# Port Authority of Guam
# Master Plan Update 2008

## Overview For Public Comment

*Presented by*
*PB International, Inc.*

March 5, 2008

# History & Snapshot

- Navy Designed & Put in Service in Late 1960's
- Has Remained Largely Unchanged Since
- Ownership/Operations to Gov-Guam in 1970's
- Done its Job for Guam & Bases as Sole Gateway (Over 90% moves through Port)
- Facilities Out of Date for Modern Cargo Operations
- Base Relocation Related Construction & Subsequent Build-up will Increase Demands
- Port Authority Hired PBI to Develop Master Plan

# Master Plan Process Overview

- ✓Kick-off in August 2007
- ✓Data Collection & Interviews
- ✓Existing Facilities & Current Trends
- ✓20 Year Demand Forecasts
- ✓Capacity Analysis
- ✓Alternatives Analysis & Preferred Alternative
- ✓Preliminary Capital Cost Impacts
- ✓Draft Master Plan Report
- ✓Public Review & Comment
- ✓Final Master Plan Report

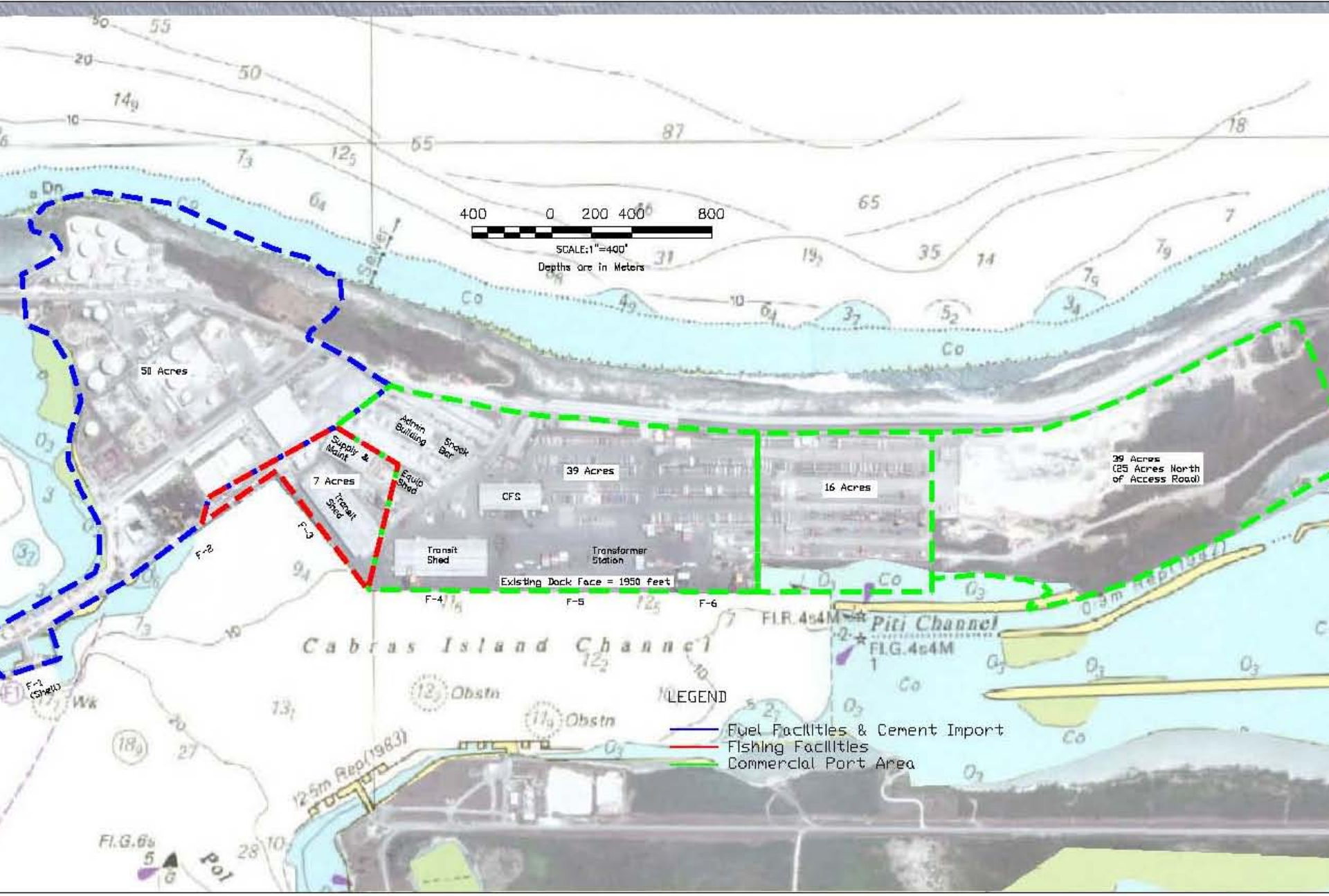
# Interviews, Meetings, Conferences…

- Started Work August 7, 2007 with Kick-off
- Over 50 Interviews, Meetings,
- Comprehensive Inventory of Data Collected

