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ANCHOR QEA

NAVFAC Naval Facilities Engineering Command

Implementing Dredging and Wharf Improvements X-Ray Wharf Apra Harbor, Guam

Pacific Chapter WEDA

October 25, 2013

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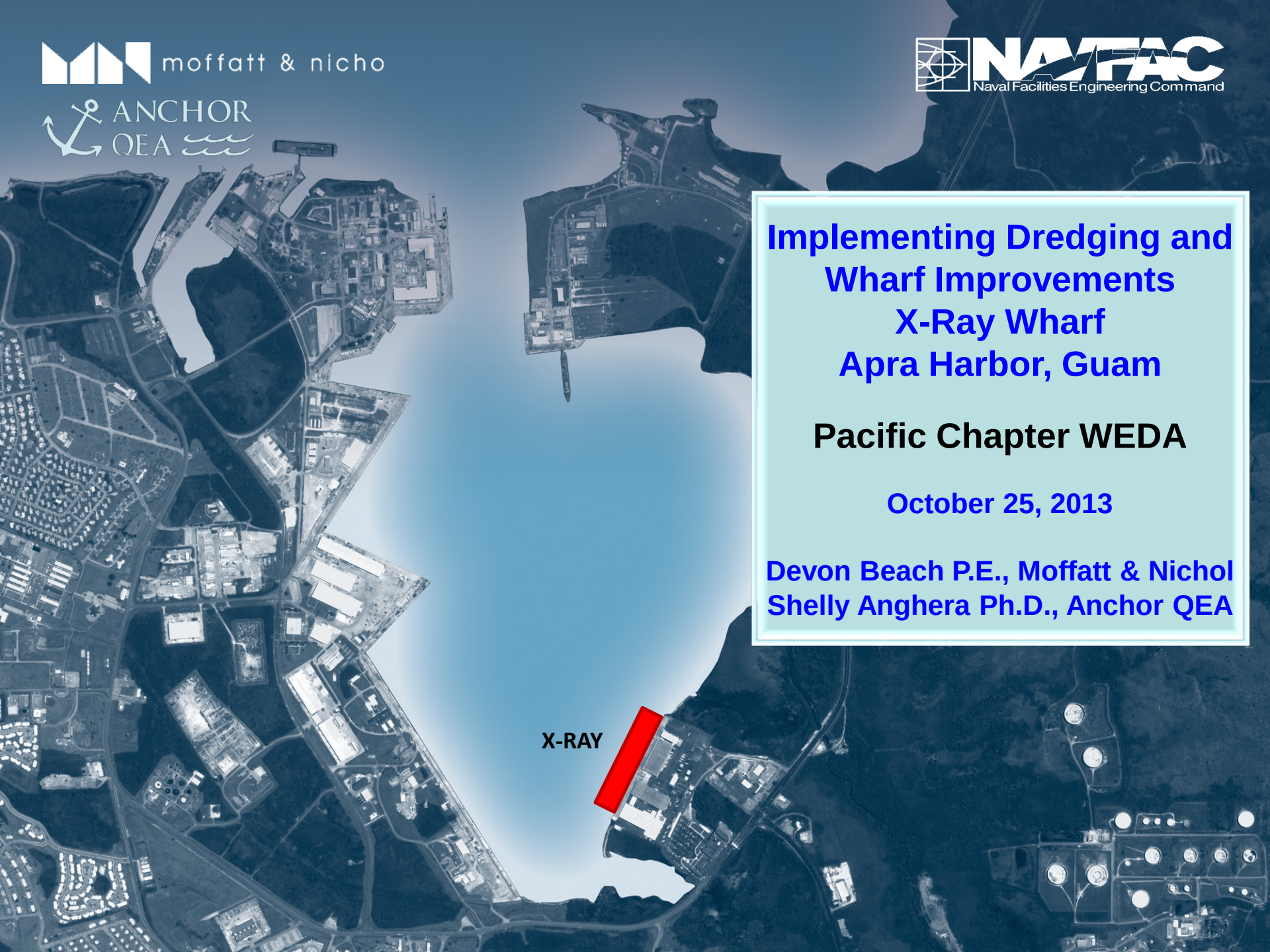
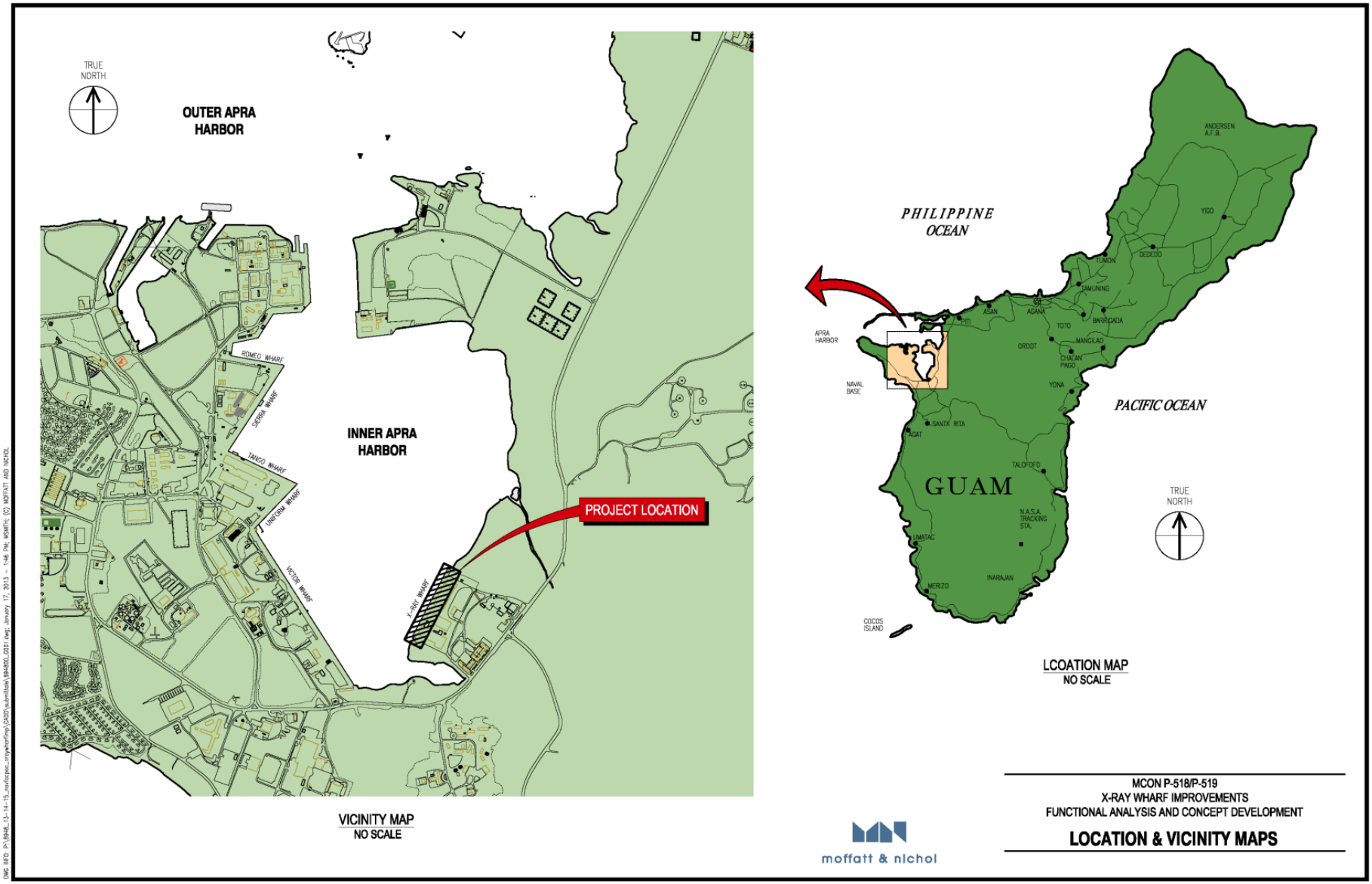


Mission Requirements & Basic Scope

WHARF IMPROVEMENTS

- Rehabilitate and modernize X-Ray Wharf
  - *Support T-AKE*
- Provide a new vertical bulkhead and wharf platform
- Accommodate increased dredge depth and operational loads
- Provide new dolphins to accommodate longer design vessels

