Jose D. Leon Guerrero Commercial Port of Guam Master Plan Update 2013 Report

Prepared for

PORT OF GUAM

PORT AUTHORITY OF GUAM

FINAL REPORT

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Prepared by

PARSONS BRINCKERHOFF

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Jose D. Leon Guerrero Commercial Port of Guam
Master Plan Update 2013 Report

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Submitted pursuant to Consultant Agreement No. PAG 09-001 between Jose D. Leon Guerrero Commercial Port (Port Authority of Guam) and Parsons Brinckerhoff acting as Owner's Agent and Engineer to assist the Port in meeting the Port Modernization Program objectives as contained in the Port Master Plan Update 2007 Report.

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List of Acronyms

A/C.....Air Conditioning
ARRA.....American Recovery and Reinvestment Act
ATS .....Automatic Transfer Switch
CAGR .....Compound Annual Growth Rate
CBP .....Customs and Border Protection
CC .....Corrosion Control
CFS .....Container Freight Station
CIA .....Central Intelligence Agency
CIP .....Capital Improvement Plan
CM .....Crane Maintenance
CMU .....Concrete Masonry Unit
CNMI .....Commonwealth of the Northern Mariana Islands
CPI .....Consumer Price Index
DAR .....Defense Access Roads
DGM .....Deputy General Manager
DHS.....Department of Homeland Security
DOD .....Department of Defense
DPRI .....Defense Policy Review Initiative
DPW .....Department of Public Works
DWT .....Deadweight tonnage
EDI .....Electronic Data Interchange
EOC.....Emergency Operations Center
ESQD .....Explosive Safety Quantity Distance
EQMR .....Equipment Maintenance and Repair
FMS .....Financial Management System
FSM .....Federated States of Micronesia
FY.....Fiscal Year
GCA.....Guam Code Annotated
GEDA .....Guam Economic Development Authority
GEPA .....Guam Environmental Protection Agency
GHPO .....Guam Historic Resources Division
GM.....General Manager
GOS.....Gate Operating System
GPA .....Guam Power Authority
GRT .....Gross Register Tonnage
GWA .....Guam Water Authority
HP .....Horsepower
HR .....High Roof
IP&E.....Isla Petroleum and Energy
ISPS..... International Ship and Port Facility Security

JGPO .....Joint Guam Program Office
LAN .....Local Area Network
LC.....Load Center
LOA.....Length Overall
LPG .....Liquefied Petroleum Gas
LR.....Low Roof
MARAD .....U.S. Maritime Administration
MARSEC .....Maritime Security
MELL.....Marianas Express Lines Limited
MEP .....Mechanical, Electrical and Plumbing
MLLW .....Mean Lower Low Water
MOA .....Memorandum of Agreement
MP .....Master Plan
MPC.....Maximum Practical Capacity
MPH .....Miles per hour
MSA.....Marianas Steamship Agencies
MT .....Metric Tons
MTSA .....Maritime Transportation Security Act of 2002
NAVFAC.....Naval Facilities Engineering Command
NEPA .....National Environmental Policy Act
NM.....Nautical miles
NOAA .....National Oceanic and Atmospheric Administration
OAE.....Owner's Agent/Engineer
OCR .....Optical character recognition
OOG .....Oversized (Out-of-Gauge) Containers
PAG .....Port Authority of Guam
PCE .....Personal Consumer Expenditures
PCS .....Permanent Change of Station
PFSP .....Port Facility Security Plan
PL.....Public Law
PM .....Preventative Maintenance
PMC.....Performance Management Contractor
PMP .....Port Modernization Program
PMT .....Program Management Team
POLA .....Port of Los Angeles
PSF .....Pounds per square foot
PSGP .....Port Security Grant Program
PSI .....pounds per square inch
PUC .....Public Utilities Commission
PUG .....Port Users Group
RC .....Reinforced Concrete
RFID .....Radio Frequency Identification
RO/RO .....Roll-on/Roll-off

ROD .....Record of Decision
RTG.....Rubber-Tired Gantry Cranes
SDDC.....Surface Deployment and Distribution Command
SHPO .....State Historic Preservation Office
SIAS.....Socioeconomic Impact Assessment Study
SLE .....Service Life Extension
SPC .....Sustainable Practical Capacity
SPPC .....South Pacific Petroleum Corporation
TBD .....To Be Determined
TEU .....Twenty-foot Equivalency Unit
TIGER.....Transportation Investment Generating Economic Recovery Grants
TOS .....Terminal Operating System
TGS .....Twenty-foot Ground Slot
TWIC.....Transportation Worker Identification Credential
UBC.....Uniform Building Code
USCBP.....U.S. Customs and Border Protection
USD .....Ultimate Stress Design
USDA .....U.S. Department of Agriculture
USWC .....U.S. West Coast
VHF.....Very High Frequency
WAMS .....Waterways Analysis and Management System
WH .....Warehouse
WIM .....Weigh-In-Motion
WSD.....Working Stress Design
WYE .....3-Phase Electrical Power Wiring Configuration

EXECUTIVE SUMMARY

Purpose and Background

Numerous changes have occurred since the Port Authority of Guam (PAG) commissioned an update of its Master Plan for the Jose D. Leon Guerrero Commercial Port of Guam ("Port") in 2007. The intent of this document is to update the content, status, and direction of the Port Modernization Program (PMP) initiated by the Master Plan Update 2007 Report. In doing this, the re-directed PMP and implementation strategy attempt to:

- Modernize the Port in the next five years
- Prepare for a downsized and delayed military build-up
- Provide a balanced focus on improvement and long-term sustainability
- Provide a strategy to secure financial self-sufficiency

The Master Plan Update 2007 Report was conducted against the backdrop of a highly publicized, rapid and large military build-up involving the transfer of troops from Okinawa to Guam. This build-up initially called for the relocation of 8,600 Marines and 9,000 dependents. It was further assumed that construction would occur between 2010 and 2014 and cause the overall population on Guam to climb as high as 250,000 including military moves, temporary construction personnel, and other induced organic and commercial growth.

At that time, it was determined that the military build-up would create significant increases in annual Port cargo volumes causing the Port to become a cargo-handling bottle-neck for Department of Defense (DOD) construction materials and impact the logistics lifeline for all of Guam. This potential challenge created the perfect storm where the demand for rapid growth in storage yard area, waterfront berths, and throughput process improvements collided with a growing sustainability backlog for aging (1960s vintage) infrastructure (wharfs, cranes, container yards, breakbulk yards) that had seen little in the way of recent investments/improvements. As a consequence, the Port Master Plan Update of 2007 Report called for more than $200 million in major capital projects to be executed in a four-year timeframe.

In 2011, members of the U.S. Congress called for a DOD reset of military alignment plans; an action that would lead to delay and downsizing of the military build-up impacts to Guam. Also in 2011, the PAG called for its own re-set focusing on a balanced program; one that addressed modernization improvements, sustainability projects, and financial self-sufficiency.

In 2012, DOD announced a projected downsizing of the military build-up plans for Guam. The new mix of personnel relocating to Guam was reduced to approximately 5,000 Marines (one third permanent party and two-thirds rotational) and 1,300 dependents. The projected construction budget for projects on Guam dropped to about $8.6 billion in 2012 dollars. The timeframe for implementing realignment was pushed back from 2010-2014 to 2016-2020. Complicating matters are the Federal budget sequester, adjustments for progress on Japan

projects, adjustment of the Okinawa consolidation to now include retaining some troops in Okinawa and expanding the U.S. realignment of departing Marines to now include positioning them in Hawaii and Australia. For these reasons, the pace of the Guam build-up is expected to be slowed further possibly pushing it to somewhere between 2020 and 2026 (when the Hawaii portion of the redistribution is scheduled for completion).

Also in 2012, consistent with its re-set plans, PAG prepared a 5-Year Tariff Projection and 20-Year PMP Financial Plan and submitted them to the Public Utilities Commission (PUC). These documents performed sensitivity analysis on the scale and pace of the military build-up and inserted the purchase of gantry cranes and a Service Life Extension Project for the Port berths into the PMP. They also evaluated investment options around both a minimum and maximum PMP budget (significantly less than projected in the previous Master Plan), consistent with the current authorized debt ceiling.

This Master Plan Update 2013 Report summarizes the evolution of change in the PMP, provides definition to the PMP improvement and sustainability projects referred to in the 2012 PUC financial projections, and contains (in Section 6) a High Level Implementation Plan, a Financial Feasibility Assessment, and an Economic Impact Statement (assessment). This information is necessary to comply with the Guam Code Annotated (GCA) Title 5, Chapter 9, Section 9301.

Collectively, these documents constitute a roadmap to guide the PAG's future development strategy over the next 20 years.

Stakeholders Outreach

The Master Plan Update 2013 kick-off meetings and initial interview process took place over a five day period from April 8 to April 12, 2013. Prior to this Port visit, the project team reviewed information related to existing terminal operations and the modernization program, and had conference calls with PAG staff to review the current land and water uses/conditions. This information provided a basis of understanding and outlined specific topics to be addressed during the Port visit.

A follow-up site visit took place over a four day period from May 28 to 31, 2013. Prior to the follow-up visit, the project team had weekly conference calls with the PAG terminal operations staff, the PAG planning staff and project stakeholders. The purpose of the follow-up visit was to update various stakeholders and get feedback and confirmation of the initial analysis and findings from PAG management.

During the process of updating the Master Plan, the project team interviewed and met with numerous individuals and port stakeholders. The participating stakeholders included:

- PAG Board of Directors
- PAG Staff
  - General Manager's Office (Includes General Manager, Deputy General Manager of Operations, and Deputy General Manager of Administration)

  - Operations
  - Maintenance
  - Strategic Planning
  - Commercial
  - Procurement
  - Finance
  - Information Technology
  - Harbor Master
  - Port Police
- PAG Tenants
  - Matson Navigation
  - Marianas Express Lines Limited
  - Cabras Marine
  - Ambyth Shipping and other steamship agents
  - Warehouse 1 Tenants
  - Mobil
  - South Pacific Petroleum Corporation (SPPC)
  - Isla Petroleum and Energy (IP&E)
- Guam Department of Public Works (DPW)
- Guam Power Authority (GPA)
- Guam Water Authority (GWA)
- US Customs and Border Protection (US CBP)
- Guam Customs
- Joint Guam Program Office (JGPO)
- Director of Guam Military Build-up Office
- Guam Economic Development Authority (GEDA)

Port of Guam Access and Facilities

Section 2 of this report provides a general overview of the water and landside access to PAG's Commercial Port facilities and describes the condition of the Port's existing facilities (storage yards, leased terminals, marinas and buildings), equipment and infrastructure (berths). Future maintenance and operation improvements are also summarized. The project team performed a condition assessment for assets such as:

- Waterside and Landside Access
  - Apra Harbor
  - Port Vicinity Road
- Land Use
  - Marine Commercial
  - Marine Industrial
  - Historic Preservation
- Commercial Marine Terminals
  - Berths F3-F6