# Commercial Port Facilities - Assets

- Breakwater & Sheltered Harbor
- Deep Water Anchorage & Access Channel
- Largely Industrial Zone – No Urban Encroachment
- Land & Waterfront Access for Expansion (20+ Yrs)
- Major Shipping Line Rotations to USWC to Far East
- Asian Services & Island Transshipment Services
- Ongoing Operations & Existing Berths – Plus for Obtaining Permits (Not a Greenfields Location)


Route 1
Piti Channel
Route 11
Commercial Port
Piti
Apra Harbor
Lockwood Terrace


400 0 200 400 800
SCALE:1"=400'
Depths are in Meters
50 Acres
7 Acres
Supply & Maint
Admin Building
Snack Bar
Equip Shed
Transit Shed
F-2
F-3
39 Acres
CFS
16 Acres
39 Acres
(25 Acres North of Access Road)
Transit Shed
Transformer Station
Existing Dock Face = 1950 feet
F-4
F-5
F-6
Cabras Island Channel
Piti Channel
Fl.R.4s4M
Fl.G.4s4M
Obstn
Obstn
12.5m Rep(1983)
Fl.G.6s
Pol
LEGEND
Fuel Facilities & Cement Import
Fishing Facilities
Commercial Port Area

# Facility Constraints

- Berths
  - Insufficient Dredge Depths (-35’ to -37’ for container ships)
  - Wharves in Poor Condition
  - Sheet-pile Bulkheads Deteriorating
- Container Cranes are a MAJOR Concern
  - 1 Operating – 1 Prone to Breakdown  1 – Non-operational
  - Do only 15-18 Lifts/Hour (25+ USWC, higher in Asia)
  - Insufficient Vertical Clearance (ships must light load)
  - Cannot Handle Post-PANAMAX Ships in Future
  - Maintenance Costs Extremely High

# Facility Constraints (Cont'd)

- Other Equipment – Insufficient, Old & Need Replacement
- Truck Gates Inefficient, Manual Processing & Slow
- Yard Area Constrained for a Wheeled Operation
- Mix of Commercial Port, Indirect and Unrelated Use
- Security – will  not meet ISPS Requirements
- No Automation – No Terminal Operating System
- Insufficient  Labor to Meet Peak Demand Periods
- To Summarize - Major Upgrade is Needed

# Cargo Forecast

*Framework for the Forecasts:*

- Transportation is a derived demand
- Population
- Employment & markets
- Major Drivers
  - Base Construction & Population Surge
  - GovGuam Infrastructure Program
  - Transshipment

# Guam - Forecast of Future Forces

## U.S. Navy

**COMNAVMARIANAS**

- SSNs/Sub Tender
- Logistics Prepos Ships
- MSC Combat Stores Ships
- MSC Ammo Ships
- Maritime Prepo Ships
- H60s
- **Transient CVN berthing**
- **HSVs**
- **Littoral Combat ship**

(Old 4350 AD/ 5230 Dep)

**(New≈≈ 5600 AD/ 5280 Dep)**


## USAF

**36th Air Wing**

- Rotational Bombers
- **More** Based Tankers
- **More** Periodic Fighters
- **Global Hawk**

( Old 1930 AD/ 2280 Dep)

**(New ≈4560 AD/ 3730 Dep)**

## USMC

**III MEF Cmd Element**
**Ground Combat Element**
**Aviation Combat Element**
**Combat Service Support**
**Plus:**
**Transient Units**
**Visiting USMC & Allied Forces**
**(New ≈10,000 AD/ 9000 Dep)**