Location and Vicinity Map



Overall Site Plan

Design Vessel

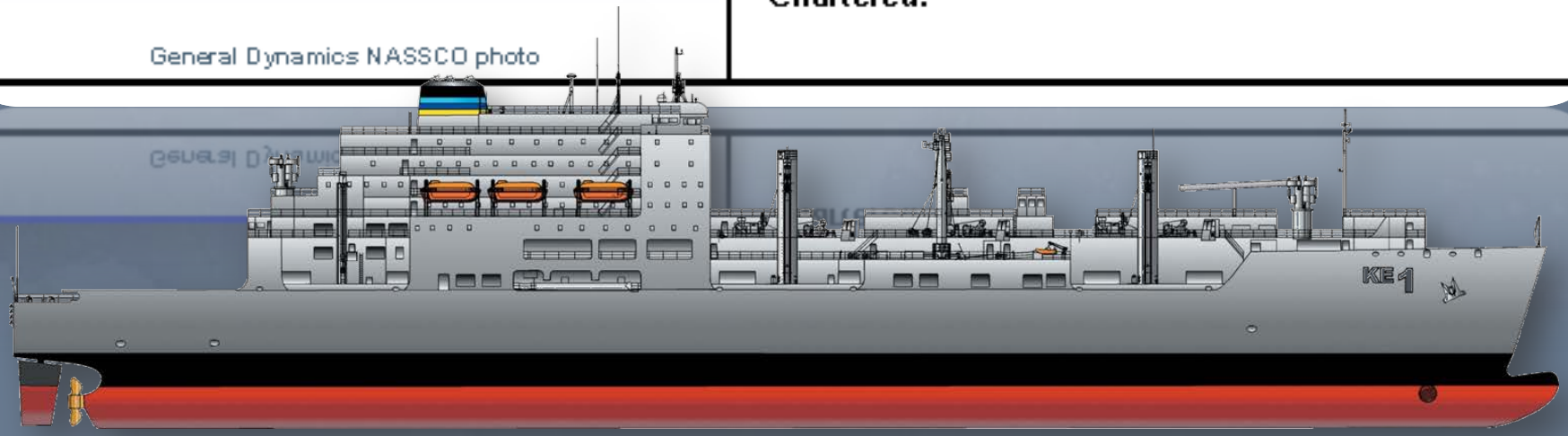
USNS LEWIS AND CLARK (T-AKE 1)

Dry Cargo/Ammunition Ship

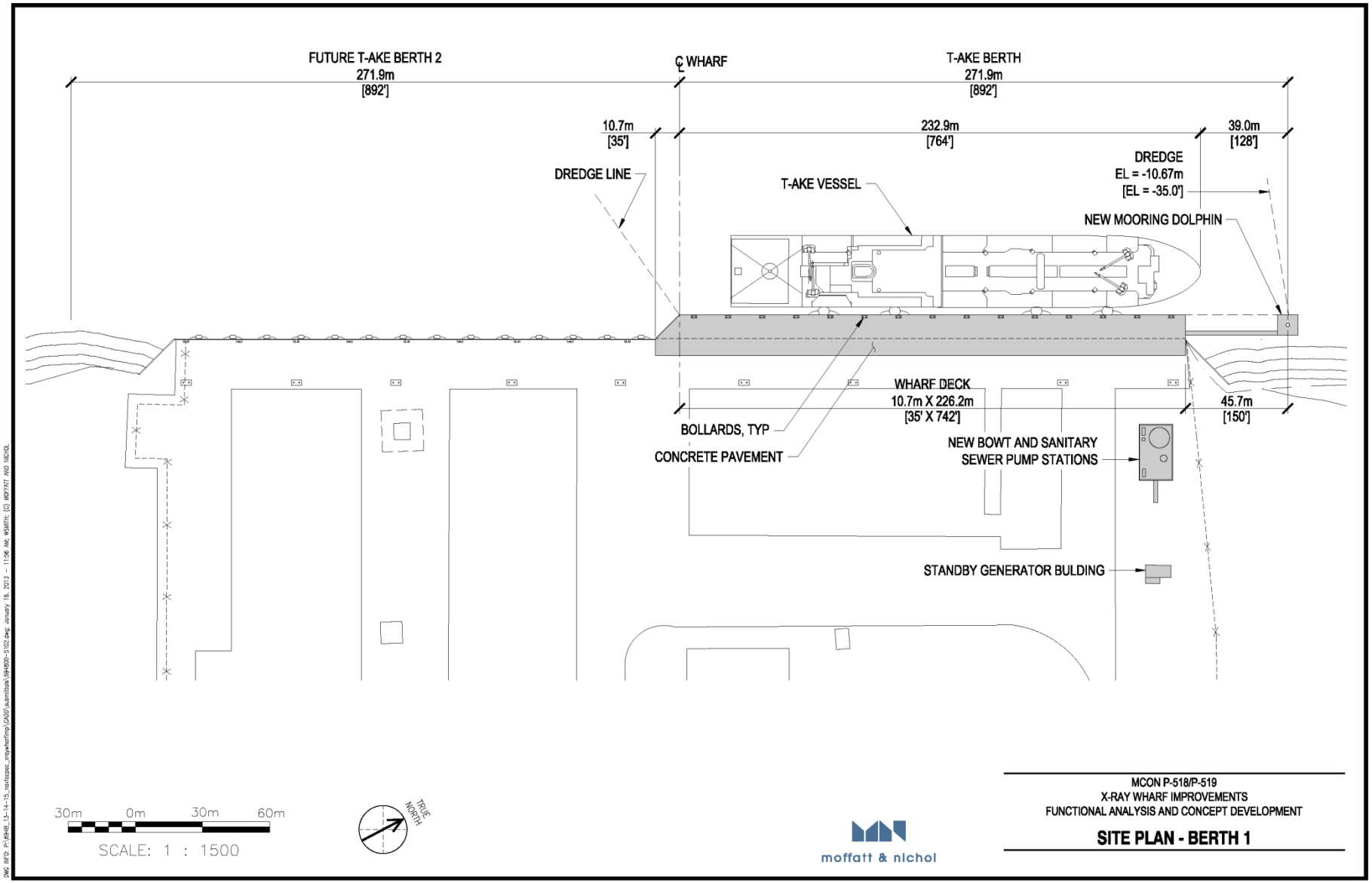
General Dynamics NASSCO photo

USNS Lewis and Clark is one of Military Sealift Command's fourteen Dry Cargo/Ammunition Ships and is part of the 34 ships in Military Sealift Command's Combat Logistics Force.

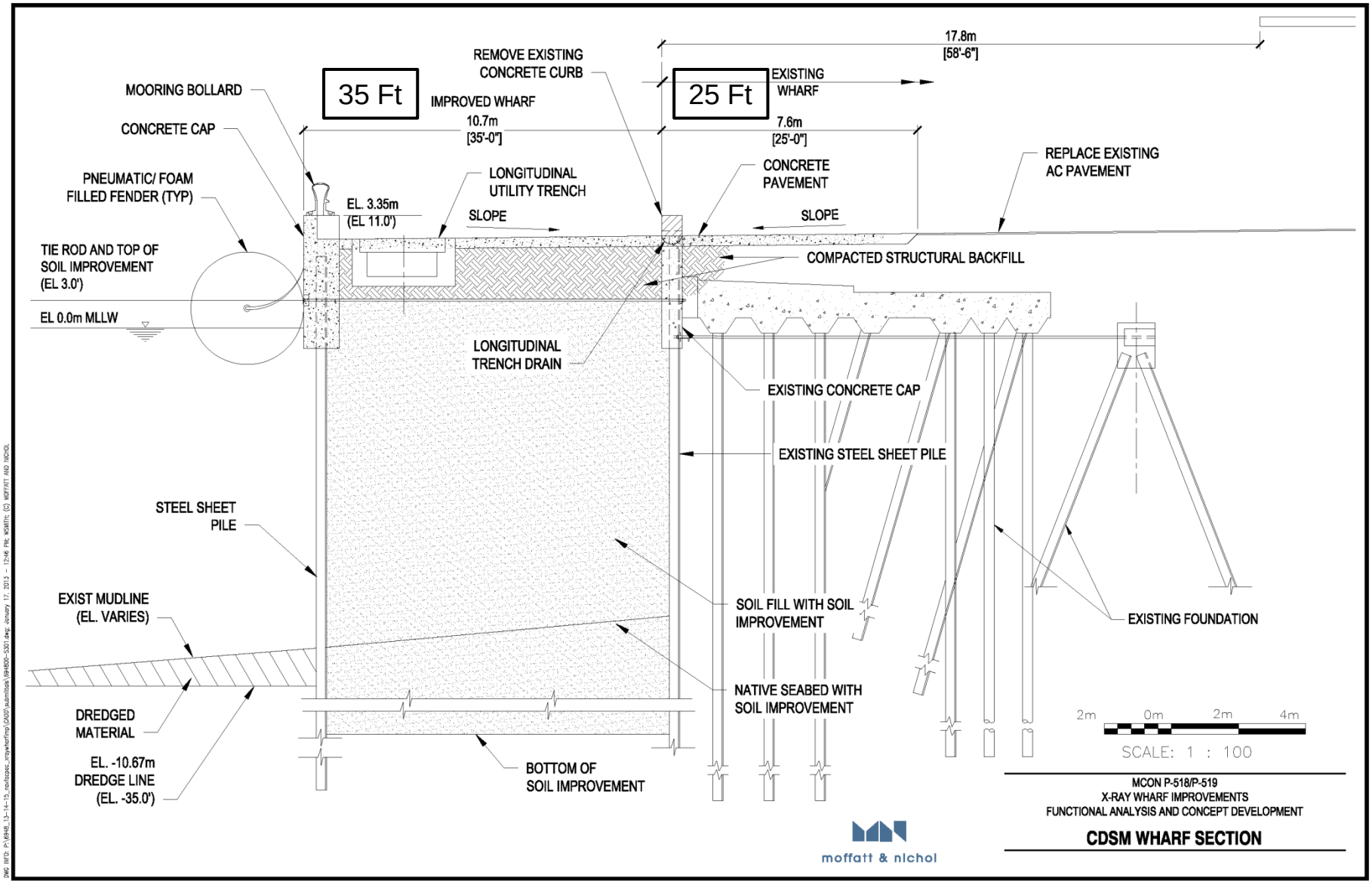
• **Length:**	**210 m (689 ft)**
• **Beam:**	**32.2 m (105.6 ft)**
• **Draft:**	**9.7 m (31.82 ft) - Scantling**
• **Displacement:**	41,000 long tons
• **Speed:**	20 knots
• **Civilian:**	124 civil service mariners
• **Military:**	11
• **Government-Owned/ Chartered:**	Government-owned