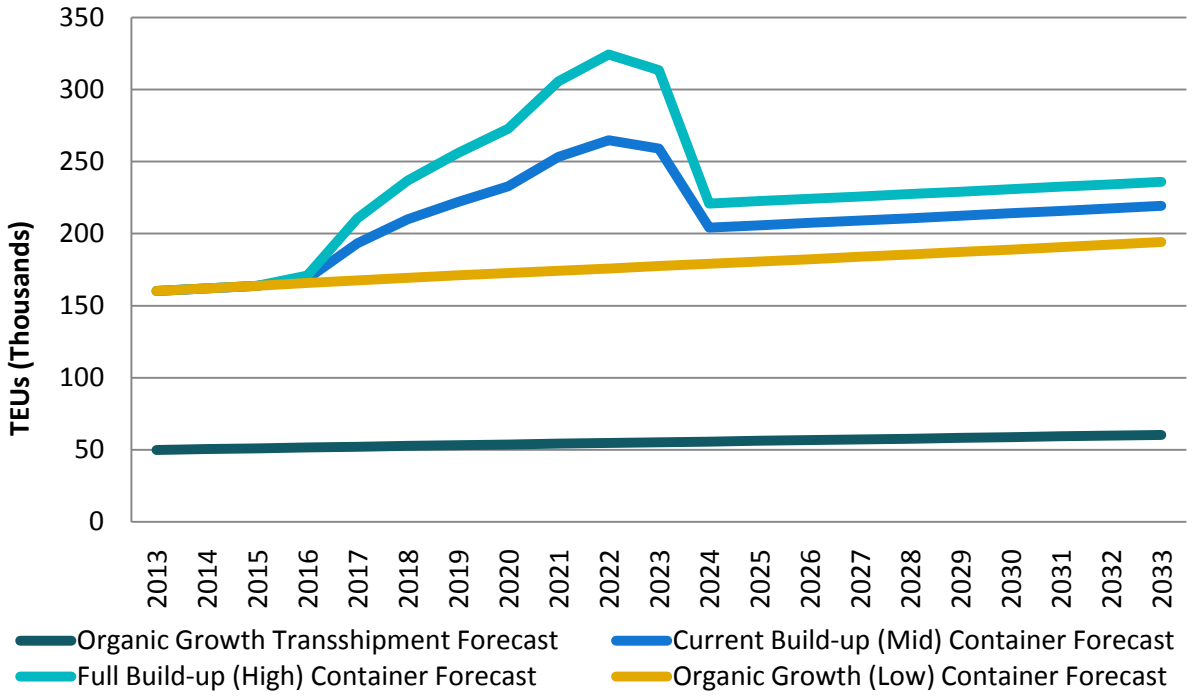
  - Hotel Wharf
  - Golf Pier
  - Family Beach and Pier Dog (also referred to as Dog Leg Pier)
  - Seaplane Ramp
- Landside Facilities
  - Marine Industrial Terminals
  - Cargo Terminals
  - Ancillary Facilities
  - Building Structures
- Marinas
  - Agat Marina
  - Gregoria D. Perez Marina (also referred to as the Hagåtña Marina)
- Port Area Utilities
  - Electrical Services
  - Lighting
  - Storm Drainage
  - Domestic Water and Sanitary Sewer
  - Fire Protection

Trends and Cargo Forecast

Section 3 of this report describes the investigation of Guam's population growth with and without a military build-up. The Government of Guam Bureau of Statistics provided a 50-year historic trend for population growth. Other historic population growth rates reported in the Central Intelligence Agency World Factbook for Guam and the U.S. Census Bureau were considered. A linear extrapolation of population growth rates for the past 50 years and past 5 years provided a trend line to predict Guam's population growth rates for the next two decades. The results of this trend analysis indicated an average annual population growth rate of 1.1 percent from 2010 to 2020 and an average annual growth rate of 0.9 percent for 2020 to 2033. These projected growth rates were used in developing the forecast of Organic Growth (Low) Scenario contained for each cargo type. These growth rates do not take into account the military build-up anticipated to begin in 2016.

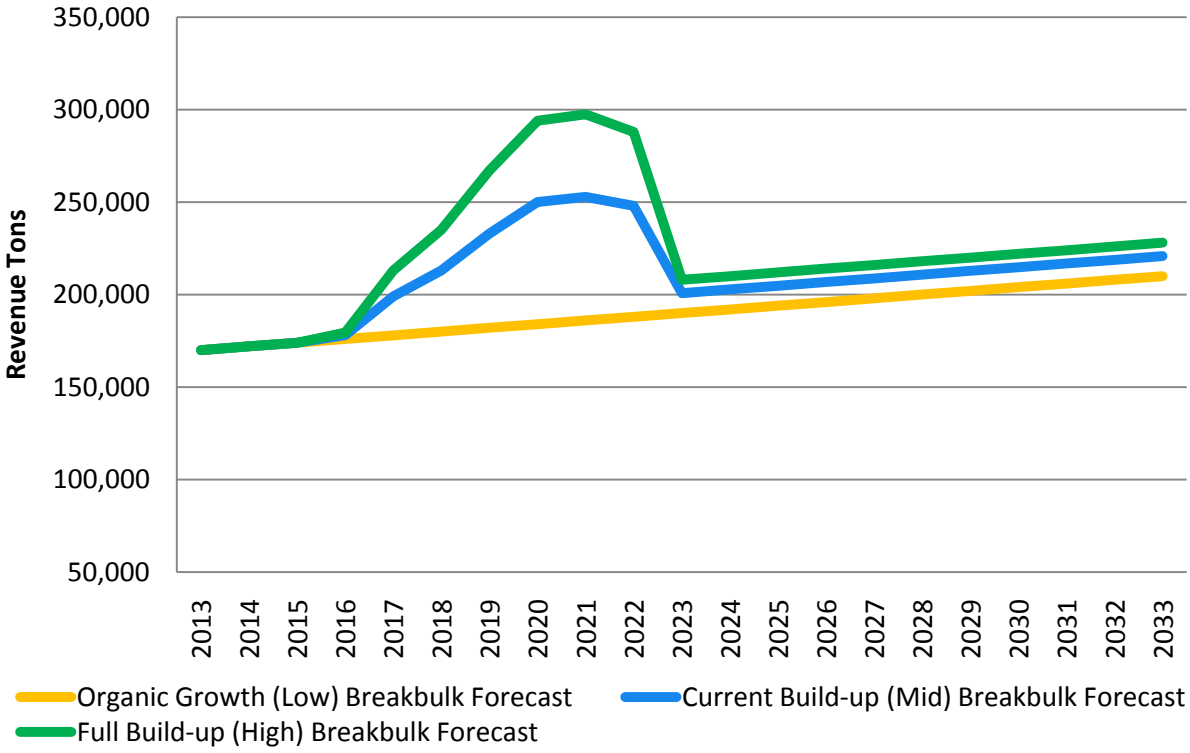
The cargo volumes were forecasted based on the Organic Growth (Low) Scenario for the anticipated population on Guam and the Micronesian region and two additional scenarios (Mid and High) for the proposed military realignment and expansion program on Guam. Meetings with the JGPO and Director of Guam build-up office representatives provided insight regarding the current condition of the anticipated military build-up. The current plan includes a start-up delayed by 6 years (now starting in 2016) with a two year increase in the build-up duration (from five to seven years). The High Scenario considers the originally planned full military build-up with the 6-year delay and 2-year extension. The Mid Scenario is the most likely and includes all attributes of the high scenario with an approximate 60 percent reduction in cargo volumes due to the downsizing of the unit to be relocated to Guam. Cargo forecasts for container, breakbulk and liquid bulk are shown in Figures ES-1 to ES-3.

Figure ES-1: Container Cargo Forecasts



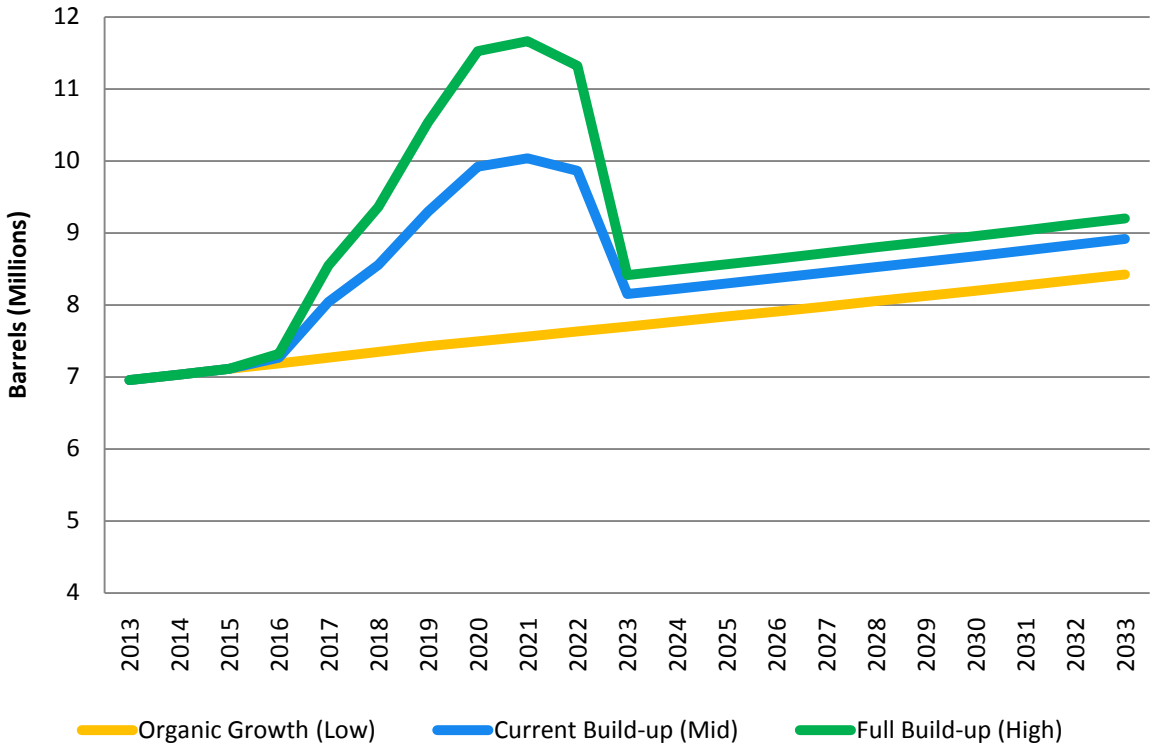
Source: Parsons Brinckerhoff analysis

Figure ES-2: Breakbulk Cargo Forecasts



Source: Parsons Brinckerhoff analysis

Figure ES-3: Liquid Bulk Cargo Forecasts



Source: Parsons Brinckerhoff analysis

Capacity vs. Demand Analysis

Using the cargo demand volume forecasts in Section 3, a capacity vs. demand analysis was performed for the PAG's commercial cargo terminals. In order to make this comparison, a capacity analysis was performed for the following commercial cargo terminal operational components and types of cargo involved:

1. Berth Utilization Analysis: Analysis of the capacity at Berths F-4 to F-6 to determine the requirement of wharf/berth needs for each demand scenario.
2. Crane Operation & Capacity: Estimation of the ship to shore crane capacity to verify that crane productivity will not impact the results reported in the berth utilization study.
3. Breakbulk and Container Yard Operation & Capacity: Estimation of the area required to store both breakbulk and container cargos against the cargo demand forecasts to identify future required improvements.
4. Gate Operation & Capacity: Analysis of the anticipated gate processing productivity to identify the future gate lane requirements.

Each capacity analysis helped identify the recommended approach to accommodate cargo demand once the modernization program is completed.

Berth Utilization Capacity

A berth occupancy analysis model was developed to investigate ongoing berthing activities. The model calculates berth utilization as the ratio of berth availability (hours of operations x total berth length) to berth occupancy (vessel time at berth x length of berth occupied).

The desired weekly berth utilization range is between 60 and 65 percent to sustain efficient operations on a 2-3 berth mixed-use marginal wharf that serves vessels of lengths ranging from 200 feet to 750 feet LOA. Said differently, a wharf such as F4, F5 and F6 subjected to a utilization rate over 65 percent will result in significant vessel delays. The results of the berth utilization analysis in Table ES-1 show that the current berth configuration is sufficient to handle full build-up cargo in its peak year.

Table ES-1: Summary of Berth Utilization Analysis

Scenario	Year	Forecast		Average Peak Week Berth Utilization
		Container (TEU)	Breakbulk (Tons)	
Existing	2013	160,000	170,000	28%
Organic Growth (Low)	2033	219,000	210,000	33%
Current Build-up (Mid)	2022	265,000	248,000	43%
Full Build-up (High)	2022	324,000	297,000	53%

Source: Parsons Brinckerhoff analysis

Crane Capacity

Along with berth utilization analysis, crane capacity is also an important component. A crane capacity analysis was performed for the PAG's four ship-to-shore cranes currently in operation. The unconstrained crane capacity for the cargo terminal is 539,000 twenty-foot equivalency units (TEUs) per year. The container forecast for Full Build-up (High) Scenario has a peak demand of 324,000 TEUs, which is about 60 percent of the crane capacity. Therefore, crane productivity will not limit berth capacity. The excess crane capacity is used for transferring the portion of breakbulk cargo that is not Ro/Ro and does not require ships gear for handling.