## U.S. Army

1 x Battalion Air Defense

***(≈630 AD/ 950 Dep)***

## USCG

225' Buoy Tender
110' Patrol Boat
25' Response Boat

***(140 AD/ 180 Dep)***

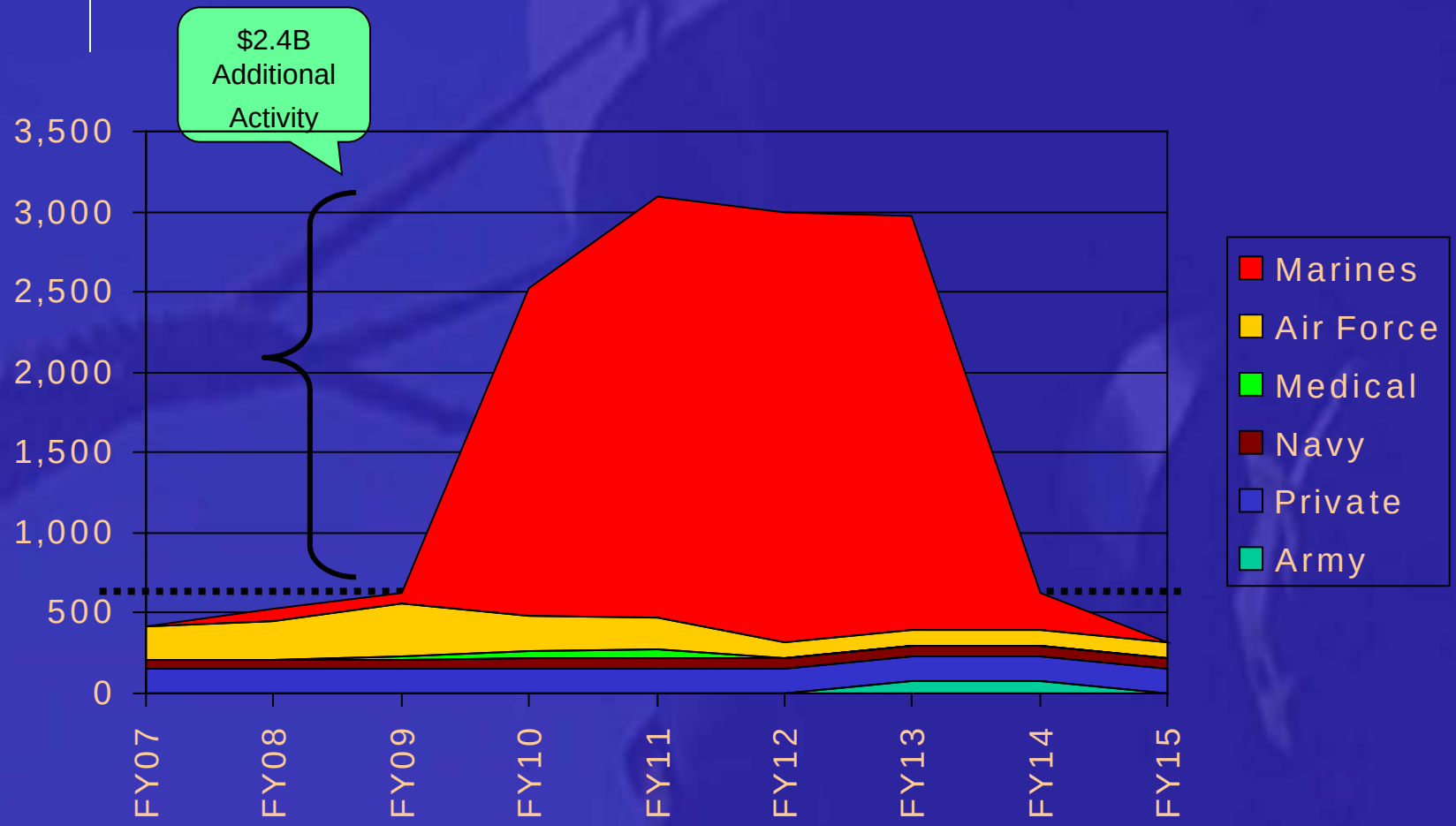
Old Total: 6,420 Active Duty / 7,690 Dependents