Site Plan – P-518 Berth 1 (North)



New Wharf Cross Section



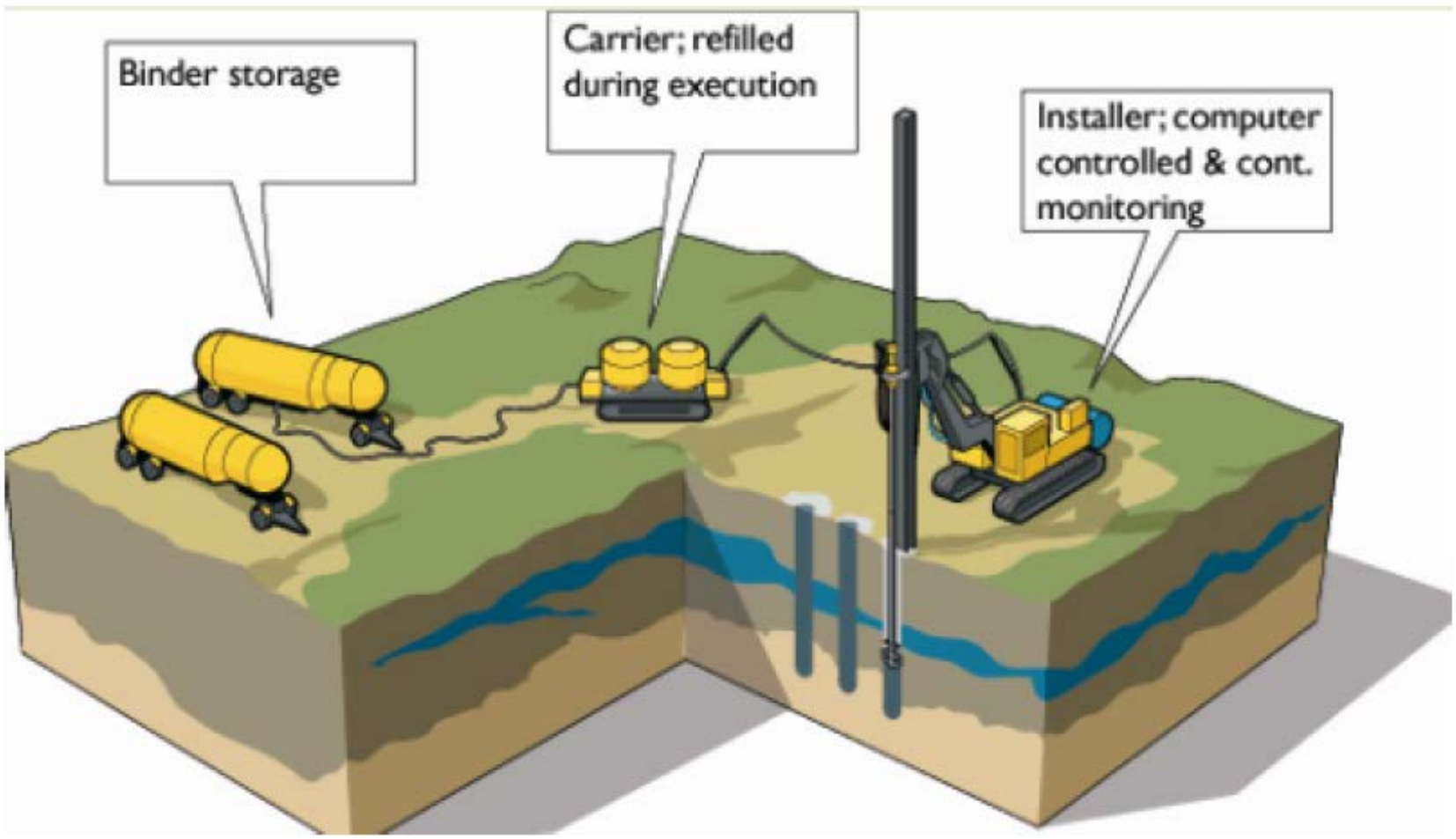
Proposed Ground Improvement Option for New Fill (Cement Deep Soil Mixing (CDSM)

- Advantages
  - *Eliminates the need for additional back land support*
  - *Negligible vibration*

- Disadvantages
  - *Has not be used on the island before*

NOTE: Stone column ground improvement was used at Uniform / Tango Wharves (P-204) – This method will still require king piles and tie-back system supported by anchor block on piles