Breakbulk Storage Capacity

A breakbulk storage capacity analysis was performed based on the demand forecast of breakbulk cargo. PAG stores its breakbulk cargo on the west side of the terminal behind Berth F-4. This area currently has approximately 7.7 acres of open and covered storage area available for breakbulk storage. Upon completion of the PMP improvements in 2016 that are described in Section 5, nine acres of open storage area will be available for breakbulk storage. Similar to the Cargo Forecast scenarios and the berth occupancy analysis, this breakbulk storage capacity analysis section also included three demand scenarios: Organic Growth (Low), Current Build-up (Mid) and Full Build-up (High). The Mid and High scenarios are further divided into stages to illustrate different operating conditions experienced during the military build-up.

- Stage 1: Start of military build-up in 2016
- Stage 2: Breakbulk peak year 2021
- Stage 3: Highest container and breakbulk volume (combined peak) 2022
- Stage 4: Planning horizon 2033 volume

The analysis results in Table ES-2 show that a maximum of 82 percent of total storage area will be required during the peak of the High Scenario. This shows that the Port will have sufficient breakbulk storage area available for cargo handling.

Table ES-2: Breakbulk Storage Area Utilization

Scenario	2013	2016 (Start of Build-up)	2022 (Peak)	2033 (Planning Horizon)
Organic Growth (Low)	39%	35%	37%	42%
Current Build-up (Mid)	39%	44%	64%	51%
Full Build-up (High)	39%	47%	82%	56%

Source: Parsons Brinckerhoff analysis

Container Yard Capacity

Currently the PAG operates a mixed container storage yard that includes wheeled and grounded (top lifter) storage. This container yard capacity analysis is divided into the same three scenarios: Organic Growth (Low) Scenario, Current Build-up (Mid) Scenario and Full Build-up (High) Scenario. The analysis results in Table ES-3 present the percent of storage capacity utilized during each stage of the planning horizon, showing that the Port will have sufficient container storage area available for cargo handling. The capacity utilization figures are an indication of storage area used and storage mode (wheeled or grounded) combined.

Table ES-3: Container Storage Capacity Utilization

Scenario	2013	2016 (Start of Build-up)	2022 (Peak)	2033 (Planning Horizon)
Organic Growth (Low)	78%	67%	53%	72%
Current Build-up (Mid)	78%	68%	80%	81%
Full Build-up (High)	78%	69%	98%	88%

Source: Parsons Brinckerhoff analysis

Gate Capacity

PAG's current container truck gate operation utilizes a manual procedure for managing and operating the gate. The current gate complex has a total of four lanes. The modernization plan includes relocation and improvements to the gate complex at the container terminal. The gate will be relocated to an undeveloped location in the northeast section of the terminal adjacent

to the existing gate. The improvement is planned to be completed by the end of 2015 so that the new gate will start operation in 2016. Also, a terminal operating system (TOS) is scheduled to be implemented by 2014 and a gate operating system (GOS) is scheduled to be installed and operational by the end of 2018 to reduce the truck processing time at the pedestals.

The container gate analysis identified that the current and planned gate lanes are sufficient for the demand forecast. The results of this analysis are shown in Table ES-4.

Table ES-4: Gate Complex Lane Requirements

Scenario	2013	2016 (Start of Build-up)	2017-2018 (Prior to GOS)	2022 (Peak)	2033 (Planning Horizon)
Operating System	**Manual**			**GOS (After 2018)**	
Organic Growth (Low)	4	3	3	2	2
Current Build-up (Mid)	4	3	3	2	2
Full Build-up (High)	4	3	4	2	2

Source: Parsons Brinckerhoff analysis

Port Improvement Program

Section 5 of the report identifies efforts and new opportunities that should be a factor in rounding out an improved and sustained asset management program. It includes a review of ongoing commercial terminal development efforts supported by the U.S. Maritime Administration (MARAD) and their Program Management Team (PMT) utilizing Port Improvement Enterprise Funds. It also reviews the actions that can be controlled by PAG once budgets are right-sized and structure is added to its Maintenance and Repair Programs and Capital Improvement Plan (CIP) investment strategy.

The identified projects are divided into two categories; Port Modernization Program (PMP) projects and Sustainability projects. The PMP includes projects that are anticipated to be completed by 2016 in order to provide facilities and equipment that are aligned with service needs for the military build-up. These projects are funded by the MARAD CIP Program Grant, PAG CIP or other grants/funding sources such as Transportation Investment Generating Economic Recovery (TIGER) grants or the Port Security Grant Program (PSGP).

Sustainability in the form of "operational practice and projects" applies to both existing (aged) facilities/equipment and new facilities/equipment. For aged facilities/equipment, the range of actions includes catch-up maintenance and repair, retrofit/renovation, and eventual replacement. To be effective and efficient, sustainability is facilitated with appropriate skilled staff and systems support. One example would be fully utilizing systems capabilities and instituting a work order system managed by trained staff and tied into an upgraded Financial Management System (FMS). The Minimal PMP makes provisions for these systems upgrades (qualifying as both improvements and sustainability measures). Several projects under the

sustainability program are identified as "To Be Scheduled" projects, which need added definition, depend on the rate of experienced deterioration, need to have a plan for phased implementation, and can only be executed when revenue generated by the tariff structure allows this to occur.

Table ES-5 includes a 20-year CIP schedule for projects through the Master Plan Update planning horizon. The start and end year of each project is graphically represented and each project is categorized as a PMP Improvement, Sustainability project or To Be Scheduled project. Appendix 5-1 includes a summary of projects and costs (where known) against this schedule. This cost schedule was used as the base CIP input in the financial analysis.

Financial Analysis

Tariff increases are identified to address increased expenditures associated with the following changes:

1. Minimum PMP investments
2. Replacement of aging facilities
3. Salary and wage increases required by Public Law (P.L.) 30-43
4. Keeping up with inflation
5. Depreciation of existing and future assets

The Implementation Plan was developed by evaluating improvement and sustainability requirements and determining a balanced approach for meeting them. The following were specifically considered:

- 5-year near-term emphasis on improvements to both improve Port efficiency and create additional cargo handling capacity in anticipation of the military build-up
- 20-year long-term focus on additional improvements targeted towards achieving operational and financial sustainability in an organic growth scenario
- Self-sufficiency through tariff adjustments to reduce or eliminate dependence on outside funding assistance
- Establish special purpose accounts for crane surcharge, facilities M&R, yard equipment M&R, CIP and sustainability projects
- Issue general obligation bonds in 2013 and 2017 to take advantage of low cost financing and compatible alignment of debt service and tariff generated revenues

Using the cargo forecasts determined in Section 3 of this Master Plan Update, the financial model calculated the size of the debt capacity at the two different cargo growth levels. The primary objective of this analysis was to establish tariff rates that would allow for an additional $60 million worth of Sustainability and To Be Scheduled project improvements above and beyond the minimum PMP. Table ES-6 presents the assumptions associated with each scenario and the resulting facilities funding capacity results.

Table ES-5: CIP Schedule

Sr. No.	Project	Funding Authority	Project Schedule
			2013 2014 2015 2016 2017 2018 2019 2020 2021 2022 2023 2024 2025 2026 2027 2028 2029 2030 2031 2032 2033
1	CFS Modification	MARAD/ DoD Grant	
2	Warehouse # 2, Gas Station and other misc structure demolition	MARAD/ DoD Grant	
3	Oil Water Separators on Existing Outfalls	MARAD/ DoD Grant	
4	Breakbulk Expansion	MARAD/ DoD Grant	
5	Parking Displaced by Breakbulk Expansion	MARAD/ DoD Grant	
6	Crane Mechanics Area Demolition	MARAD/ DoD Grant	
7	High/Low Mast Lighting, Water System and Fire System Upgrade (First Phase)	MARAD/ DoD Grant	
8	Container Gate Area	MARAD/ DoD Grant	
9	Container Yard Expansion	MARAD/ DoD Grant	
10	Seaman's Club Demolition	MARAD/ DoD Grant	
11	Load Center 5	MARAD/ DoD Grant	
12	Breakbulk Terminal Gate	MARAD/ DoD Grant	
13	Equipment Wash Rack	MARAD/ DoD Grant	
14	Financial Management System	PAG	
15	Demolition of Gantry 2 and RTGs	PAG	
16	PAG Service Life Extension of F3 - F6	PAG	
17	Terminal Operating System	PAG	
18	Gate Operating System	PAG	
19	Marine and Port Security Operations Center (MPSOC) Building	PSGP/DHS	
20	Installation of MOV at Golf Pier Fuel Pipelines	PAG	
21	Cargo and Vehicle Detection/Screening Machine	PSGP/DHS	
22	SLE: Acquisition of Cargo Handling Equipment	PAG	
23	Container Yard Storm Drain Channel Repairs	PAG	
24	Inbound/Outbound OCR Portals and Canopies	PAG	
25	Compressors for Admin Building A/C System	PAG	
26	Various Air Conditiong Units and Parts/Supplies	PAG	
27	Harbor Crane Part/Supply - Bearing Unit	PAG	
28	Warehouse # 1, CMU and Column Repairs	PAG	
29	Architectural/Engineering Services - IDQ	PAG	
30	Emergency Back-Up Generators	PSGP/DHS	
31	Agat Marina Dock "A" Repairs	PAG	
32	Electrical Work for Additional 56 Reefer Outlets/Reefer Lights Installation	PAG	
33	Agat Marina Loading Dock Structural Repair	PAG	
34	Port Police Security Upgrade	PAG	
35	Renovations to Harbor Refuge	PAG	
36	Repair/Upgrade Perimeter Fence	PAG	
37	Purchase 2 Gantry Cranes	PAG	
38	Purchase 2 Gantry Cranes	PAG	
39	Demolish 2 Gantry Cranes	PAG	
40	Demolish 2 Gantry Cranes	PAG	
41	Purchase Replacement and Additional Yard Equipment	PAG	
42	Replacement of Administration Building	PAG	
43	Replace Hotel Wharf and Access Road	PAG	
44	Upgrade of Power System for IT Office	PAG	
45	Marinas Sewage Pump Station Upgrade	PAG	
46	Automatic Transfer Switch for LC2 and LC3	PAG	
47	Renovation of High Tower, Low Tower, and Existing Gate Bldg	PAG	
48	Warehouse 1 Renovation	PAG	
49	Progressive Pavement Replacement all terminal yards	PAG	
50	Progressive Utilities Replacement in existing terminal	PAG	
51	PAG Soil Stabilization of F4/F6	PAG	
52	Progressive Fence Replacement	PAG	

Notes:

= Port Modernization Program Projects

= Sustainability Projects

= To Be Scheduled Projects

Source: Parsons Brinckerhoff analysis

Table ES-6: Bonding Capacity Results of Tariff Increases by Scenario

Scenario	Low	Mid
Container Volume Yrs. 1-20	2,084,878	2,483,158
Breakbulk Tons Yrs. 1-20	3,820,000	4,238,800
Tariff Increase Yrs. 1-5	4.36%	4.36%*
Tariff Increase Yrs. 6-20	3.95%	3.95%*
Bonding Capacity (5.5% avg. coupon)	$71M	N/A
Pay-as-you-go Facilities	$79M	N/A
Gross Improvements & Sustainability Project Funding Capacity above and beyond minimum PMP	$150M	N/A