**New Total: ≈18,930 Active Duty / 19,140 Dependents**

= New

Source: DOD

# DOD Guam Construction Activity (Millions 2007$)



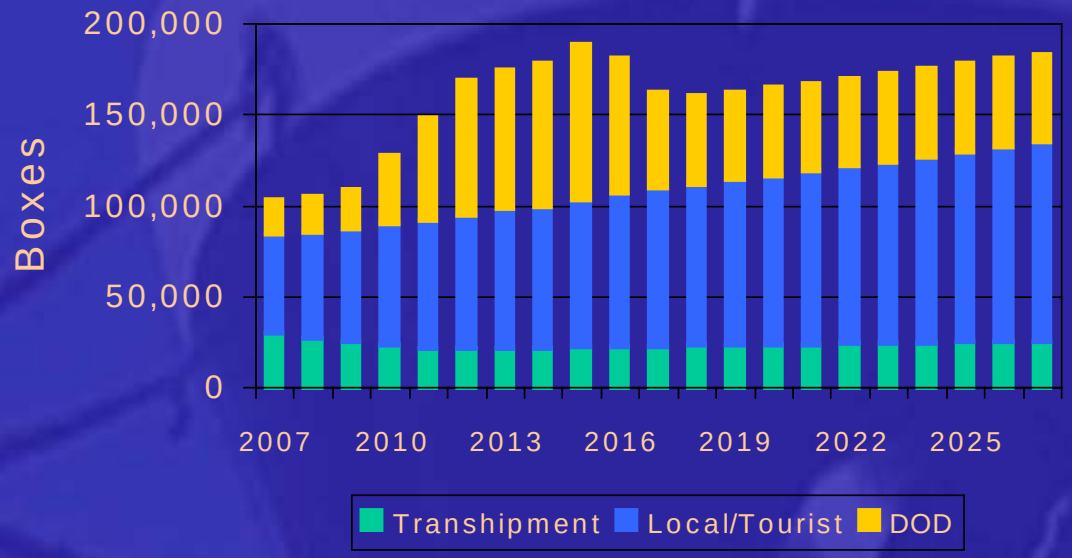

Source: DOD

# Government of Guam
# Approx. $3 Billion Infrastructure

- DPW Roads and Highways: $1.575 Billion
- GPA: $660 million
- GWA: $487 million
- DPW Solid Waste: $230 million
- Around $300 million per year

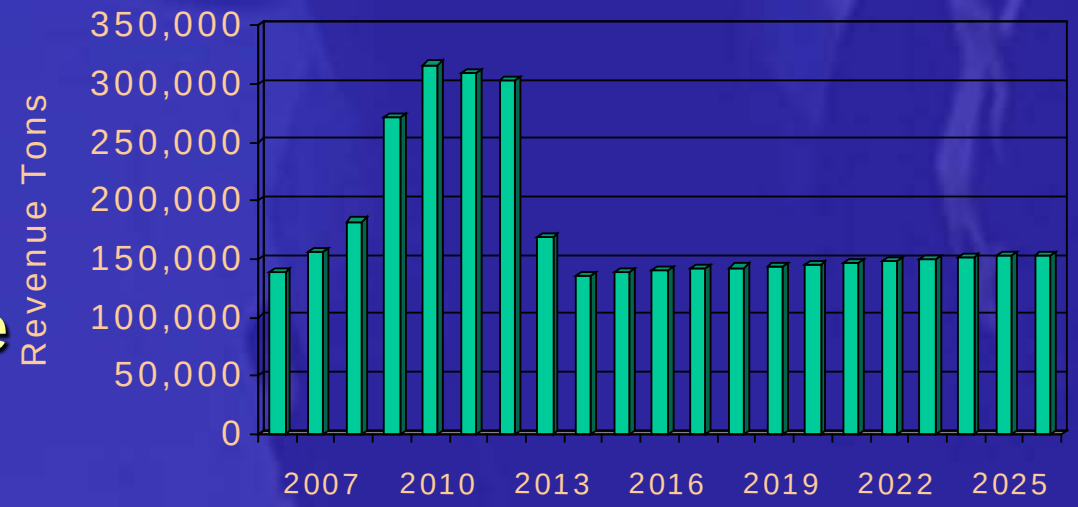
# Forecast

Containers in Boxes




Median Break-bulk Cargo

Cement is Double or More

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# Capacity Constraints "As Is" with Current Trade Patterns

*Annual Cargo:*

| | | |
|---|---|---|
| ▪ Containers: | 103,000 | Boxes in 2007 |
| Est. Capacity | 120,000 | (current trade pattern) |
| Peak Demand | 190,000 | (200,000 high peak) |
| ▪ Break-bulk: | 155,000 | Tons Peak in 2006 |
| Est. Capacity | Close to Capacity | |
| Peak Demand | 320,000 | Tons During Construction |
| ▪ Cement: | 100,000 | Tons in 2007 |
| Est. Capacity | 125,000 | Tons |
| Peak Demand | 250,000 | Tons (Could range higher) |
| ▪ Cruise: | 6 to 8 | Vessels |
| Future Demand | 25 | Vessels if Successful |
| ▪ Liquid Fuels | Have Excess Capacity (Shell/Mobil) | |