Site Logistics



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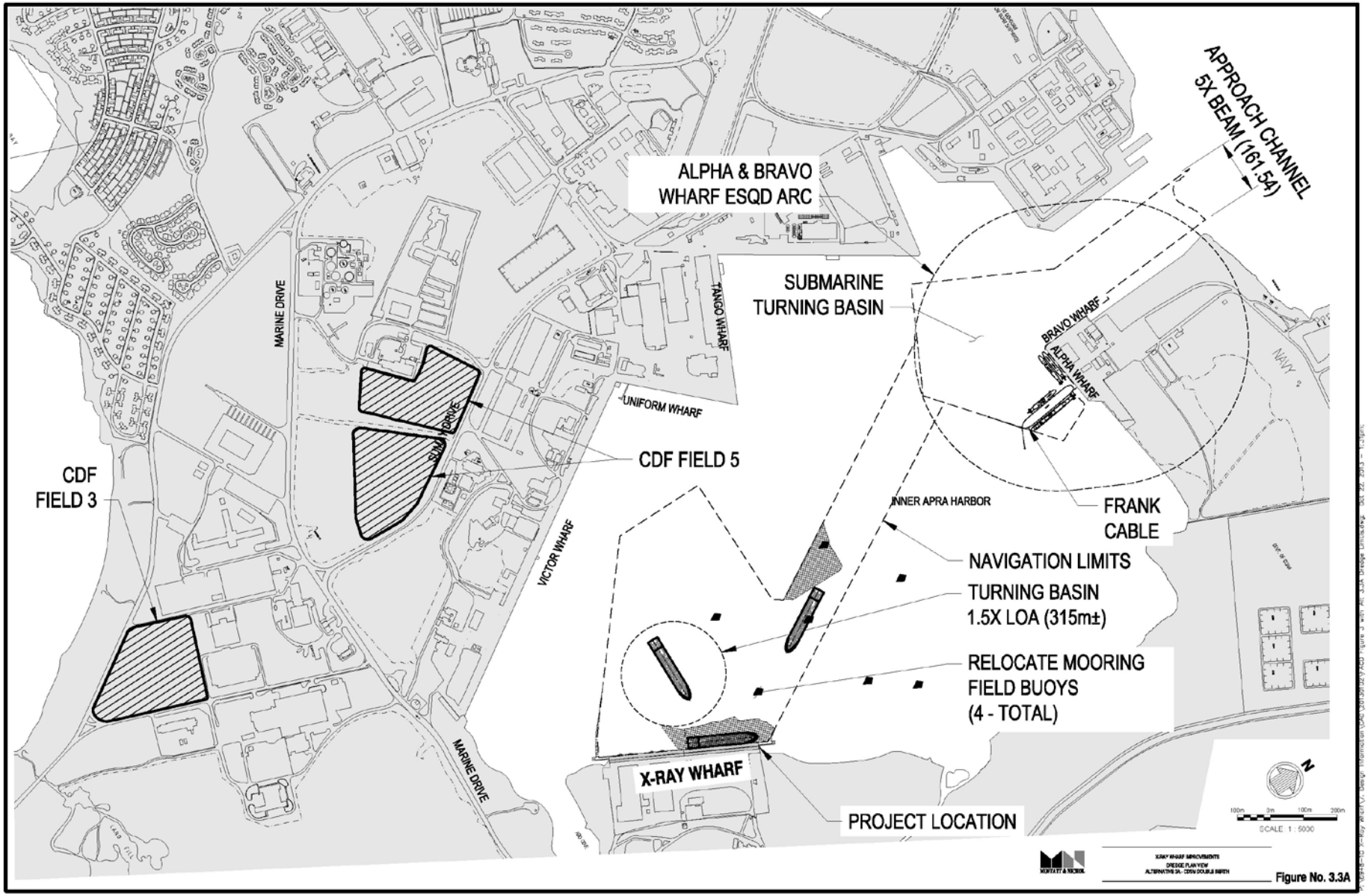
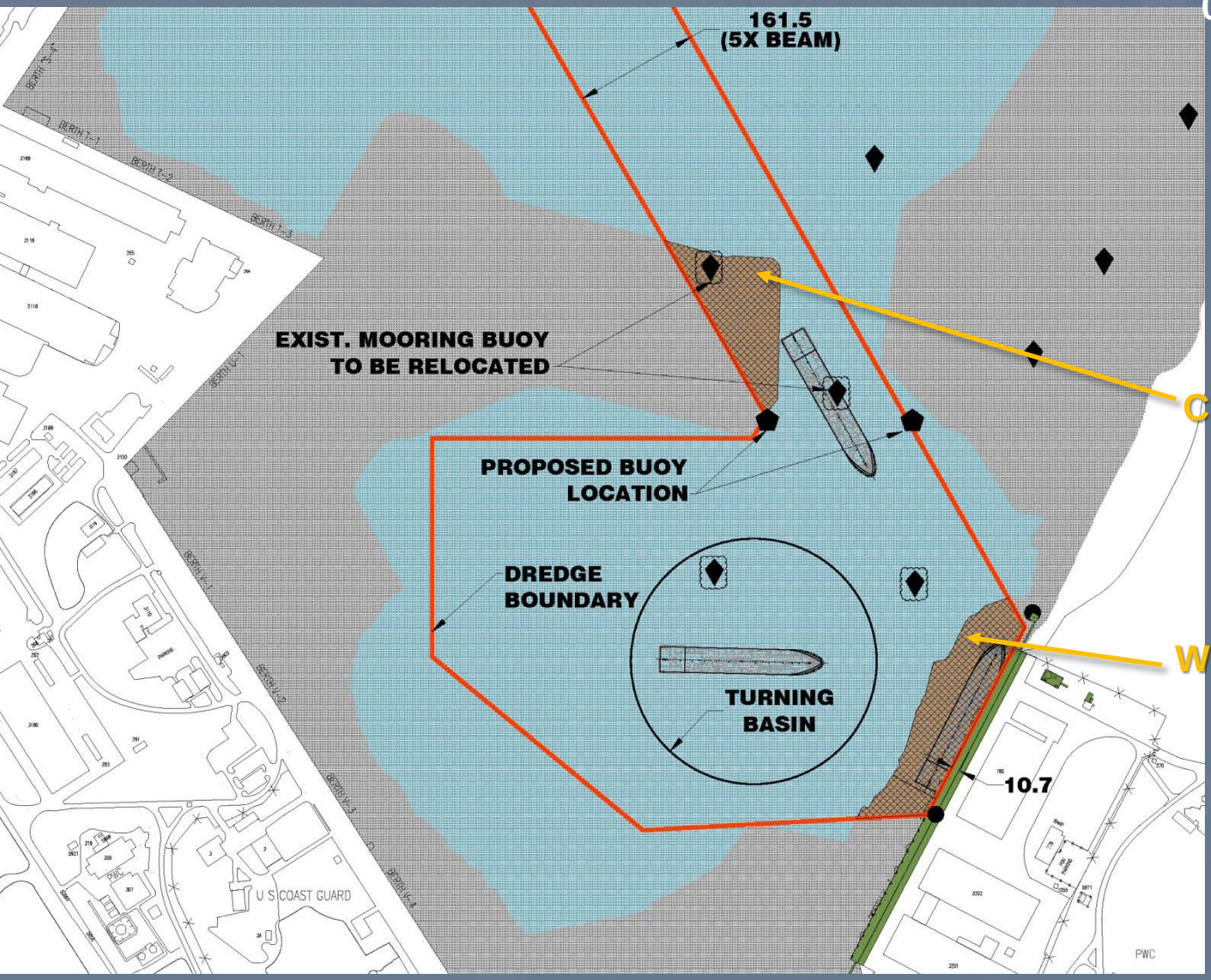
DREDGING

Navigation Plan and CDF Location Plan



Dredge Approach Channel and Berth



DREDGE REQUIREMENTS

10.67m (35'), plus
0.6m (2') over-dredge

Neatline – 21,200 m^3
O/D – 17,650 m^3
Total – 38,850 m^3

CHANNEL DREDGING

Neatline – 9,700 m^3
O/D – 10,500 m^3
Total – 20,200 m^3

WHARF AND TURNING BASIN DREDGING

Neatline – 11,500 m^3
O/D – 7,150 m^3
Total – 18,650 m^3

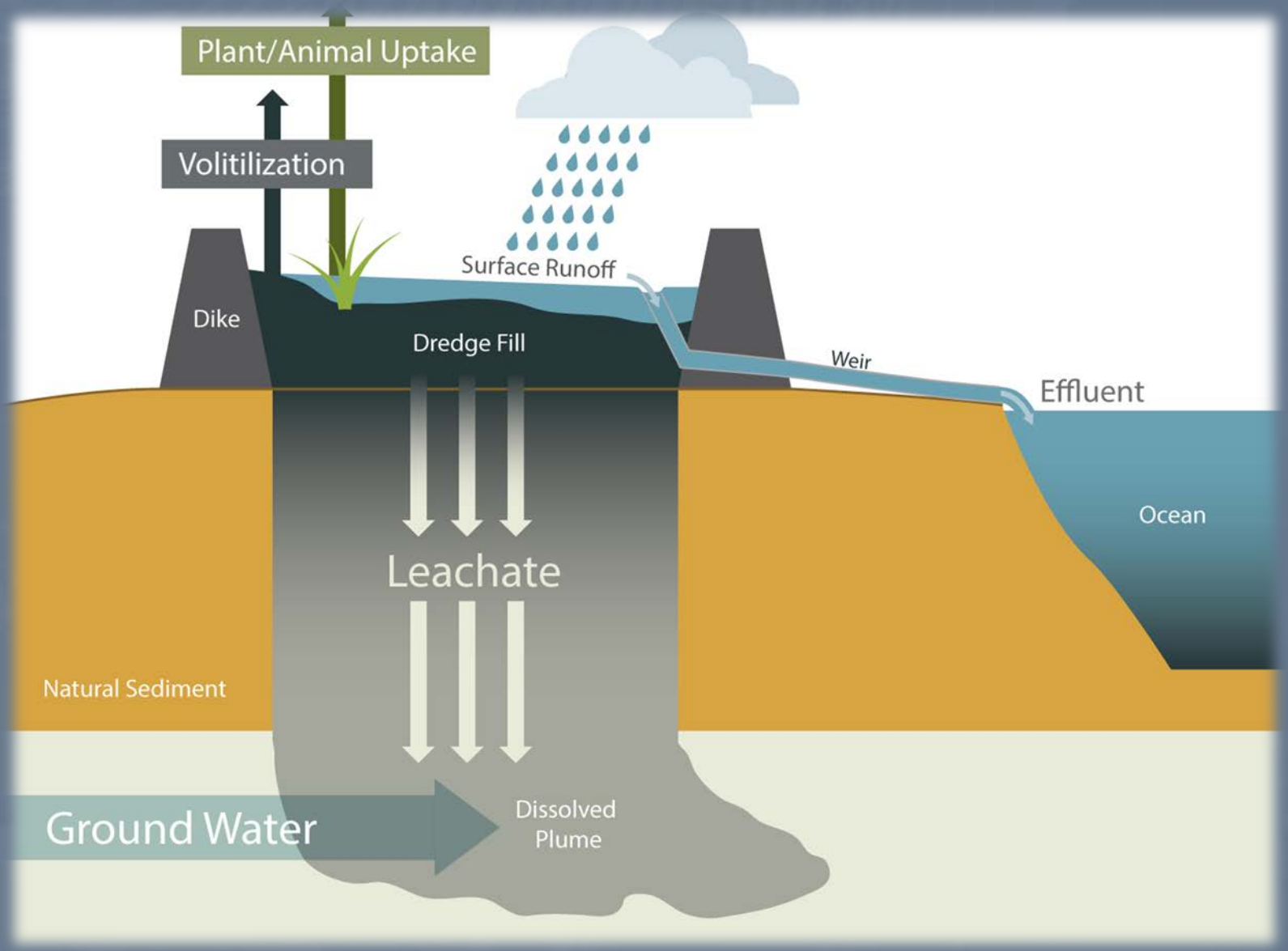
Dredge Approach Channel and Berth

- Disposal
  - *Placement at confined disposal facility (CDF)*
  - *Deep ocean disposal site*
- Dredged characterization
  - *Most material is believed suitable for ocean disposal (Element Environmental and Weston Solutions, Inc. 2012)*
  - *Pending final EPA approval*