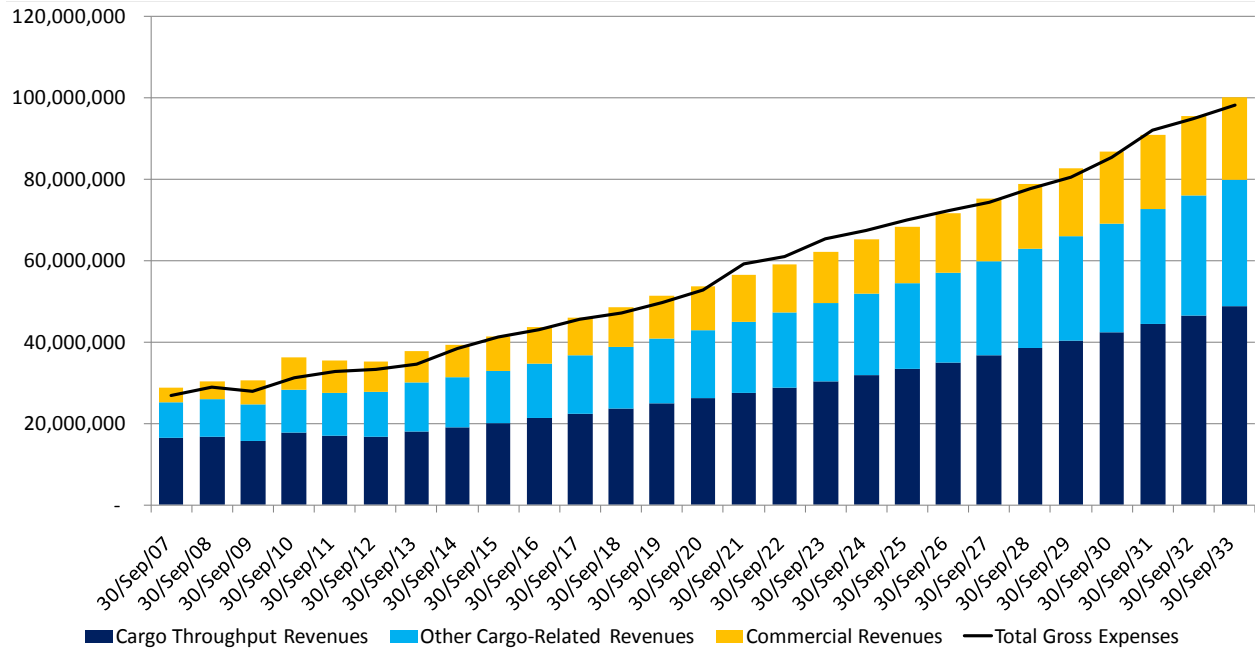
* *It is recommended that the port establish the 5 and 20-year tariff increases early on, but in the case of a military buildup, these will be replaced with annual tariff reductions.*
Source: Parsons Brinckerhoff analysis

The debt service used to calculate the tariff rate increases is based on recent debt issuance at the Port and at other agencies on Guam. The debt issuance assumptions utilized in the financial analysis are as follows:

- Revenues equal to at least 130 percent of gross debt service
- Average annual coupon rate of 5.5 percent
- Debt issuance costs equal to 4 percent of the gross bond amount

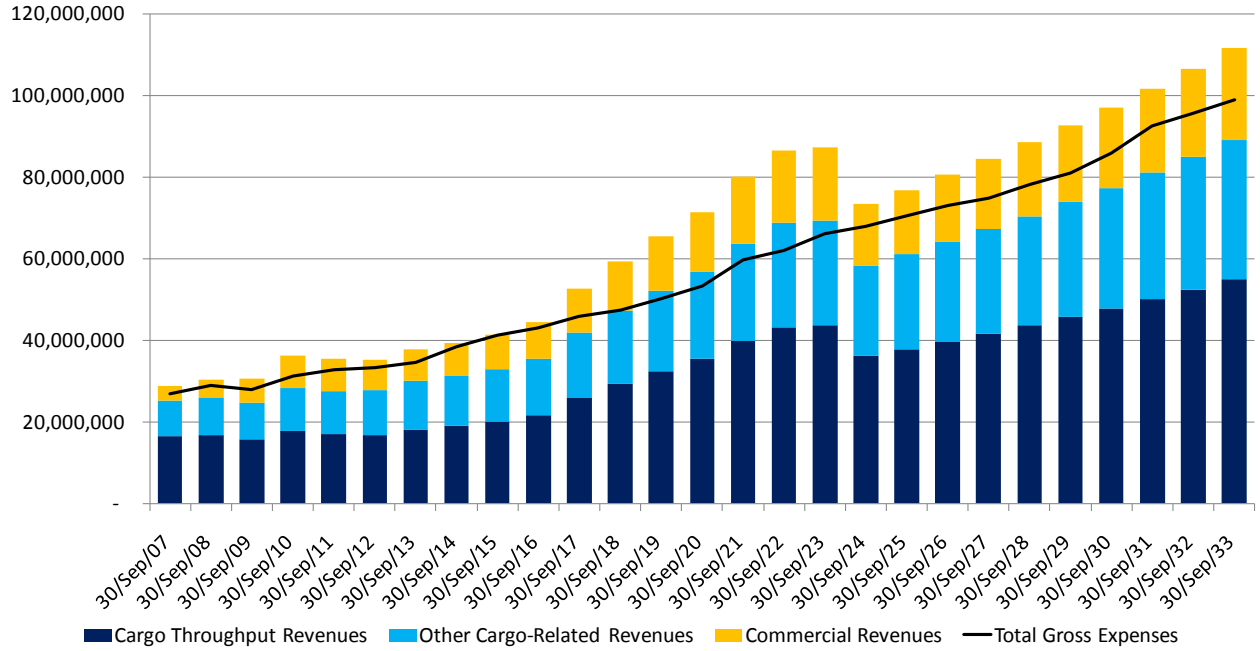
The annual and cumulative revenues and expenditures associated with each scenario are presented in Figures ES-4 and ES-5.

Figure ES-4: Variable Tariff Revision—Organic Growth (Low) Scenario



Source: Parsons Brinckerhoff analysis

Figure ES-5: Variable Tariff Revision—Mid Build-up Scenario



Source: Parsons Brinckerhoff analysis

When comparing the additional revenue gained from the increased tariffs to the value of total imported goods or to the island's total PCE, it becomes apparent that any potential impact they might have is minimal. Even under the Mid Scenario, by the end of the forecast period, the additional revenues are less than half a percent of forecasted PCE and approximately 0.6 percent of the forecasted value of all imported goods. Furthermore, these estimates were made under conservative assumptions:

- The full impact of the tariff is passed on to island residents and businesses, not to foreign shippers or to the steamship companies
- PCE and imported goods both grow at the moderate rate of 1.9 percent annually
- Mid Scenario for imports

Tables ES-7 and ES-8 highlight the increased revenues compared to PCE and imported goods under the Organic Growth and Mid Build-up Scenarios respectively. In the case of a Mid Build-Up Scenario, tariffs will need to be reduced for future years.

Table ES-7: Organic Growth (Low) Scenario Increased Revenues Compared to PCE and Imported Goods

	2014	2019	2024	2033
Increased Revenues as a Percentage of PCE	0.02%	0.13%	0.23%	0.44%
Increased Revenues as a Percentage of Imported Goods	0.03%	0.20%	0.36%	0.68%

Source: Parsons Brinckerhoff analysis

Table ES-8: Mid Build-up Scenario Increased Revenues Compared to PCE and Imported Goods

	2014	2019	2024	2033
Increased Revenues as a Percentage of PCE	0.02%	N/A	N/A	N/A
Increased Revenues as a Percentage of Imported Goods	0.03%	N/A	N/A	N/A

Source: Parsons Brinckerhoff analysis

To put this into context, the project team analyzed retail item prices from the island and the corresponding estimate of the how much the tariff could increase these prices should the 2033 impact be felt today. Table ES-9 highlights the impact of a tariff on specific commodity items.

Table ES-9: Tariff Impact on Retail Prices

Item	Current Price	Impact of Cumulative Tariff Increases
20 oz. Coca-Cola	$0.89	< $0.01
Can of Spam	$2.99	$0.01
T-Shirt	$12.99	$0.05
160 oz. Laundry Detergent	$17.99	$0.07

Source: Parsons Brinckerhoff analysis

The minimum PMP and sustainability improvements to replace aging facilities are expected to create near-term economic impacts for the Island of Guam. The economic impacts from the program will be driven by an increase in construction spending in the region. These program expenditures would generate a short-term increase in demand for engineering and technical services, as well as construction-related labor and materials.

It should be noted that dollar values of economic impacts are expressed in terms of the most recent completed calendar year (2012). The reason for this is because 2012 is the most recent year for which all relevant econometric data have been collected and analyzed. Only construction spending that takes place in the future is included in the economic impact projections. Table ES-10 summarizes economic impacts from construction.

The minimum PMP has begun to generate economic impacts for the region as of Q3 2013. For all future years, the program is projected to create 1,760 job-years of employment, including 1,740 direct/indirect job-years.

The limited size of the indirect and induced impacts is because of the nature of Guam's economy. As an Island geared heavily towards tourism, much of the needed labor and materials for the improvements will need to be brought in from elsewhere. When goods and labor are purchased outside the region this is referred to as "leakage" or spill-over. When leakage occurs, the impact of a program on the local region is reduced. In the case of Guam, the level of anticipated leakage is high.

Table ES-10: Summary of Construction Economic Impacts (2012 USD)

Direct + Indirect Impacts	
Employment (Annual Average)	249
Annual Earnings (2012 USD)	$8,007,590
Annual Output (2012 USD)	$10,371,462
Induced Impacts	
Employment (Annual Average)	2
Annual Earnings (2012 USD)	$29,430
Annual Output (2012 USD)	$48,511
Total Impacts	
Employment (Annual Average)	251
Annual Earnings (2012 USD)	$8,037,019
Annual Output (2012 USD)	$10,419,973

Source: Parsons Brinckerhoff analysis

Recommendations

The following recommendations are provided for PAG consideration and represent a strategy for successfully completing the PMP and maintaining a sustainable Port to benefit the citizens of Guam.

Complete PMP improvement projects 2014 through 2018:

- Complete the following PMP improvement projects prior to the military build-up cargo peak in 2016:
  - MARAD-managed projects (Container Freight Station renovation, Warehouse 2 demolition, container terminal yard expansion, breakbulk yard expansion, new gate complex, fire-fighting improvements, storm water Improvements)
  - Service life extension work on cargo terminal wharfs
- Complete systems improvements 2014 through 2018:
  - Interim financial management system upgrade
  - Terminal operating system upgrade
  - New gate operating system

Initiate the following sustainability measures in the near-term:

- Define and develop additional sustainability projects required to maintain the condition of the facilities
- Implement structured maintenance program for gantry cranes
  - Managed by performance management contractors (PMC)
  - New parts room
  - Hire trouble-shooting specialists
  - Provide targeted training for crane mechanics staff
- Implement structured maintenance program for terminal yard equipment

- Right-size facilities maintenance and repair budget
- Secure delegated procurement authority
- Establish special funds/accounts for crane surcharge, facilities maintenance, capital improvement plan and yard equipment maintenance

Follow the 5-Year PMP Plan with Additional Improvements and Long-Term (years 6-20) Sustainability Projects:

- Inbound and Outbound Gate Complex optical character recognition (OCR) portals
- Replace Administration Building:
  - Consider relocating it
  - Consider creating an unfinished lower floor allowing for tenant improvements
- Progressively replace all underground utilities
- Progressively replace terminal pavements
- Expand concrete masonry unit (CMU) fencing to replace chain link fence where practical
- Perform surface concrete repairs to extend service life of warehouse buildings
- Provide internal space utilization adjustments to Equipment Maintenance and Repair (EQMR) Building and Warehouse 1 (WH1) to improve maintenance functions
- Perform space utilization and minor renovations to:
  - Existing Gate Administration Building
  - High Tower
  - Low Tower
- Replace all gantry cranes when Port of Los Angeles (POLA) cranes reach the end of their service life:
  - One contract for four cranes delivered two at a time starting as early as year 16 and then in year 18, or
  - Two contracts for two cranes each, deliverable in years 16 and 18
- Plan for wharf replacement in parallel with gantry crane replacement. Evaluate whether the acquisition of new gantry cranes will influence wharf and crane rail replacement timing.
- Follow through with plans to upgrade Port salary structure to achieve 50th market percentile salaries and wages over a period of about 10 years. Leverage increased salary levels to initiate targeted hiring to accomplish succession management and obtain higher technology skill sets in information technology and trouble-shooting maintenance staffing.

