the spit should be approximately 70,000 cy. (If the actual spoils volume proves to be larger, the overage can be used to construct a wider version of the spit, or disposed of at an alternate site.)

## **Configuration**

Figure 2 shows the proposed plan form of the reconstructed spit, along with historical shorelines derived from the 1955 and 1982 aerial photographs. Figure 3 provides idealized cross-sections through the spit at two locations. The side slopes are inclined at 4(H):1(V), extending from a crest elevation of +4 ft (MLLW) to the existing seabed. The crest width measures approximately 55 ft at Cross-Section A and 135 ft at Cross-Section B. The capacity of the disposal site is estimated to be 71,000 cy, although this quantity should be regarded as approximate because it is based on an extrapolation of the bathymetric data obtained for the dock site in 2002 (Coastal Frontiers, 2002).

As indicated above, the cross-sections shown in Figure 3 are idealized, in that they are intended primarily for use in computing the spit volume. The as-built cross sections will be far less smooth, and will consolidate over time as the material thaws and is reworked by incident waves. Nevertheless, if the composition of the dredged material resembles that of the original spit, it is likely that the cross-sections of the reconstructed spit will evolve toward those shown in Figure 3. As in the case of the original spit, the reconstructed spit will be subject to wave overtopping and therefore will be devoid of vegetation.

## **References**

- Coastal Frontiers Corporation, 2003, "Bluff Erosion Analysis for the Point Thomson Gas Cycling Project-Draft Report", conducted for Parsons E & C, Inc., Arcadia, CA.
- Coastal Frontiers Corporation, 2002, "Pt. Thomson Bathymetric Surveys", conducted for Parsons E & C, Inc., Arcadia, CA, 5 pages + Chart

Tekmarine, Inc., 1983, "Point Thomson Coastal Processes Study, Beaufort Sea, Alaska",  
Prepared for Exxon Company U.S.A., Contract No. PTD-8206, 156 pages +  
Appendix.