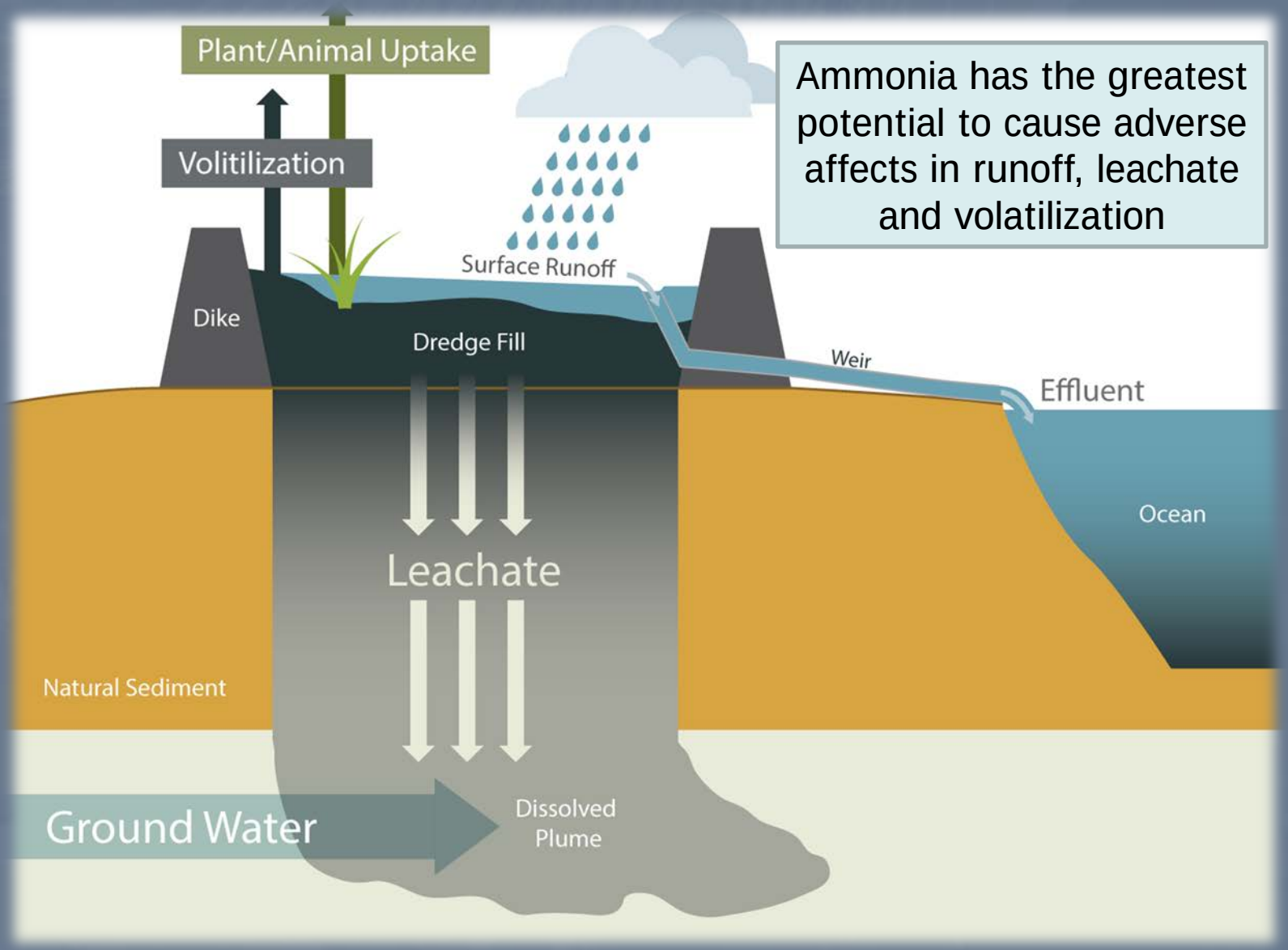
Confined Disposal Facilities

- DMMP identified 6 potential upland areas to be considered for placement of dredged material (MEC/Weston 2004)
- Contaminant fate and transport studies were evaluated for 3 sites preferred by the Navy (Weston 2005)
- Upland Testing Manual (USACE 2003) applied

Upland CDF Site Designation

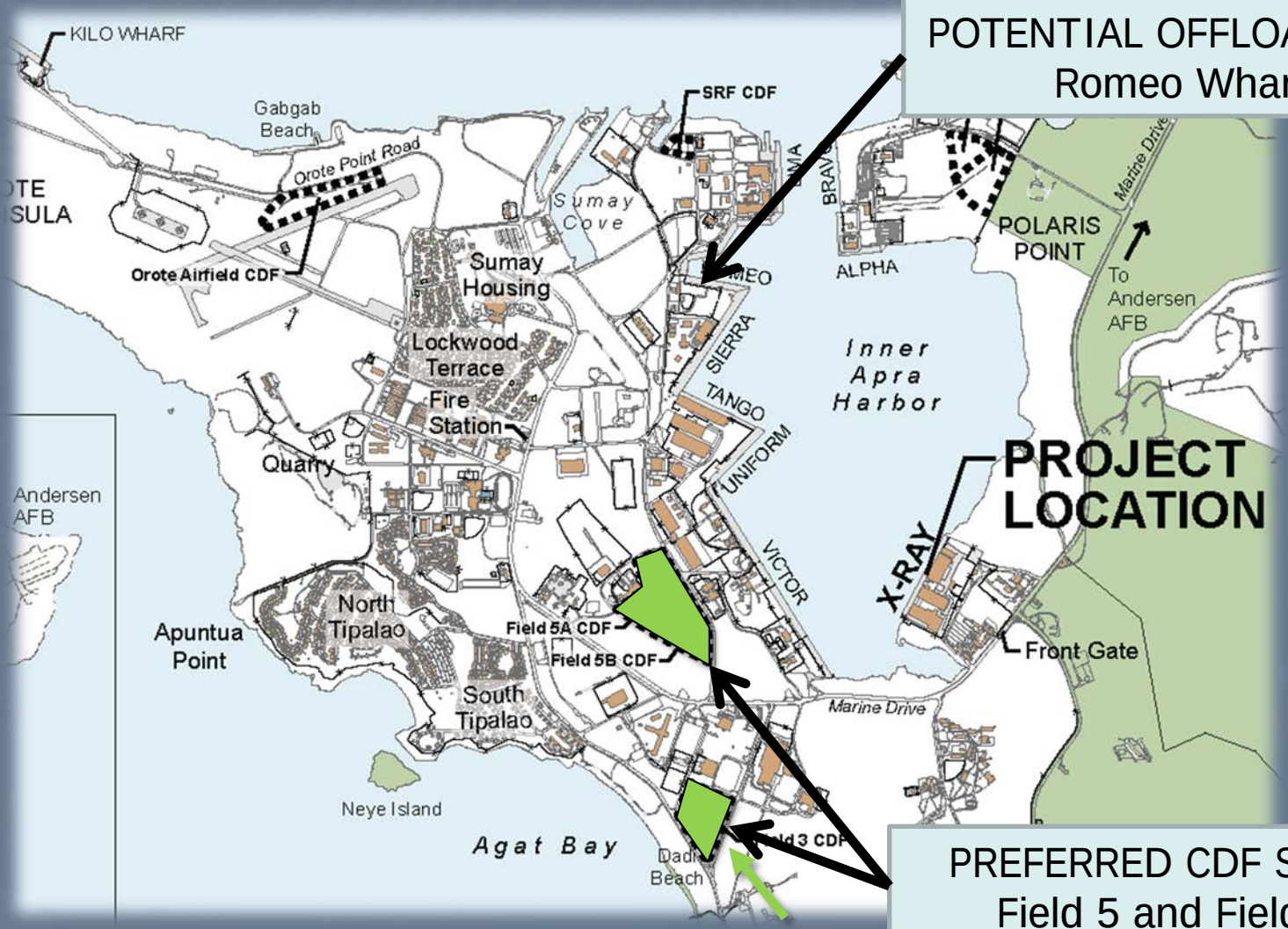


Upland CDF Site Designation



Ammonia has the greatest potential to cause adverse affects in runoff, leachate and volatilization