Initiate or follow through with these financial self-sufficiency measures:

- Implement a five-year annual tariff increase of 4.36 percent to keep up with inflation and fund the PMP and near-term sustainability projects/initiatives
- Plan for a 3.95 percent annual tariff increases after the initial five-year schedule to keep pace with inflation
- Monitor annual cargo volumes and compare with demand forecast scenarios to identify correct forecast demand scenario and implement the recommended approach
- Review list of PMP and Sustainability projects in five years to refine and update the CIP

- Review financial performance of PAG in five years and update CIP schedule to identify any required changes to the long-range annual tariff increases of 3.95 percent
- Integrate the upgraded and new financial management, terminal operating, and gate operating systems
- Work with public finance consultant, bond underwriters and attorneys to develop a strategy to secure low interest bonds (revenue, lease revenue, general obligation, and double tax-exempt as applicable)
- Consider issuing public debt to accelerate additional improvements and catch-up on sustainability projects
- Establish secure accounts and associated budgets to assure that equipment and facilities maintenance budgets are right-sized and executable.

To successfully implement the recommendations in this Master Plan Update, the PAG will need to make some significant changes to the current operating/management practices and strategies. The magnitude of the modernization program and continuation of a long-term sustainability effort will require significant changes to the way the PAG has historically implemented improvements. Some of the key adjustments to management strategy and oversight required to be successful include:

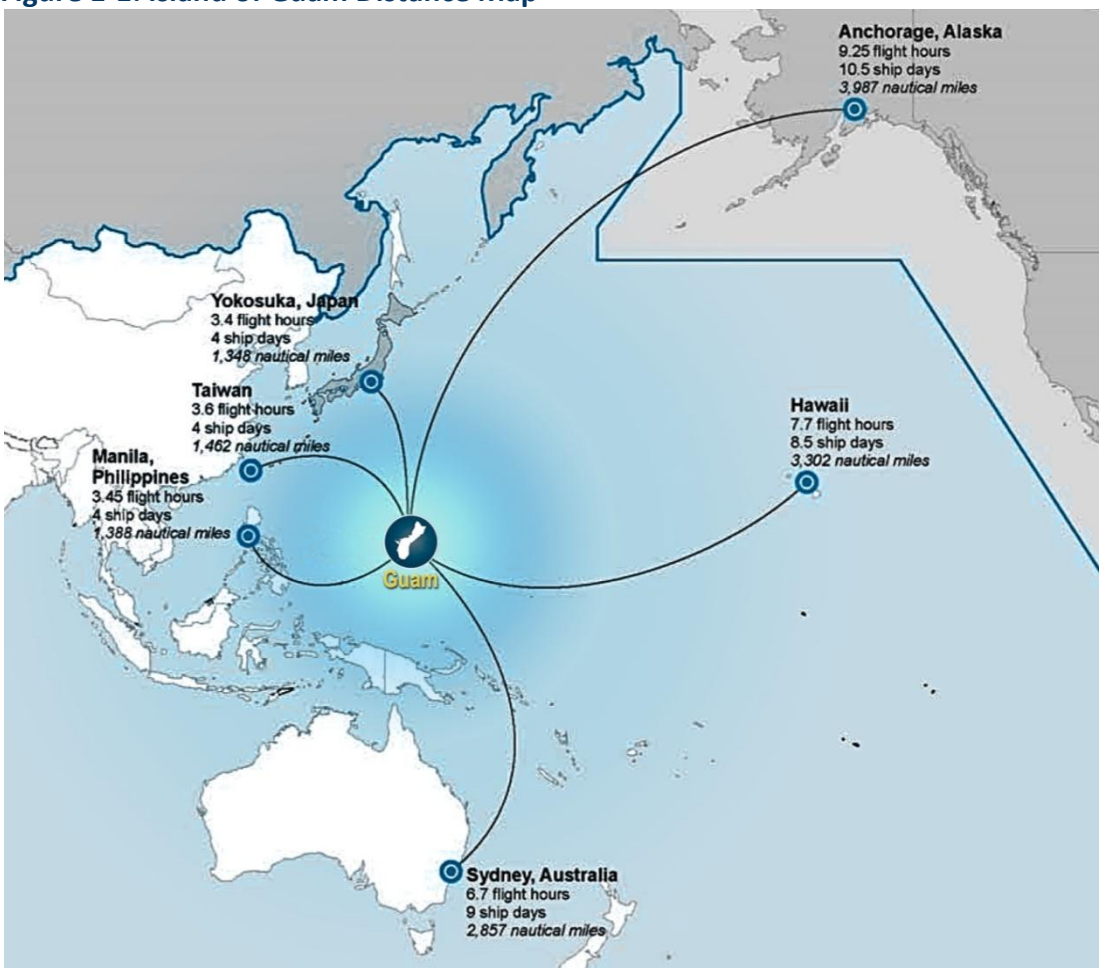
- Right-sized staffing through attrition, succession management, and organizational adjustment
- Attainment of required skill sets through targeted recruitment, OTJ training, and specialized training
- Elevation of performance expectations to align with escalating salary structure
- Establish Strategic Planning Committee (engineering, planning, commercial, finance) to identify, prioritize, and budget CIP and Sustainability Projects to align with funds availability
- Policing of accounts to assure adequate and timely funding and accountability for execution

SECTION 1. INTRODUCTION

1.1. GUAM AND PORT OVERVIEW

Guam is an organized, unincorporated territory of the United States, which is governed by the Government of Guam represented by the Governor and the Guam Legislature. The island covers 212 square miles and is located in the western Pacific Ocean, about 3,300 nautical miles (nm) from the shores of Hawaii, 1,560 nm from Tokyo and 1,460 nm from Taiwan (see Figure 1-1). It is the largest and southernmost island in the Marianas Archipelago and the largest island in Micronesia.

Figure 1-1: Island of Guam Distance Map



Source: U.S. GAO Report 13-360 at http://www.gao.gov/assets/660/655142.pdf, Adapted by Parsons Brinckerhoff

Guam's population is currently about 160,000, comprising mostly civilians but also military personnel and their dependents from the U.S. military bases located on the island. Guam's population is expected to increase in the next few years as a result of a realignment of U.S. forces from Okinawa, Japan to Guam.

The island of Guam has served as a port of call since the 16th century, first catering to the ships of Spain and then, after the Spanish-American War, to American interests. Today, the Commercial Port of Guam performs a crucial and indispensable role in the lives of the civilian and military population of Guam, the military bases and neighboring islands in the region. The port is an important transportation hub linking the Western Pacific islands with the expanding Far East market, the United States and the rest of the world. An estimated 90 percent of the day-to-day goods and supplies consumed by its constituencies pass through Guam's Commercial Port. In addition it is the primary seaport in Micronesia and serves as a transshipment hub for the entire Western Pacific Region.

Cargo going to/from the Western Pacific region by water, including the Commonwealth of the Northern Mariana Islands (CNMI) of Saipan, Tinian, Rota and other smaller islands, Republic of Palau, and the Federated States of Micronesia (FSM) has long been moved through Guam by transshipment services. Since Guam has the largest population base in this region and the most cargo, it is a natural transshipment hub to these neighboring islands. Hawaii was previously the origin of transshipment to the Eastern Caroline Islands (Marshall Islands and Kosrae, Pohnpei and Chuuk in the FSM) but this switched to Guam in the mid 2000s. Figure 1-2 depicts the locations of these islands in relation to Guam.

Figure 1-2: Western Pacific Region Islands

Source: Parsons Brinckerhoff

The Jose D. Leon Guerrero Commercial Port of Guam ("Port"), is currently owned, operated and managed by the Port Authority of Guam (PAG), a legal public corporation and an autonomous agency of the Government of Guam. The PAG controls over 1,000 acres in the Apra Harbor area including the Commercial Port with six waterfront berths (F1-F6), two fuel piers, a 500-foot long wharf, marine industrial terminal (oil tank farm and cement silos), fishing facilities, seaplane ramp and a privately-managed marina and harbor of refuge. The PAG also owns and operates a marina in the southern municipality of Agat and the Gregorio D. Perez Marina in Guam's capital city Hagåtña. PAG properties are shown in yellow in Figure 1-3.

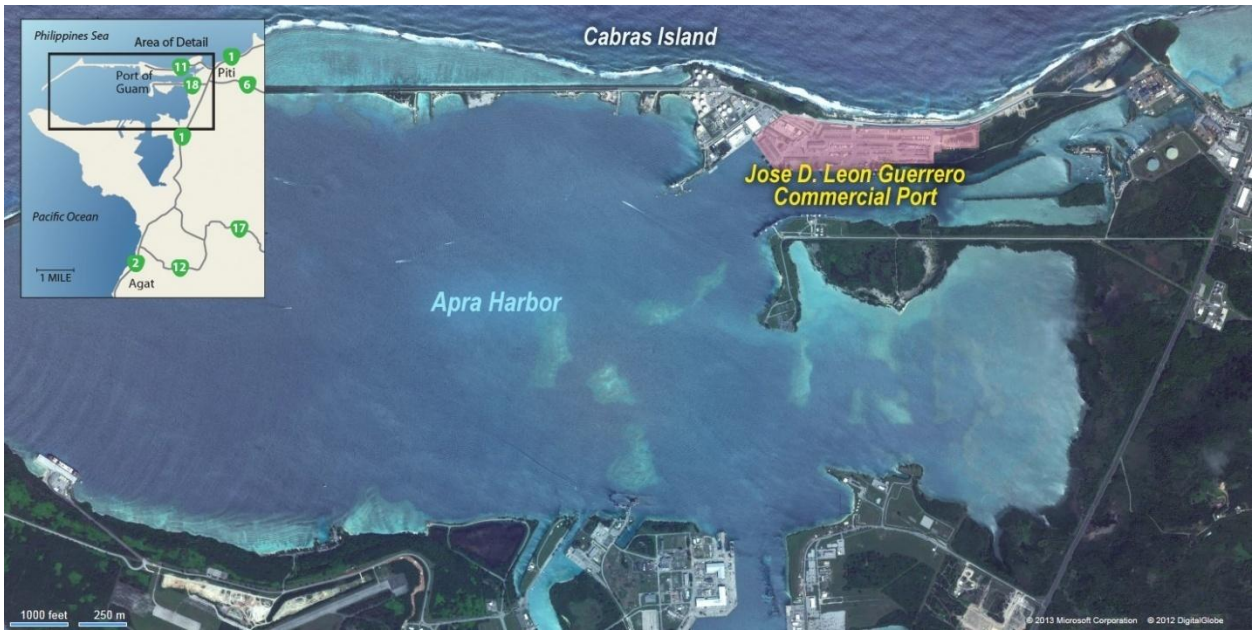
Sheltered within the inner reaches of the Outer Apra Harbor, the Commercial Port is Guam's only deepwater port and provides the people of Guam with ocean commerce, shipping, recreational and commercial boating as well as sea vessel navigation. It is also the 16th commercial strategic seaport in the U.S. and the only commercial port on the island, offering facilities and services to ships of all registries.

As shown in Figure 1-4, the Port is located on 62 acres of land on and adjacent to Cabras Island in Piti. These collocated facilities provide deep draft waterfront access and landside support services for container, breakbulk, fishing, and passenger vessels. The Port is comprised of a breakbulk terminal and a container terminal, five cargo handling berths, cargo handling equipment, 26.5 acres of cargo storage, and several facilities and equipment maintenance and repair buildings.

Figure 1-3 : Guam and PAG Properties

Source: Bing Maps Imagery, Adapted by Parsons Brinckerhoff

Figure 1-4 : Commercial Port



Source: Bing Maps Imagery, Adapted by Parsons Brinckerhoff

1.2. PURPOSE AND BACKGROUND

1.2.1. PURPOSE

The intent of this document is to update the assumptions, drivers, and conclusions of the most recent Port Master Plan entitled "Master Plan Update 2007 Report". That report, completed in 2008 and approved in September of 2009 by Public Law 30-57, was instrumental in outlining a proposed Port Modernization Program (PMP) that was to proceed at an accelerated pace. This update revisits the PMP in light of recently announced changes to the military forces realignment and other items mentioned in the Background Section 1.2.2. The original Scope of Work for the execution of this Master Plan Update is presented in Appendix 1-1.

In effect, this update addresses a PMP reset that:

- Maintains an effort to modernize near-term
- Reflects an adjustment to projected cargo impacts of the Defense Policy Review Initiative
- Adds a balanced focus on improvement and long-term sustainability
- Addresses the right-sizing of operations, maintenance and repair, and capital improvement budgets
- Limits uplands terminal area(s) expansion
- Supports Service Life Extension for waterfront structures
- Addresses the tariff structure needed to secure financial self-sufficiency

Section 6 of this report contains a High-Level Implementation Plan, a Financial Feasibility Assessment (and model), and an Economic Impact Statement (assessment). Appendix 6-1 contains 5-Year Tariff Petition Schedules for submission to the Public Utilities Commission

(PUC). Collectively these documents constitute a roadmap to guide the PAG's future development strategy over the next 20 years.