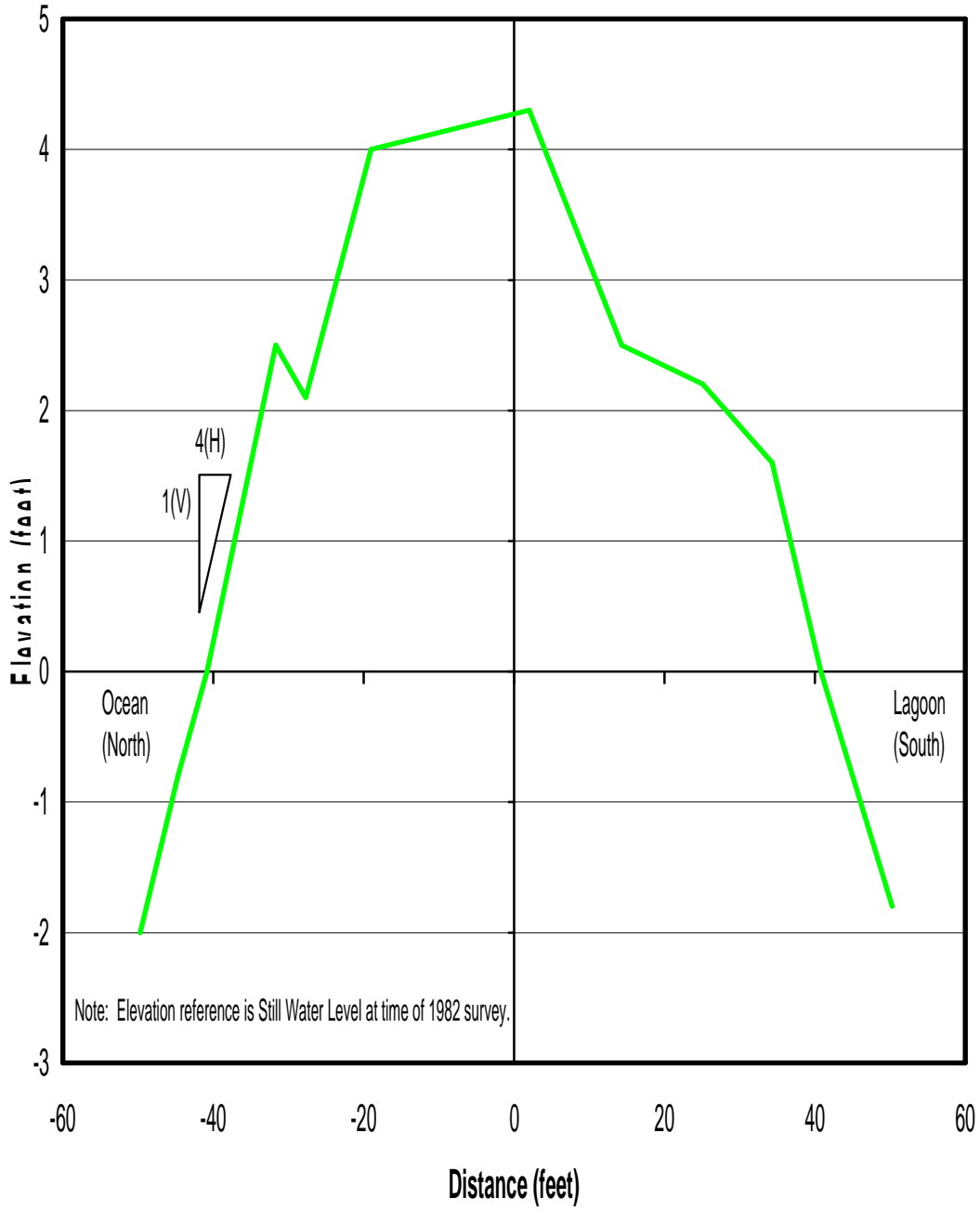


Figure 1. Survey Profile obtained on the East Spit in 1982

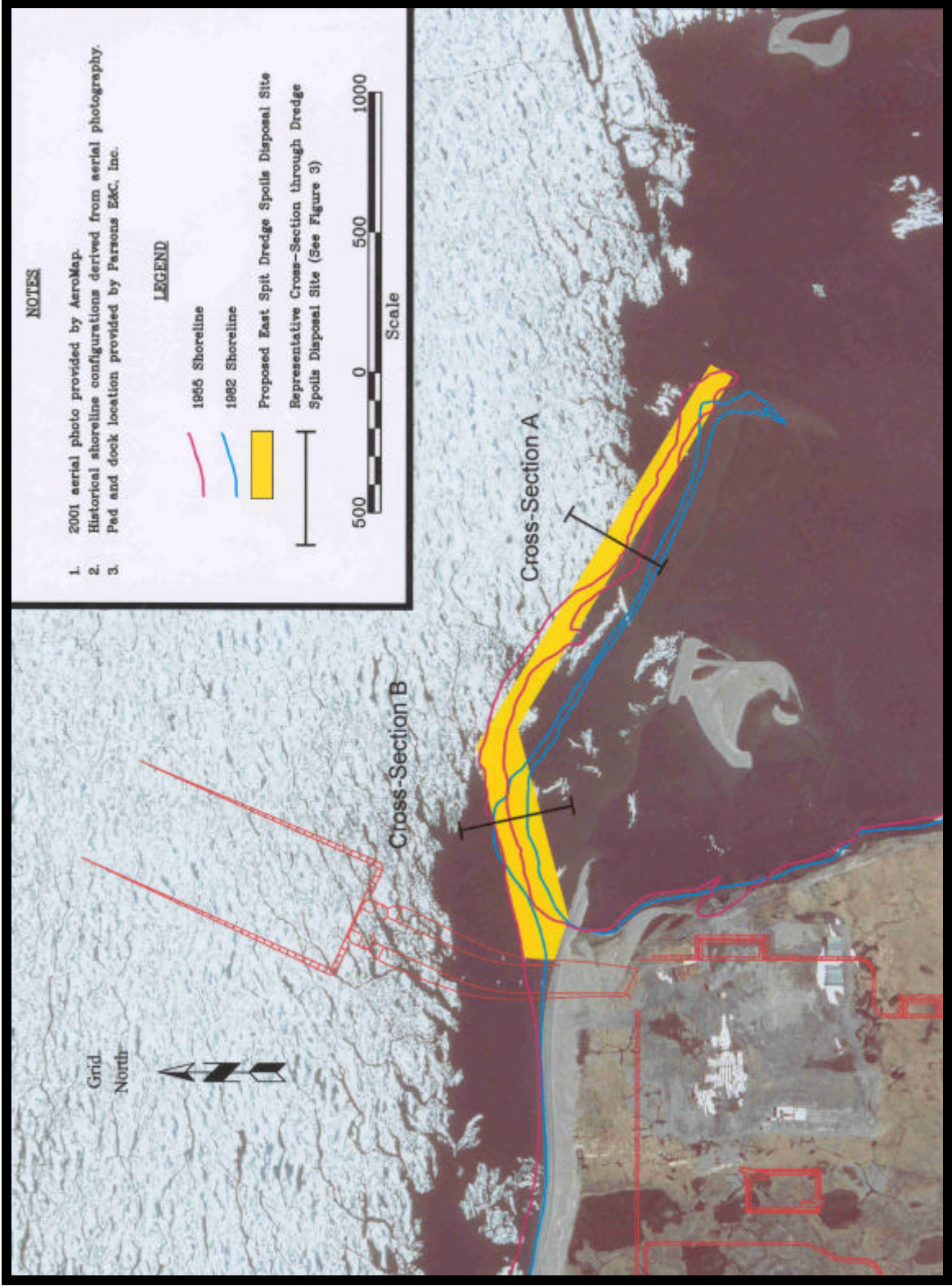
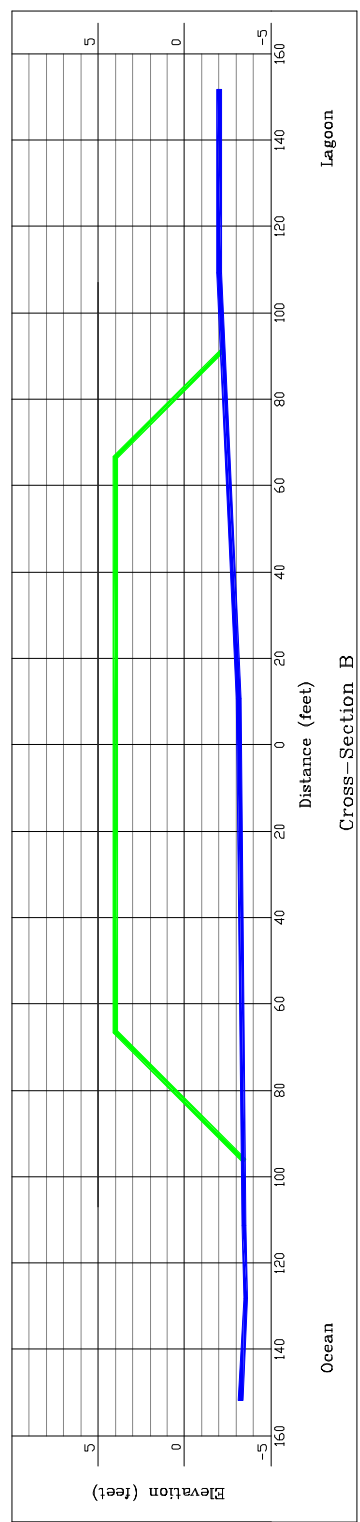
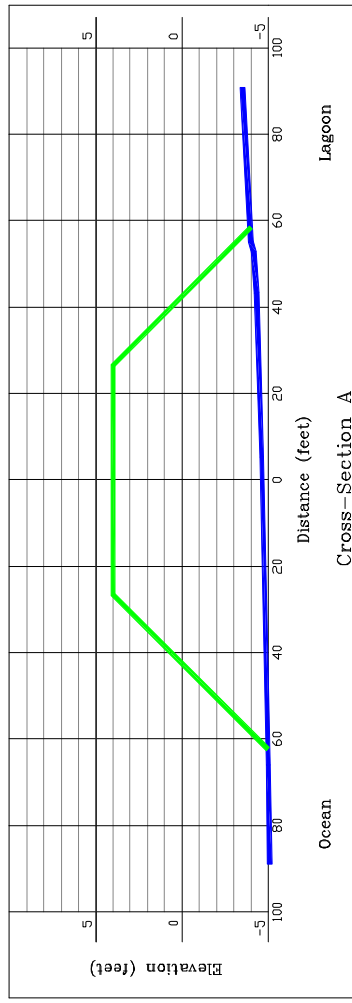


Figure 2. Plan From Configuration of Proposed East Spit Dredge Spoils Disposal Site



**NOTES**

1. Vertical Datum is Mean Lower Low Water.
2. Estimated seabottom derived from bathymetric data obtained on 8 and 9 August 2002.
3. See Figure 2 for location of cross-sections.

**LEGEND**

- Dredge Spoils
- Seabottom (estimated)

**Figure 3. Idealized Cross-Sections Through Proposed East Spit Dredge Spoils Disposal Site**