# Design Ships

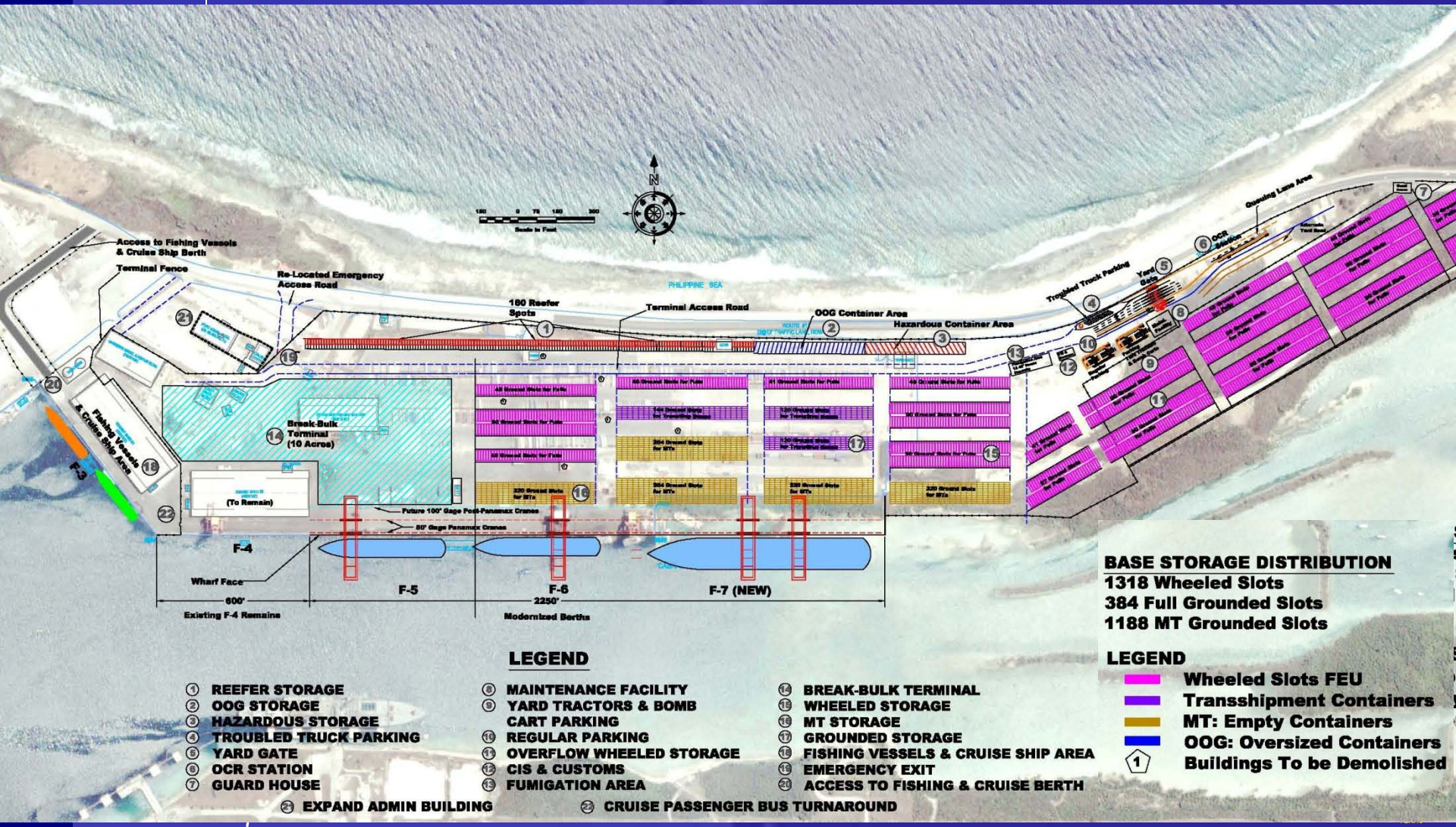
## Short Term

| Classification | TEU | LOA (Feet) | Draft (Feet) | Beam (Feet) | Width (Container) | DWT |
|---|---|---|---|---|---|---|
| Handy Size | 2,200 | 640 | 33 | 93 | 11 | 25,000 |
| Maunawili | 2,600 | 712 | 41 | 105.6 | 13 | 37,752 |
| Horizon Hunter | 2,824 | 729 | 39 | 98 | 12 | 39,266 |
| LMSR Military Vessel | N/A | 950 | 37 | 105.6 | N/A | 34,000 |

## Long Term

| Classification | TEU | LOA (Feet) | Draft (Feet) | Beam (Feet) | Width (Container) | DWT |
|---|---|---|---|---|---|---|
| Post Panamax | 4,800 | 900 | 45 | 135 | 16 | 90,000 |
| Super Post Panamax | 8,000 | 1,150 | 48 | 150 | 18 | 100,000 |