In parallel with this Master Plan Update will be the submission of a separate Transshipment Report that investigates the recently enacted Gantry Crane Surcharge to determine if any adjustment is required to account for the maintenance costs that result from the double-handling of container boxes destined for the outer islands. The Transshipment Report also includes an assessment of the differing fuel-throughput charges associated with imported and transshipped fuels to determine if there are any recommended adjustments to fuel loading rates going forward. This report will reflect some of the revenue and expense analyses performed under the Master Plan Update to both right-size and financially support the maintenance and repair and capital improvement budgets associated with the PAG's transshipment Business Lines.

1.2.2. BACKGROUND

The Master Plan Update 2007 Report was conducted against the backdrop of a highly publicized rapid and large military build-up on Guam. The Department of Defense (DOD) plans were grounded in a series of defense realignment initiatives embodied in the Defense Policy Review Initiative (DPRI) of 2002 and the follow-on U.S. – Japan Roadmap for Realignment Implementation of 2006 (known as the "Roadmap"). These plans initially called for the relocation of 8,000 Marines and their dependents from Okinawa, Japan to Guam. The Roadmap increased this total to 8,600 Marines and 9,000 dependents. Related projections estimated that the realignment construction would occur between 2010 and 2014 and overall population on Guam would rapidly climb to 250,000 including military moves, temporary construction personnel, and other induced organic and commercial growth.

At that time, it was determined that a massive military build-up initially envisioned would create large and rapid increases in annual Port cargo volumes causing the Port to become a cargo-handling bottle-neck for DOD construction materials and impact the logistics lifeline for all of Guam. This potential challenge created the perfect storm where the demand for rapid growth in storage yard area, waterfront berths, and throughput process improvements collided with a growing sustainability backlog for aging (1960s) infrastructure (wharfs, cranes, container yards, breakbulk yards) that had seen little in the way of recent investments/improvements. As a consequence, the Port Master Plan Update of 2007 Report called for more than $200 million in major capital projects to be executed in a three to four year timeframe.

The key elements of the Master Plan Update 2007 Report (which were not yet funded or put into phases) included:

- Retention of Warehouse 2 (WH2) and demolition of the Container Freight Station (CFS) Building
- Construction of a new 900-foot Berth F7
- Replacement of the wharf structure at Berths F5-F6

- Dredging at Berths F5 and F6 to -42-foot from Mean Lower Low Water (MLLW)
- Dredging of Berth F7 to -51-foot from MLLW
- Full yard expansion to the northeast
- A modernized gate complex located east of the existing gate
- Creation of an expanded 10-acre breakbulk yard east of the existing container yard and west of a 26-acre expanded container yard
- Demolition of Electrical Load Center (LC) 3
- Demolition of the Unitek-operated hazmat facility on Route 11
- West access through Cabras to divert cruise traffic away from the Port
- Provision for future 100-gauge gantry cranes and a supporting rail structure
- New maintenance facility
- Existing gate demolished
- A new customs inspection station and customs building
- Expanded storage capacity for refrigerated (reefer) containers

Subsequent to release of the Master Plan Update 2007 Report, the following series of events helped shape the 2010 PMP in terms of content, phasing, budget allocation, and Capital Improvement Plan (CIP) investment priorities:

- The PAG entered into a Memorandum of Agreement (MOA) with the U.S. Maritime Administration (MARAD) installing them as a federal partner who would oversee execution of the PMP.
- The Federal Government established the Port of Guam Improvement Enterprise Fund as a repository for Port of Guam Modernization Program funding (both federal and private) and installing MARAD as the manager of the Enterprise Fund to execute responsibilities outlined in the aforementioned Port-MARAD MOA.
- The PAG secured $50 million in pledged U.S. Department of Agriculture (USDA) Direct and Guaranteed Loans.
- The PAG applied for a $49.7 million American Recovery and Reinvestment Act (ARRA) Grant and pledged matching funds from the USDA Loans.
- The ARRA Grant, also known as a “Tiger” Grant, application required environmentally “shovel-ready” projects resulting in the PAG having to prioritize uplands improvements (Phase 1-A) over in-water improvements (Phase 1-B).
- The PAG produced an Implementation Plan, Financial Feasibility Assessment, and Economic Impact Statement in order to secure Legislative Approval of the Master Plan Update 2007 Report. These reports were aligned with the ARRA Grant application and established a phased approach to execution of the overall PMP. This phasing established Phases I and II with Phase I-A mirroring the ARRA Grant scope for uplands work, Phase I-B adjusting waterfront usage for existing berths, and Phase II deferring the F7 Berth Expansion for at least 20 years.
- The Guam Legislature enacted and the Governor signed into law, Public Law (P.L.) 30-57. This law essentially approved the Port Master Plan Update 2007 Report and what was

termed Phase I (Phase I-A and Phase I-B) of the Port Modernization Program. It also imposed a debt ceiling of $ 54.5 million, required the purchase of two gantry cranes by December of 2012, and required program downsizing in the event that ARRA Grant funds were not received.

- Matson and Horizon purchased three used gantry cranes from the Port of Los Angeles (POLA), and signed a lease with the PAG that enabled them to financially justify refurbishing those cranes and placing them on Port rails for a period of five years.
- The PAG completed a Terminal Development & Operations Plan Report in 2010 that added detail to what was approved in P.L. 30-57.
- The PAG completed Preliminary Design of the Phase I-A projects.
- The PAG completed a Phase I-A Implementation Plan.
- MARAD solicited and awarded a Program Management Team (PMT) Contract.
- MARAD and the PMT Value Engineered the Port's Phase I-A Preliminary Design and revised the Phase I-A Implementation Plan to that which was affordable within projected budgets.
- The PAG did not receive the requested ARRA Grant.
- The Guam Legislature passed legislation (P.L. 30-100) that required the PAG to investigate alternative funding, address at a minimum, capacity requirements for the Organic Growth Scenario, stay the course on the gantry crane acquisition, and only incur debt that was within the Port's ability to service.
- DOD issued a Record of Decision (ROD) for its Environmental Impact Statement relative to planned Guam construction activity under DPRI.
- In reaction to the failed ARRA Grant application, and the implications of Guam P.L. 30-100, DOD followed the release of its ROD with special legislation authorizing the deposit of $50 million in the Port of Guam Improvement Enterprise Fund.
- In parallel with MARAD work on Phase I-A and in preparation for a future Phase I-B, the PAG commissioned the preliminary design of Phase I-B marine projects targeting the replacement of the sheetpile wharf structures at Berths F4 and F6. During an underwater inspection of the existing wharf structures, it was determined that there were unexpected structural defects in the pile-supported wharf structure at Berth F5.
- In 2011, members of the U.S. Congress called for a DOD re-set of the military alignment plans for DPRI.
- Also in 2011, the PAG called for its own re-set focusing on a balanced program that could no longer ignore significant waterfront problems with no financial plan in place to address them. It also re-directed the marine facility design effort to focus on Service Life Extension of existing berths including making repairs to Berth F5.
- With the military re-set called for, the Port determined that cargo projections were now very uncertain and that a more fiscally conservative approach to both borrowing and what the money should be spent on was necessary. This led to a decision by the PAG to drop its plans to execute the $25 million Guaranteed USDA Loan. At the same time, the PAG

temporarily limited MARAD implementation work to that which could be paid for solely by the DOD $50 million placed in the Enterprise Fund.

- The PAG prepared a 5-Year Tariff Projection and 20-Year PMP Financial Plan and submitted it to the PUC. These documents performed sensitivity analysis on the scale and pace of the military build-up, inserted the purchase of gantry cranes and a Service Life Extension Project for the Port berths, and evaluated investment options around both a Minimum and Maximum PMP budget, consistent with the current authorized Debt Ceiling of $54.5 million.
- In 2012, DOD announced a projected downsizing of the military build-up plans for Guam. The new mix of personnel relocating to Guam was reduced to approximately 5,000 Marines (one-third permanent party and two-thirds rotational) and 1,300 dependents. The projected construction budget for projects on Guam dropped to about $8.6 billion in 2012 dollars. The timeframe for implementing realignment was pushed back from 2010-2014 to 2016-2020. Complicating matters is the Federal budget sequester, adjustments for progress on Japan projects, adjustment of the Okinawa consolidation to now include retaining some troops in Okinawa and expanding the U.S. realignment of departing Marines to now include positioning them in Hawaii and Australia. For these reasons, the pace of the Guam build-up is expected to be slowed further possibly pushing it to somewhere between 2020 and 2026 (when the Hawaii portion of the redistribution is scheduled for completion). On top of this, the General Accounting Office issued a recent (2013) report indicating that the quality of current realignment cost estimates are poor, the Australia portion has not been estimated, and Master Planning for the realignment is incomplete.
- Horizon terminated its shipping business in Guam.
- Matson and Horizon offered the PAG an opportunity to purchase their used gantry cranes (three POLA cranes and Gantry 3).
- The Guam Legislature passed special legislation authorizing the purchase of the Matson/Horizon cranes consistent with the direction provided previously in Public Laws 30-57 and 30-100.
- The PAG solicited PUC authority to implement a Gantry Crane Tariff Surcharge to support purchase of the used cranes.
- The PAG executed a previously pending USDA Loan to purchase the used gantry cranes, making the current total of owned Gantry cranes equal to five.
- The PAG initiated disposal action for Gantry 2 determining that it was excess to their needs going forward.
- The PAG is pursuing an Interim Tariff Petition to bridge between the last Tariff adjustment enacted and the 5-Year Tariff Petition that will be submitted following approval of this Master Plan Update.
- The PAG has actively and continuously pursued Security Grants.

As a consequence of the aforementioned series of events, the previously identified and approved Phase I (A &B) PMP Elements underwent a transformation as follows:

Phase I-A

- The breakbulk yard was moved to the west side of the site and a new breakbulk gate was added
- The CFS building is now being renovated instead of demolished
- The number of required additional outlets for reefer containers has been reduced
- WH2 is now scheduled for demolition rather than retention
- The proposed original container yard expansion was reduced in size
- Provision for future 100-gauge cranes was pushed beyond the 20 year planning horizon, subject to re-thinking when new cranes are acquired in the 2029-2033 timeframe
- The following projects were added during preliminary design, but either deferred or refined during value-engineering and budget reconciliation:
  - Administration Building expansion was deferred
  - Optical character recognition (OCR) portals and canopies were deferred
  - Gamma ray scanners at breakbulk yard were earmarked for future security grant acquisition
  - Demolition of Low Tower was deferred
  - Construction of a new gate for the Administration Building was deferred but is now viewed as eliminated
  - Equipment maintenance and repair (EQMR) building expansion was deferred
  - Small EQMR building renovation was deferred
  - Container yard expansion toward the junction of Routes 11 and 11-A was retained but downsized
  - Relocation of Tristar Fuel Lines was deferred and is an ongoing and unresolved discussion item
  - A new gate complex extending toward the junction of Routes 11 and 11-A was retained but both relocated and downsized
  - Demolition of hazardous materials disposal facility on Route 11 went away with the new gate reconfiguration
  - Demolition of Electrical LC3 went away with the construction of new LC5 north of the new container yard expansion
  - Small Welding Building renovation was deferred
  - Back-up generators are earmarked for future security grant acquisition

Phase I-B

- Used crane purchase was advanced and included in the minimum PMP; thus competing with Phase 1-A funding within the $54.5 million debt ceiling
- Service life extension of Berths F4-F6 was added; pushing wharf replacement beyond 20 years
- Dredging of Berths F4-F6 was pushed beyond 20 years
- New gantry crane acquisition has been scheduled for years 16-19 of the 20-Year planning horizon

Grant Projects

- Emergency operations center (EOC); design currently underway
- Security network infrastructure (underground ductwork); design currently underway
- Marina improvements – Phase II underway on Hagåtña Marina
- Hi-Mast lights replacement in existing container yard; work already completed
- Purchase of three trailerable, seawater and foam-capable, fire fighting pumps; work already completed

In addition to the above transformation, the PMP Implementation Strategy has taken on a conservative near-term spending approach and a balanced "Improvement/Sustainability/Self-Sufficiency" focus. As such it can be characterized as follows:

Near-Term (first 5 years) minimal PMP Investment

- MARAD/PMT Implementation Plan
  - Reconfigured and expanded breakbulk yard
  - Access to Berth F4 and demolition of WH2
  - Smaller reconfigured new gate complex
  - Small container yard expansion
  - Fire-fighting, storm drainage, and security improvements
- Used crane acquisition; already accomplished
- Service life extension for berths
- Upgrade Financial Management System (FMS)
- Upgrade Terminal Operating System (TOS)
- New Gate Operating System (GOS)
- Limited yard equipment purchase; some accomplished already and some pending

Longer Term (years 6-20) Improvement and Sustainability Projects

- Previously deferred Improvements will be re-evaluated for need
- Budget will be established to support progressive replacement of aging facilities
- Projects will likely be phased to accommodate continuity of operations and limitations on available funding
- Facility utilization improvements will lead to minor renovations in existing facilities

1.3. DATA COLLECTION

The Master Plan Update 2013 kick-off meetings and initial interview process took place over a five day period from April 8 to April 12, 2013. Prior to the terminal visit, the project team reviewed information related to existing terminal operations and the modernization program, and had conference calls with PAG staff to review the current land and water uses/conditions. This information provided a basis of understanding and outlined specific topics to be addressed during the terminal visit.