CDF's

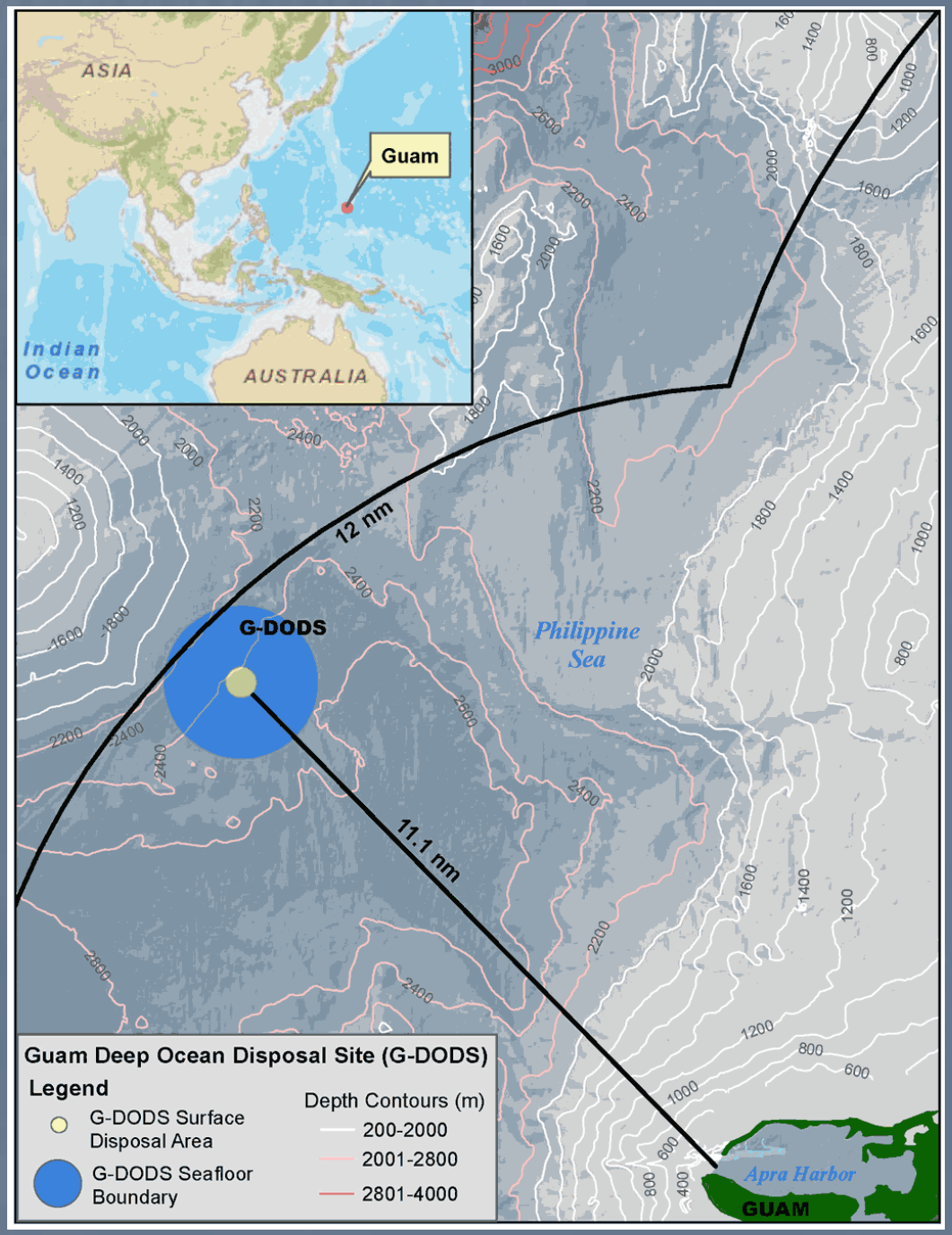


POTENTIAL OFFLOAD SITE
Romeo Wharf

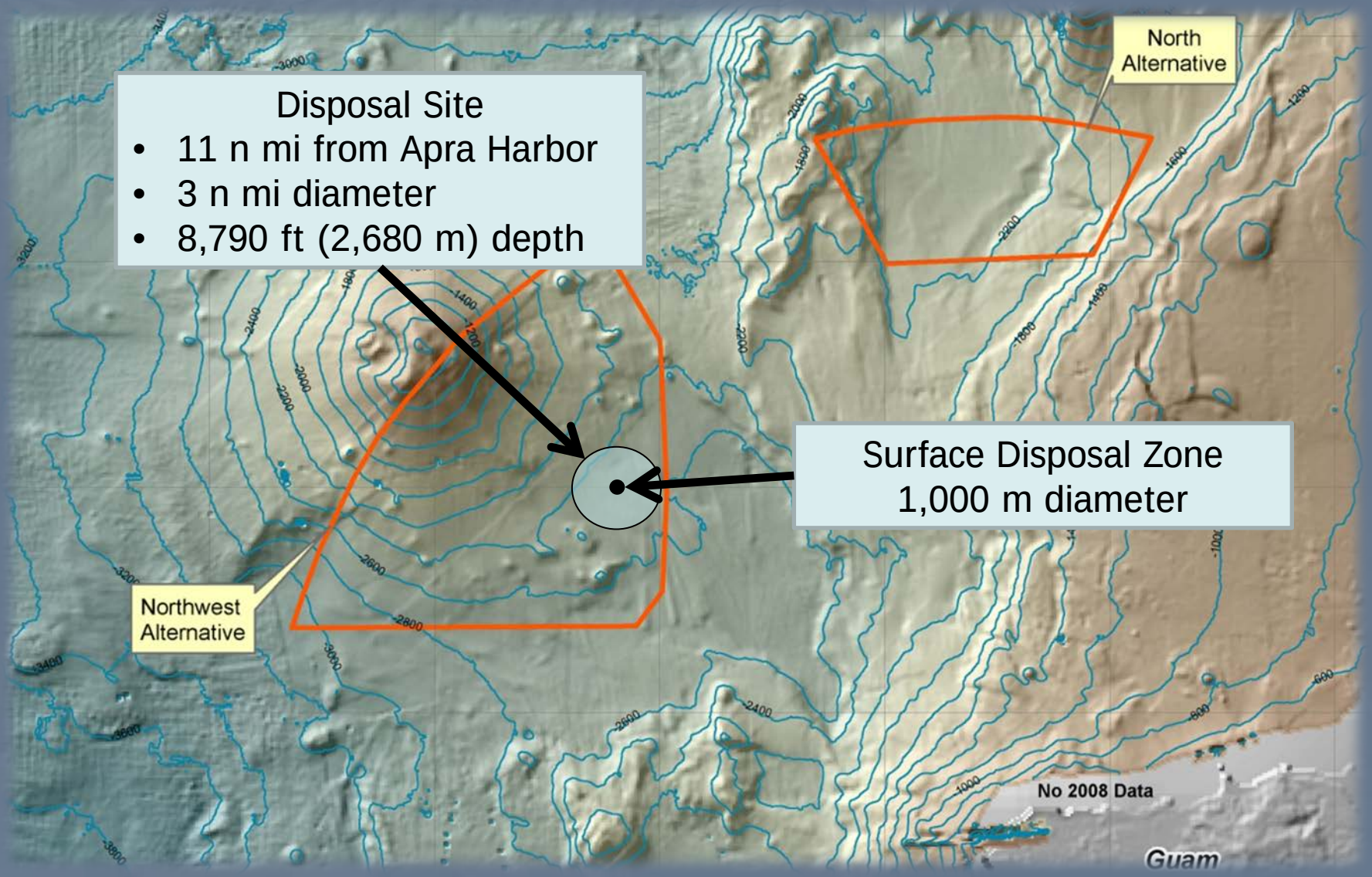
PREFERRED CDF SITES
Field 5 and Field 3

Guam Deep Ocean Disposal Site

- G-DODS
- Designated September 2010
- Lack of beneficial reuse options for dredged materials
- Limited capacity and competing projects for CDF's