# Analyzed Alternatives & Selected Concept for Implementation



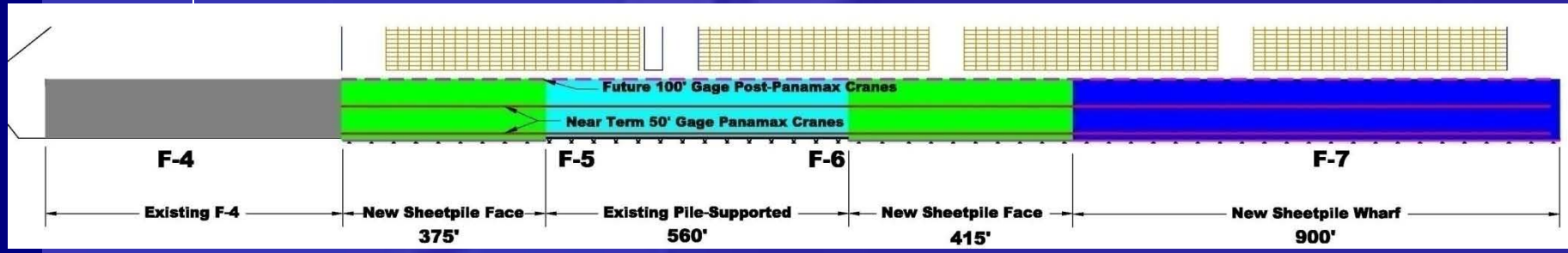
# Selected for Implementation

- Considered Alternatives & Port Selected Combination Wheeled + Grounded System
- Modernize & Expand 2,250 of Wharf & Dredge:
  - Existing Berth: -37’ As Is
    New Berth: -42’ Now & -51’ Future
- Apron & Container Crane:
  - Near Term: 50’ PANAMAX Crane
    Long Term: 100’ Gage Post-PANAMAX
- Retain/Save Most Existing Buildings
- Minimize Disruption to Existing Operations
- Secure Yard per ISPS
- High-mount Yard Lighting, Paving & Utilities
- Expand Terminal for Peak Storage Demands

# Selected Concept
## Features (Cont'd)

- New, Efficient Truck Gates
  - Paperless Semi-automated Gates
  - Optimize Manning
- Break Bulk Storage Yard for Construction Peak
  - Rebar, Pipe & non-Containerized Project Cargo
  - Use for Military Deployment Exercises in Out Years
- Plan for Customs, Agriculture Inspection, Fumigation Etc.
- Cement: Dredging by Port / Other Private Sector