Table 1-1 includes a schedule of the interviews conducted by the project team during the kick-off week.

Table 1-1: Interview Schedule – April 2013

Date	Day	Time	Meeting
4/8/2013	Monday	9:00 am	Kick-off w/ PAG General Manager & Deputy General Manager (DGM)
		1:00 pm	PAG Operations
		2:00 pm	Department of Public Works
4/9/2013	Tuesday	9:00 am	PAG Maintenance and Port Tour
		11:00 am	PAG Information Technology
		1:00 pm	Guam Customs
		3:00 pm	PAG Planning
		3:30 pm	Guam Economic Development Authority
4/10/2013	Wednesday	9:00 am	PAG Engineering
		11:00 am	Board of Directors
		1:00 pm	PAG Finance
		2:00 pm	US Customs and Border Protection
		4:00 pm	Port Police
4/11/2013	Thursday	8:00 am	Meeting w/ Senator Ada (including PAG DGM and PAG Operations Manager)
		9:00 am	Public Utility Commission
		9:00 am	Guam Power Authority
		11:00 am	PAG Commercial
		11:00 am	Guam Water Authority
		1:00 pm	PAG Marketing
		2:00 pm	PAG Harbor Master and Port Pilot
4/12/2013	Friday	1:00 pm	Port Users Group
		2:00 pm	Out-brief Meeting w/ PAG General Manager & DGM

Follow-Up Site Visits

A follow-up site visit took place over a four day period from May 28 to 31, 2013. Prior to the follow-up visit, the project team had weekly conference calls with PAG terminal operations staff, PAG planning staff and project stakeholders. The purpose of the follow-up visit was to update various stakeholders and get feedback and confirmation of the initial analysis and findings from PAG management.

Table 1-2 includes a schedule of the meetings conducted by the project team during the follow-up site visit week.

Table 1-2: Interview Schedule – May 2013

Date	Day	Time	Meeting
5/28/2013	Tuesday	10:00 am	In-brief Meeting w/ PAG General Manager, DGM Operations, DGM Administration
5/29/2013	Wednesday	8:00 am	PAG Operations
		10:00 am	PAG Procurement
		2:00 pm	Board of Directors
		4:00 pm	Port Users Group
5/30/2013	Thursday	9:00 am	PAG Commercial
		1:00 pm	PAG Finance
		1:30 pm	Matson Navigation
5/31/2013	Friday	9:00 am	Public Utility Commission
		10:00 am	Marianas Express Lines Limited
		1:00 pm	Guam Military Build-up Office
		2:00 pm	Out-brief Meeting w/ PAG General Manager, DGM Operations & DGM Administration
6/04/2013	Tuesday	2:45 pm	Public Utility Commission
6/10/2013	Monday	10:00 am	Slater Nakamura

A third visit took place over a five day period from July 15 to 19, 2013. The purpose of this visit was to present the interim draft to PAG management and the Board of Directors. Table 1-3 includes a schedule of the meetings conducted by the project team during the week.

Table 1-3: Interview Schedule – July 2013

Date	Day	Time	Meeting
7/15/2013	Monday	2:00 pm	In-brief Meeting w/ PAG General Manager, DGM Operations, DGM Administration
7/16/2013	Tuesday	1:00 pm	Presentation with Division Heads & Staff
7/17/2013	Wednesday	9:00 am	PAG Procurement
		10:00 am	PAG Finance
		11:45 pm	Board of Directors
7/18/2013	Thursday	9:00 am	South Pacific Petroleum Corporation
		10:00 am	Mobil
		1:00 pm	Isla Petroleum & Energy
		3:00 pm	Port Users Group
7/19/2013	Friday	2:00 pm	Out-brief Meeting w/ PAG General Manager, DGM Operations & DGM Administration

1.4. STAKEHOLDER OUTREACH

The interviews/data collection process provided a means for the project team to engage stakeholders to understand their concerns, perspectives and to obtain data critical to updating the Master Plan Update 2007 Report and subsequent Port Modernization Program, both near and long-term. Over the four month period, the project team interviewed and met with numerous individuals and Port stakeholders. The participating stakeholders included:

- PAG Board of Directors
- PAG Staff
  - General Manager's Office (Includes General Manager, Deputy General Manager for Operations, and Deputy General Manager for Administration)
  - Operations
  - Maintenance
  - Strategic Planning
  - Commercial
  - Procurement
  - Finance
  - Information Technology
  - Harbor Master
  - Port Police
- PAG Tenants
  - Matson Navigation
  - Marianas Express Lines Limited
  - Cabras Marine
  - Ambyth Shipping and other steamship agents
  - Warehouse 1 Tenants
  - Mobil
  - South Pacific Petroleum Corporation (SPPC)
  - Isla Petroleum and Energy (IP&E)
- Guam Department of Public Works (DPW)
- Guam Power Authority (GPA)
- Guam Water Authority (GWA)
- U.S. Customs and Border Protection (US CBP)
- Guam Customs
- Joint Guam Program Office (JGPO)
- Director of Guam Military Build-up Office
- Guam Economic Development Authority (GEDA)

Meeting notes on these and other meetings are presented in Appendix 1-2.

SECTION 2. PORT OF GUAM ACCESS AND FACILITIES

This section provides a general overview of the water and landside access to PAG's Port facilities and describes the condition of the Port's existing facilities (storage yard and buildings), equipment and infrastructure (berths). Future maintenance and operation improvements are also summarized. This section can serve as a reference for comparison to the recommended PAG modernizations described in Section 5.

2.1. WATERSIDE ACCESS

The PAG's Port facilities are located on Cabras Island in Apra Harbor on the west coast of Guam. The Apra Harbor layout is depicted in Figure 2.1 and consists of Outer Apra Harbor and Inner Apra Harbor. The main navigation channel, anchorages, the Port facilities, marinas, other marine industrial facilities and the Navy's Echo and Delta wharves are located in the Outer Harbor. Other Navy facilities including the Navy Dry Docks are located in the Inner Harbor.

More detailed information on the navigational infrastructure around the Island of Guam and Apra Harbor are described in the following National Oceanic and Atmospheric Administration (NOAA) and British Admiralty nautical charts:

- NOAA 81048 Guam
- NOAA 81054 Apra Harbor
- British Admiralty 1109 Apra Harbor

Public Law 26-72 "Harbor Rules and Regulations of the Port Authority of Guam" governs Harbor use. Operations within Outer Apra Harbor are controlled by the PAG through the office of the Harbormaster. The U.S. Navy controls all operations in Inner Apra Harbor, which is a restricted area.

2.1.1. APRA HARBOR AND NAVIGATION

The main access channel in the Outer Apra Harbor is aligned at 83^{o} from the harbor channel entrance, which is 705 feet wide between Orote Island and Spanish Rocks. Inbound traffic has priority and access is restricted when winds exceed 35 knots. The overall harbor navigation metrics as described in Fairplay or provided by the Harbormaster include:

Traffic Figures	Approx. 2 million tons of cargo and 530 vessels handled annually
Load Line Zone	Summer
Maximum Vessel Size	Draft 51.8 feet, 100,000 deadweight tonnage (dwt)
Pilotage	Compulsory for vessels over 500 gross register tonnage (GRT) and available 24 hours per day (Note: Fishing vessels in any event require pilotage first time in harbor)

Once inside the harbor, access to the Port facilities and Navy wharves Delta and Echo is to the northeast through Cabras Island Channel, which currently seems to have 39.4 feet depths. The Port berths currently have depths of approximately 34 feet or less.

From the main channel access to Inner Apra Harbor and restricted Navy facilities are at a southeasterly alignment.

According to Fairplay, there are six anchorages available in Guam as shown in Table 2-1.

Table 2-1: Anchorage Points in Outer Apra Harbor

Number	Latitude	Longitude	Depth (m)	Notes
501	13°27.2'N	144°37.6'E	43.0	General anchorage
701	13°26.6'N	144°37.5'E	43.6	Military explosive anchorage
702	13°27.4'N	144°28.1'E	39.0	Military explosive anchorage
703	13°27.3'N	144°38.3'E	34.4	General anchorage
704	13°28.6'N	144°38.5'E	36.6	Navy anchorage
951	13°26.5'N	144°38.2'E	89.0	Navy anchorage

The following are the capacities of the tugs available in the harbor through Cabras Marine:

- Goliath (3,600 HP)
- Talofofo (3,750 HP)
- Mangilao (3,750 HP)
- Quipuha (3,600 HP)

According to the Harbormaster, two tugs are generally used for navigation of most vessels within the harbor. Sometimes four tugs are used for aircraft carriers.

2.1.1.1. Navigational Aids

The Federal aids to navigation are identified on the nautical charts described under Section 2.1. The Coast Guard Cutter Sequoia, home-ported in Apra Inner Harbor in Guam, is the only vessel responsible for the aids on Guam, as well as most of the Marianas Islands and Kwajalein Atoll in the Marshall Islands. As a result, response time to correct aids damaged or extinguished on Guam may be delayed due to other priorities.

In addition, there are privately maintained aids at other locations such as the entrance to Agat Marina. The civilian Port Police maintain the aids to navigation at the marina.

The Fourteenth Coast Guard District, located in Honolulu, Hawaii, publishes a Weekly Notice to Mariners. This publication is distributed via mail, e-mail and internet and advises mariners of navigation matters that may be of immediate concern. Additionally, the Coast Guard broadcasts a Notice to Mariners over Very High Frequency (VHF) radio on navigational issues that are of immediate and local importance.

2.1.1.2. Tidal Range and Flow

Range: 3.6 feet

Flow: Off the entrance, the flood stream sets between north and northeast and the ebb stream southwest, slack water occurring at 30 minutes before Low Water and 45 minutes before High Water. When combined with the southwest-going current associated with the northeast trades, which is greatly affected by the force of the wind and may, on occasions, be sufficient to overcome the northeast-going stream, the resultant flow has maximum rates of 1.5 knots northeast-going and 3 knots southwest-going. Strong tide rips may also be encountered.

Swell: Heavy west swells sometimes make the harbor entrance dangerous for a period of several days; this occurs when a typhoon is developing in the area and moving northwest.

2.1.2. Condition Assessment

Approximately once every five years the U.S. Coast Guard conducts a Waterways Analysis and Management System (WAMS) study for the waters around Guam. At the time of this writing, a WAMS study for the waters around Guam is underway. According to U.S. Coast Guard officials, there have been no comments received yet by the public. Due to other operational commitments, the U.S. Coast Guard has not been able to complete the WAMS study according to their original schedule, although they do not anticipate any changes to the current aid to navigation system.