Guam Deep Ocean Disposal Site



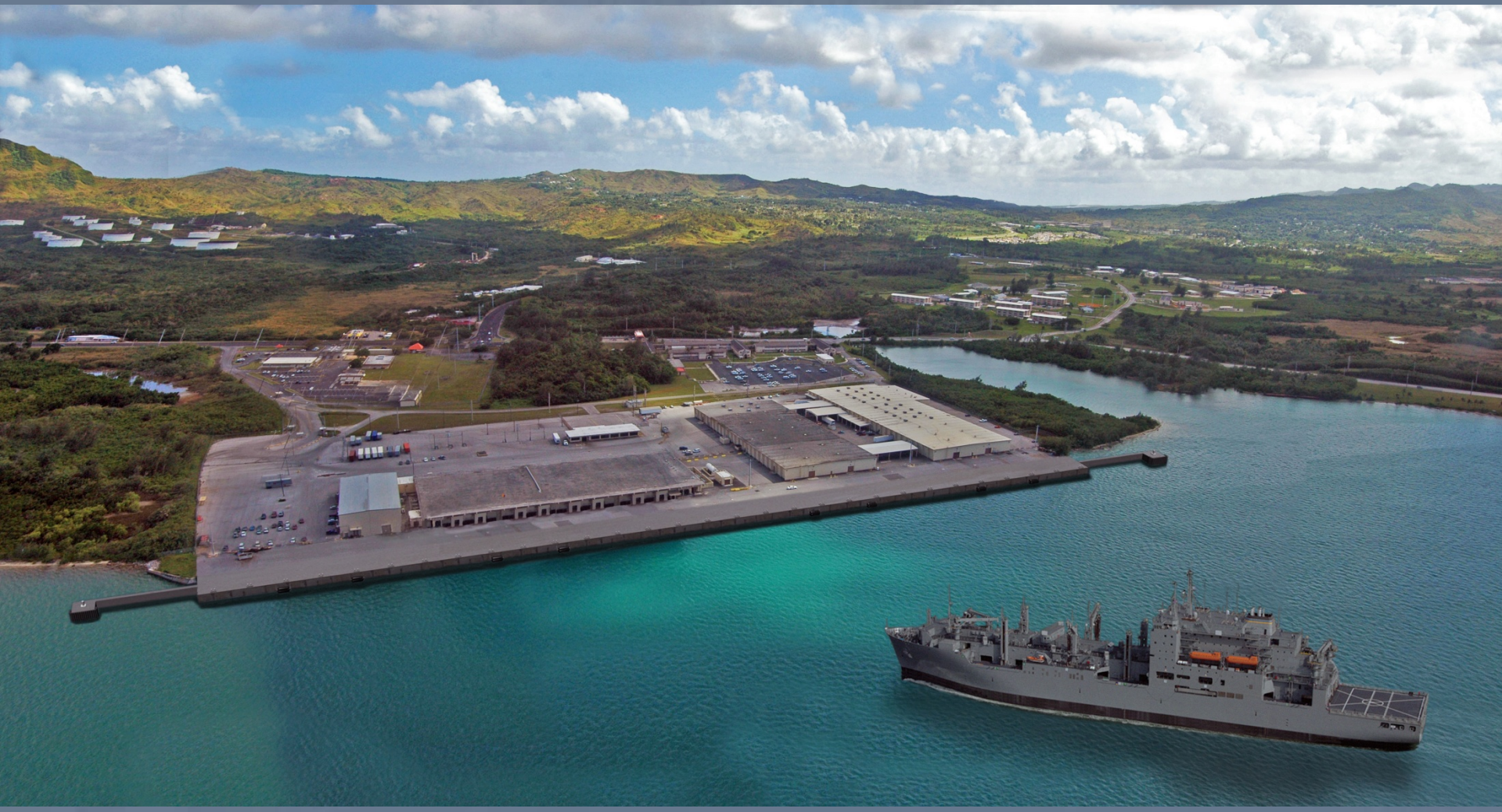
Guam Deep Ocean Disposal Site

- Site use limited to permitted projects, with clean material having no practicable alternative;
- Maximum 1,000,000 cy per calendar year;
- No disposal operations during coral spawning;
- No disposal during unsafe weather/sea conditions;
- Required documentation for each trip:
  - *Satellite tracking to confirm surface discharge location;*
  - *Sensors on scows to detect any leaking or spilling during transit;*
  - *Scow certification checklist for each load.*

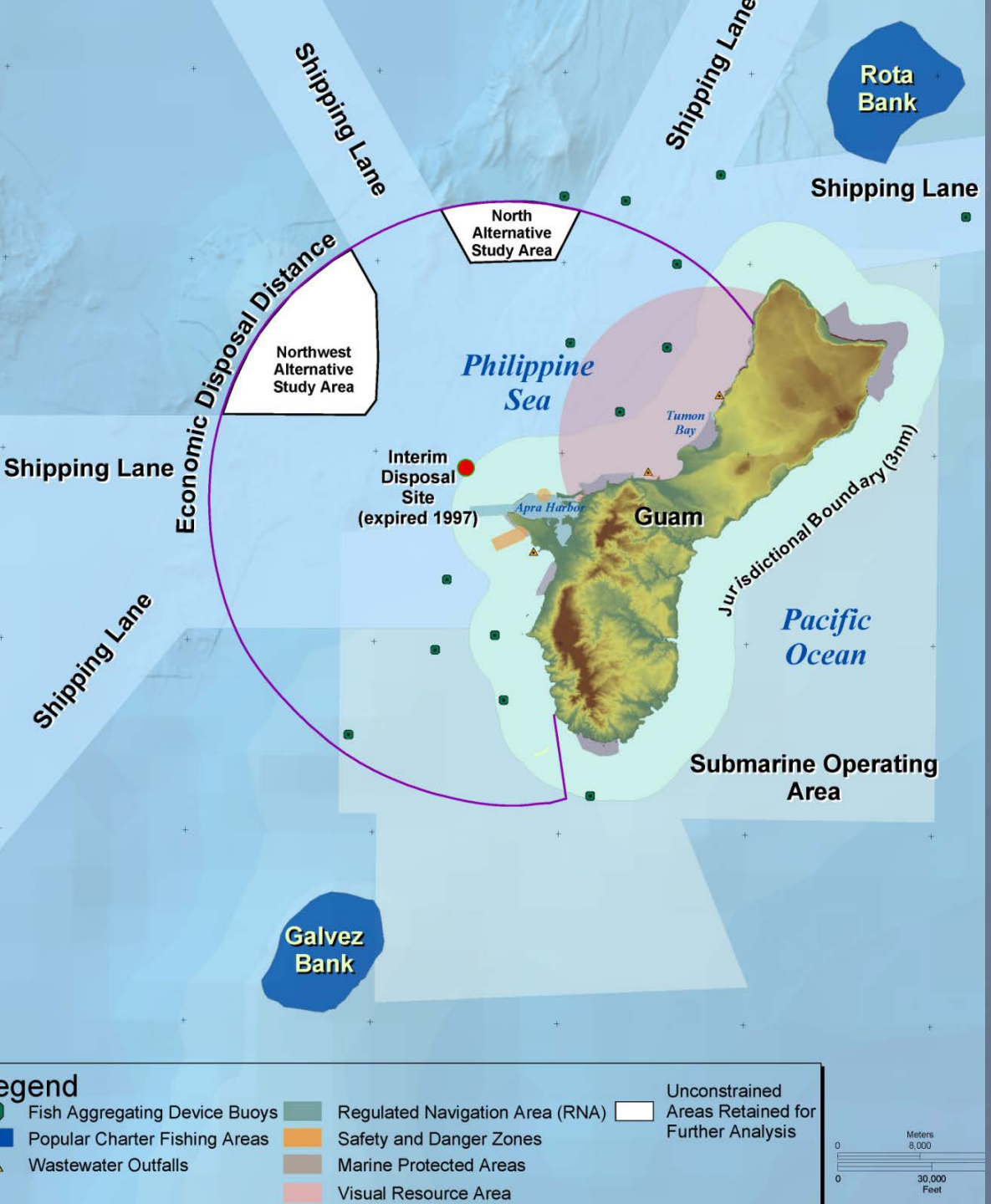
Summary

- Bids expected to be released March 2013
- Unique challenges of working in Guam
  - *Cement deep soil mixing*
  - *Ocean disposal*
  - *Jones Act – US flagged vessels*