# F-5/F-6/F-7 2,250’ Modernized Wharf

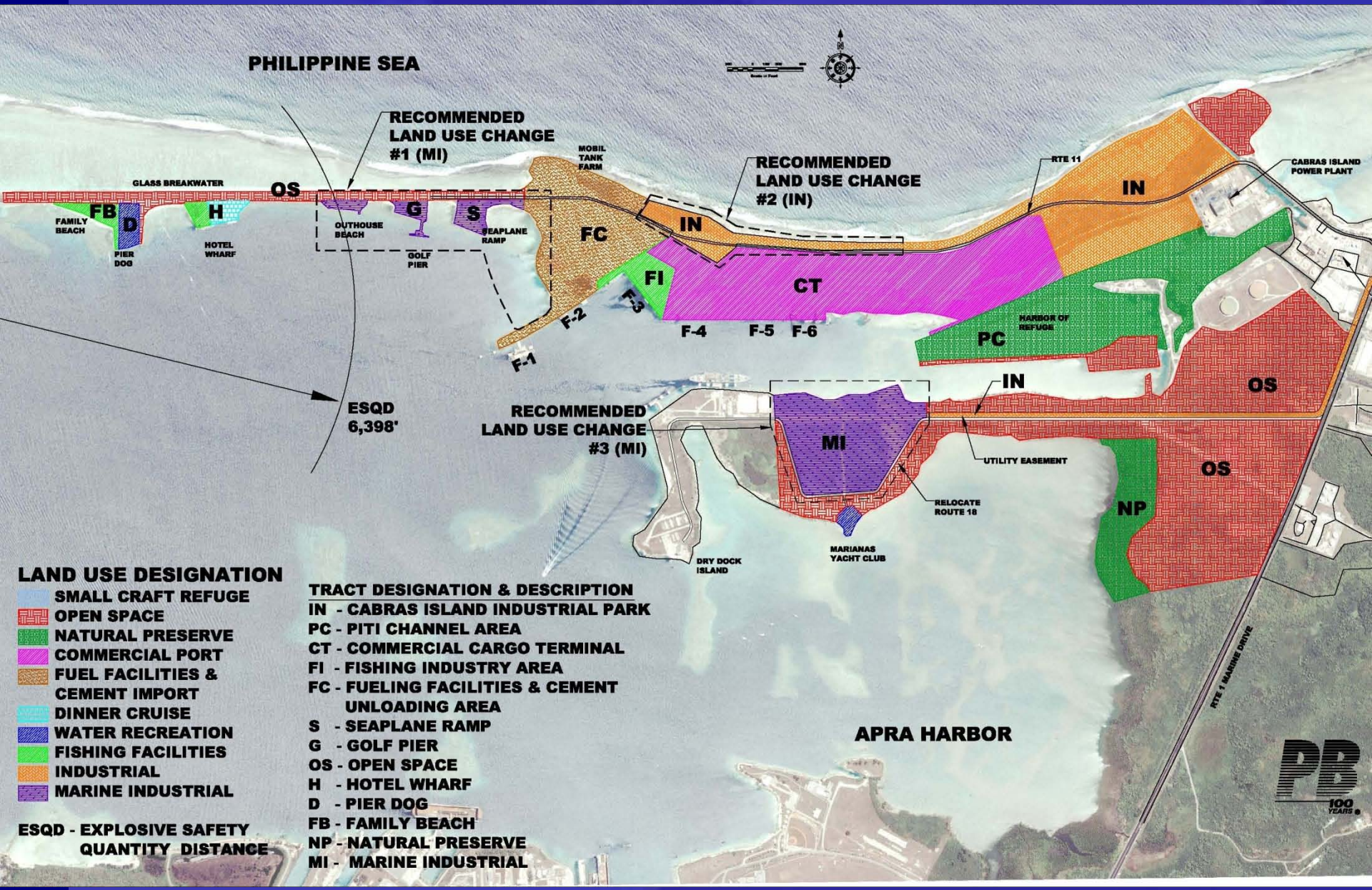



## Modernized Berth Depths

| Berth | | Near Term | Long Term |
|---|---|---|---|
| F-4 | | -34' | -34' |
| F-5 | | -37’ | -37’ |
| F-6 | West | -37’ | -37' |
| F-6 | East | -42’ | -51’ |
| F-7 | | -42’ | -51’ |

# Cargo Terminal Budget Estimates

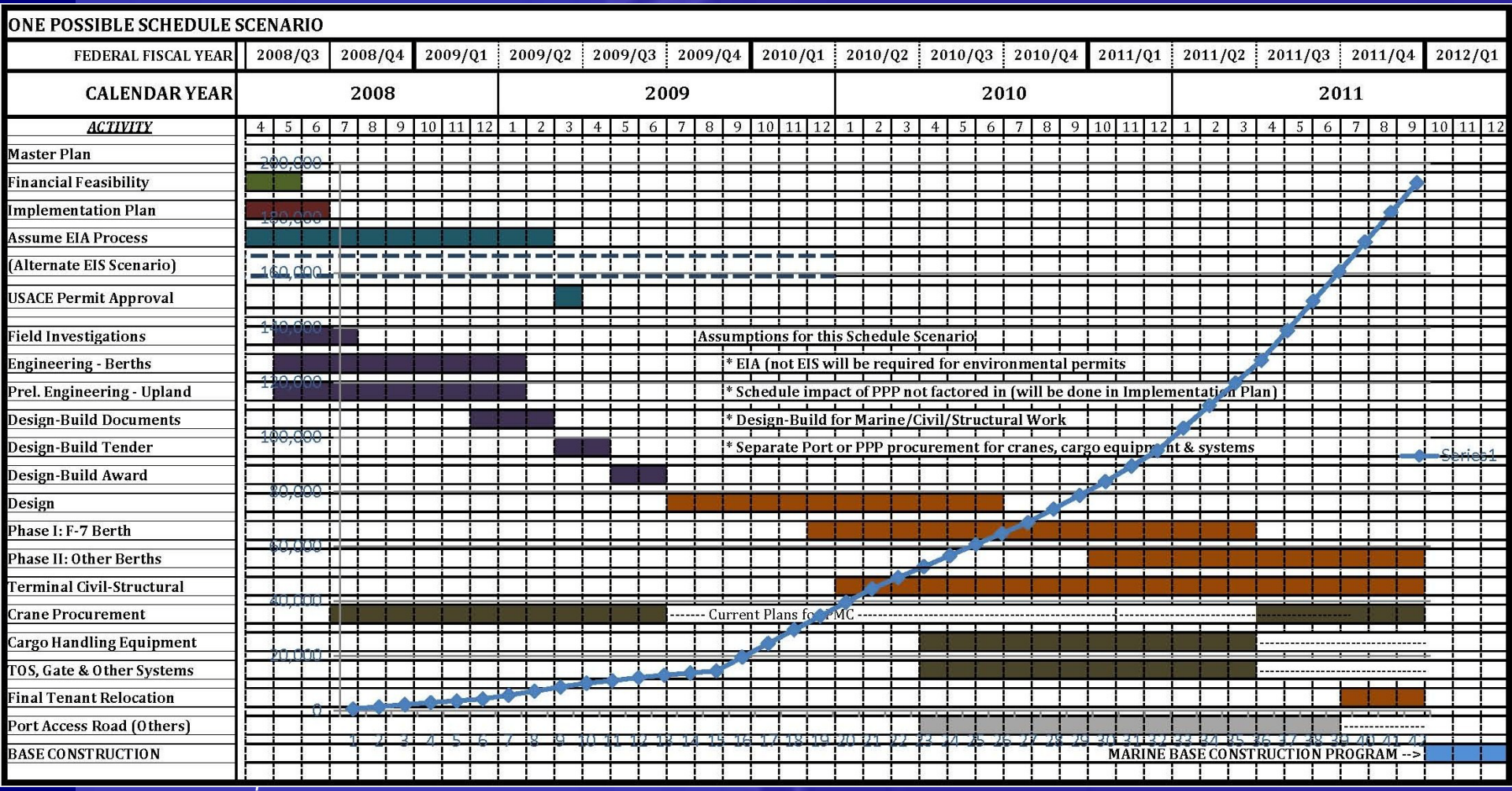
| ITEM DESCRIPTION | | Budget Estimate |
|---|---|---|
| Mobilization and Demobilization | | $ 6,530,000 |
| Miscelleneous Construction Excluded Below | | $ 2,180,000 |
| Demolition | | $ 7,510,000 |
| Berth F-5 to F-7 Modernization | | $ 34,290,000 |
| Buildings | | $ 7,950,000 |
| Terminal Paving | | $ 14,600,000 |
| Power, Lighting & Electrical | | $ 8,990,000 |
| Site Utilities | | $ 20,110,000 |
| Security | | $ 7,740,000 |
| Container Cranes | | $ 14,500,000 |
| Top-Picks & Spreaders | | $ 2,900,000 |
| Side-Picks | | $ 1,500,000 |
| Other Yard Equipments | | $ 3,700,000 |
| Terminal Operating System | | $ 2,500,000 |
| Gates | | $ 2,500,000 |
| | | $ - |
| | | |
| SUBTOTAL Direct Costs | | $ 137,500,000 |
| Contingency | 25% | $ 34,500,000 |
| Engineering/Permits/CM | 15% | $ 21,000,000 |
| | | |
| TOTAL | | $ 193,000,000 |