Questions



FY14 MCON P-518 – Berth 1
FY15 MCON P-519 – Berth 2
X-RAY WHARF IMPROVEMENTS
APRA HARBOR, GUAM

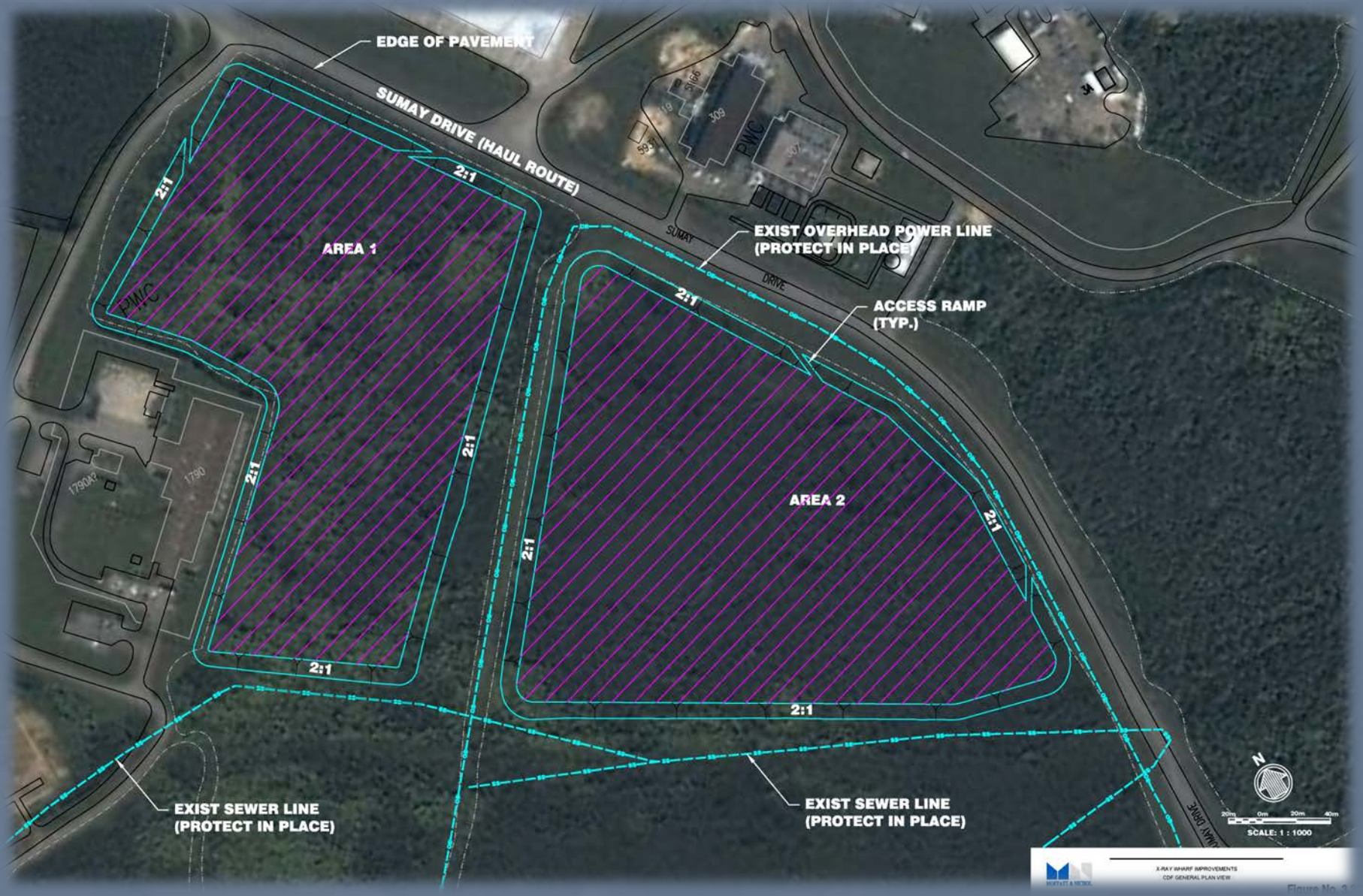
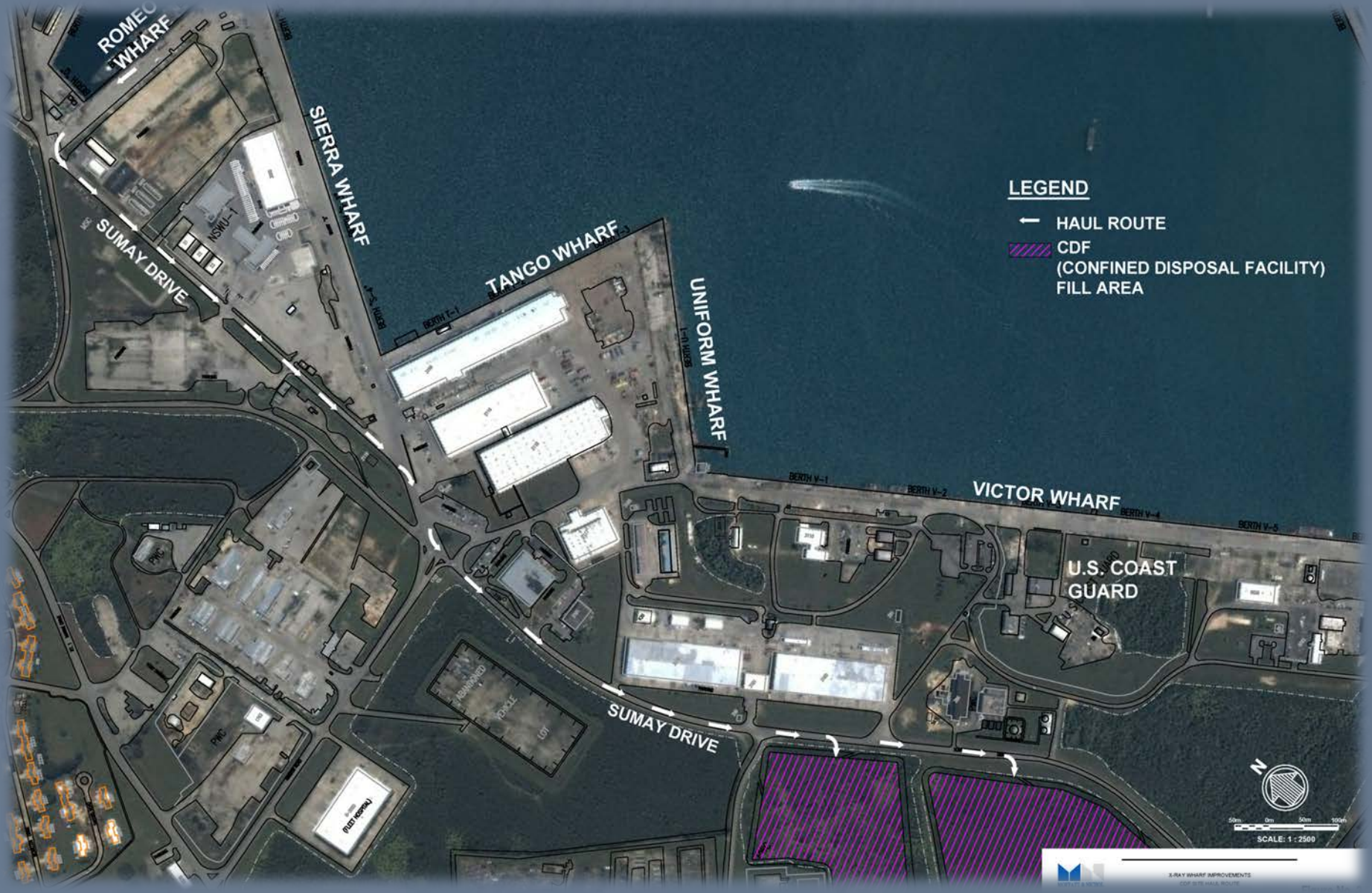


Zone of Siting Feasibility Study

ODMDS location

- Cost of transport
- Navigational restrictions
- Political/jurisdictional boundaries
- Environmental/ Sensitive resources

Field 5 CDF


EDGE OF PAVEMENT
SUMAY DRIVE (HAUL ROUTE)
AREA 1
AREA 2
2:1
EXIST OVERHEAD POWER LINE
(PROTECT IN PLACE)
ACCESS RAMP
(TYP.)
EXIST SEWER LINE
(PROTECT IN PLACE)
EXIST SEWER LINE
(PROTECT IN PLACE)
PWC
1790A2
1790
309
N
SCALE: 1 : 1000
X-RAY WHARF IMPROVEMENTS
CDF GENERAL PLAN VIEW

Haul Route to CDF 5