PHILIPPINE SEA
RECOMMENDED LAND USE CHANGE #1 (MI)
RECOMMENDED LAND USE CHANGE #2 (IN)
RECOMMENDED LAND USE CHANGE #3 (MI)
GLASS BREAKWATER
OS
FB
FAMILY BEACH
D
PIER DOG
H
HOTEL WHARF
OUTHOUSE BEACH
G
GOLF PIER
S
SEAPLANE RAMP
MOBIL TANK FARM
FC
IN
FI
CT
F-1
F-2
F-3
F-4
F-5
F-6
RTE 11
CABRAS ISLAND POWER PLANT
HARBOR OF REFUGE
PC
ESQD 6,398'
MI
UTILITY EASEMENT
RELOCATE ROUTE 18
NP
DRY DOCK ISLAND
MARIANAS YACHT CLUB
RTE 1 MARINE DRIVE
APRA HARBOR
LAND USE DESIGNATION
SMALL CRAFT REFUGE
OPEN SPACE
NATURAL PRESERVE
COMMERCIAL PORT
FUEL FACILITIES & CEMENT IMPORT
DINNER CRUISE
WATER RECREATION
FISHING FACILITIES
INDUSTRIAL
MARINE INDUSTRIAL
ESQD - EXPLOSIVE SAFETY QUANTITY DISTANCE
TRACT DESIGNATION & DESCRIPTION
IN - CABRAS ISLAND INDUSTRIAL PARK
PC - PITI CHANNEL AREA
CT - COMMERCIAL CARGO TERMINAL
FI - FISHING INDUSTRY AREA
FC - FUELING FACILITIES & CEMENT UNLOADING AREA
S - SEAPLANE RAMP
G - GOLF PIER
OS - OPEN SPACE
H - HOTEL WHARF
D - PIER DOG
FB - FAMILY BEACH
NP - NATURAL PRESERVE
MI - MARINE INDUSTRIAL

# Land Use Changes

- Change #1: Outhouse Beach to FC Area
  - Designate as Marine Industrial
  - Develop on Opportunistic Basis
- Change #2: Opposite CT N. of Route 11
  - Designate as Industrial
  - Increase Flexibility For Terminals
- Change #3: Opposite CT, S. Side of Chnl
  - Designate as Marine Industrial
  - Develop on Opportunistic Basis

# Preliminary Schedule Illustration Using One Notional Delivery Method



# Questions ?