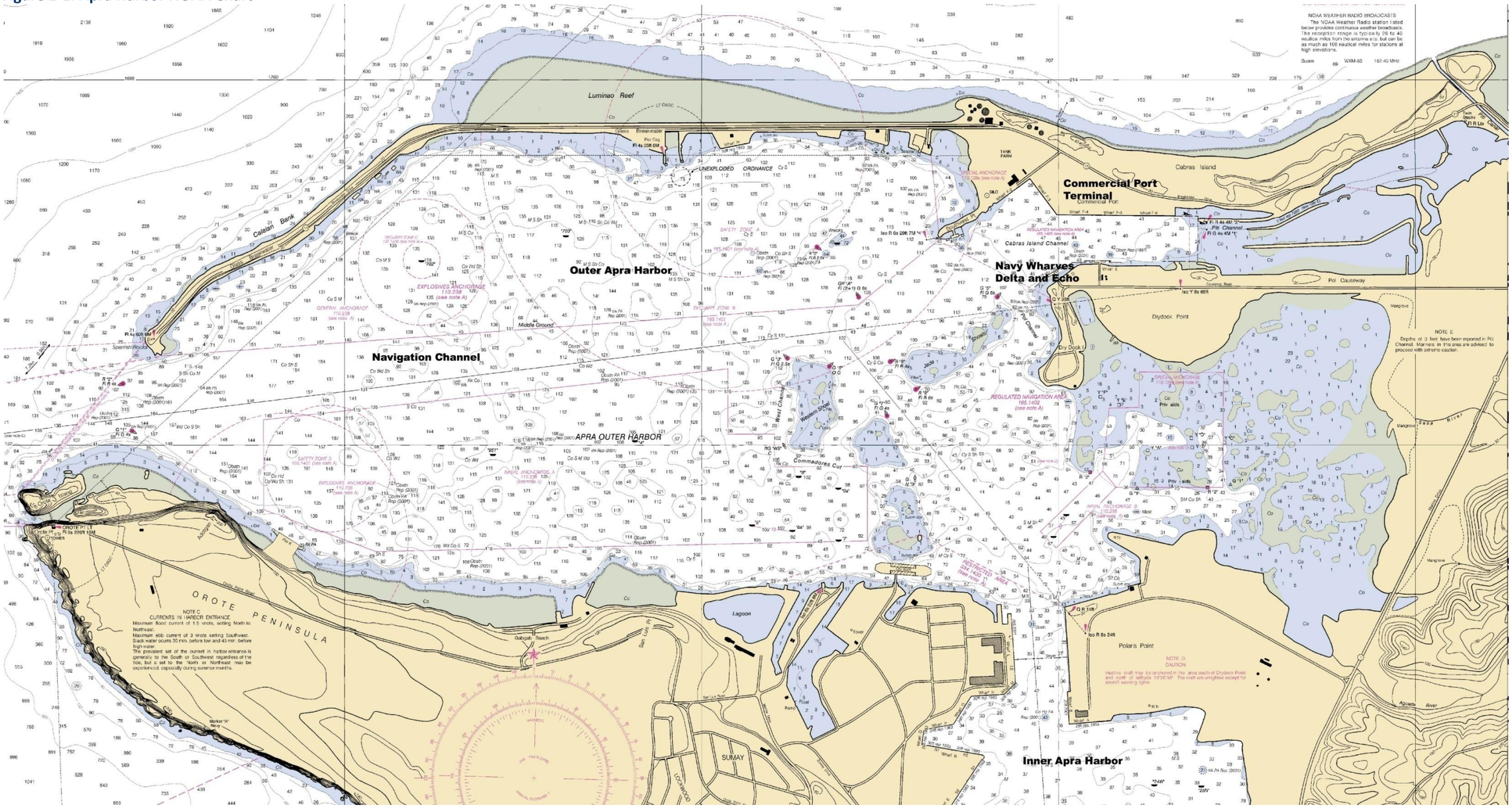
With regard to Apra Harbor, this may change if the anticipated military build-up on the island occurs and additional Naval and commercial vessels increase their Port visits or are home-ported there, or new wharves are built or new channels dredged.

2.1.3. Maintenance and Operational Improvements

The Port does not have responsibility for the maintenance of the Federal aids to navigation. If these aids are damaged by storms, the U.S. Coast Guard Cutter Sequoia, stretched thin with responsibility for all navigational aids in the region must schedule and repair them.

It is recommended that the Port provide input on their in-water infrastructure improvements to the U.S. Coast Guard's WAMS study.

Figure 2-1: Apra Harbor NOAA Chart

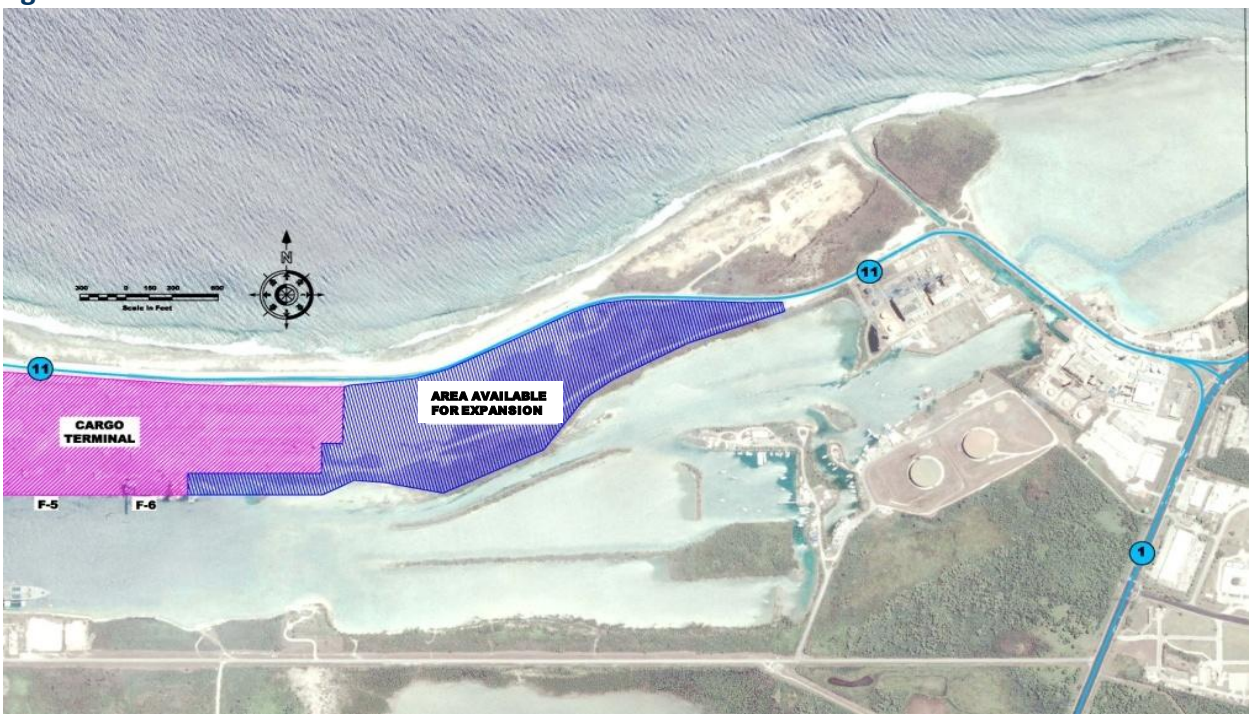


Source: NOAA Charts Rose Point Navigation LLC

2.2. LANDSIDE ACCESS

The Port facilities owned and managed by the PAG are located along the northern shoreline of Apra Harbor close to Piti Channel. Access from Tamuning and other urban areas is via the four-lane main arterial, Route 1, or Marine Corps Drive, which at this point, runs Southwesterly towards Piti. Access to the Port from Piti is via the two-lane road Route 11. The intersection of Route 1 and Route 11 is signaled. From the intersection, Route 11 runs west and crosses the Piti Channel Bridge onto Cabras Island. It is the only current road access to Cabras Island. On Cabras Island, Route 11 runs past GPA's Power Plant Complex adjacent to and to the south of the road, past vacant lands set aside for the Cabras Industrial Park and into the Port area.

Figure 2-2: Commercial Port Location and Access



Source: Parsons Brinckerhoff analysis

The Port is located south of the access road as shown in Figure 2.2. The North barrier along the road consists of a low seawall and armored breakwater protection facing the Philippine Sea. The road runs past the Cargo Terminal and Marine Industrial Facilities Area and dead ends on Glass Breakwater, which forms the northern breakwater for Outer Apra Harbor.

2.2.1. Port Vicinity Road 11

Route 11 is a two-lane road with 12-foot travel lanes and 8-foot shoulders (both directions) within the 100-foot-wide right-of-way corridor. It has provision for turning pockets to the existing entrance to the container yard and the new container gate currently under design with MARAD.

The pavement of Route 11 was originally built with 8-inch thick base course and 2-inch thick asphalt with typical 2 percent drain slope outward; double bituminous surface treatment for shoulders with typical five percent drain slope outward. The DOD Defense Access Roads (DAR) program overlaid the road in 2012 with 5 inches of asphalt and maintained the 2 percent crown in the roadway and reinforced the shoulder to 7 inches of asphalt over an 8-inch thick base course. The travel lanes and turn lanes have a 1-inch thick friction course. The traffic flow at the interchange of Route 1 and 11 is controlled by a traffic light complete with two left turn lanes and signal for traffic outbound from the Port area.

2.2.1.1. Condition Assessment

According to the analysis revealed in the Guam 2010/2020 Highway Master Plan by Department of Public Works (DPW), the capacity to handle anticipated traffic flow will be adequate up to 2020. No short-term or long-term capacity expansion is recommended. With the military alignment changes announced in 2012, it is likely that Route 11 traffic capacity will be sufficient well into the future.

Recent work under the DAR program has resurfaced and strengthened the road, added drainage improvements, made provision for a new Weigh-In-Motion (WIM) facility, and made alignment changes that retain access through the current Port gate and allow for future access through the proposed new Port gate. These improvements are expected to satisfy all Port-related traffic management concerns.

2.2.1.2. Maintenance and Operational Improvements

The above referenced study by DPW revealed a large amount of rocks/coral rubble piled up in front of the existing seawall. Some of this has since been cleared, but a substantial portion (from the existing gate to the west end of the container yard) still remains. This poses a continuing threat of increased wave run-up and renders the seawall ineffective against overtopping during large storms/typhoons. Overtopping of the seawall in the future may cause rocks/coral rubble to be deposited on Route 11, resulting in temporary road closure, and possible road damage and flooding of the cargo terminal yard. DPW plans for continuing any seawall work to improve overtopping conditions are unclear.

2.3. Land Use Environment

The current land use designations were last updated in the Master Plan Update 2007 Report approved by the Guam legislature and enacted in P.L. 30-57 in September of 2009. These land use designations are depicted in Figure 2.3 and are posted on the Port's website. These designations, along with a proposed change to Hotel Wharf and a possible change to the open

space tract fronting Route 18 and Route 1, are deemed to be applicable to this 2013 Master Plan Update and are summarized as follows:

Industrial

The segment of land nestled between the cargo terminal, the Mobil Tank Farm and the Seawall to the north and the area adjacent to the Route 11 Approach Road has been designated for "Industrial" use. The proposed Cabras Island Industrial Park is slated to be located on the eastern portion of this tract.

Cargo Terminal

This tract designated "Commercial Port" consists of the existing cargo terminal areas and the expansion areas located to the east of the terminal. It consists of approximately 95 acres of land with access to deep navigable waters of the Cabras Navigation Channel in Apra Harbor. It includes the area currently occupied by the Port Administration Building and associated small buildings located outside the fenced area of the cargo terminal.

Piti Channel/Harbor of Refuge

This tract consists of Piti Channel that flows from the Philippine Sea under the Route 11 bridge past the Harbor of Refuge for small craft and into Apra Harbor via the Cabras Island Navigation Channel and Port Slips.

Fishing Facilities at F3

This tract includes the segment of land currently occupied by the Port's Transit Shed #1, the Carriers Maintenance and Repair Building and adjacent tank area. It is currently located within the cargo terminal fence and is contiguous with the terminal. A portion of this area is leased and occupied by the CASAMAR Purseiner fishing repair facility. The remainder of the CASAMAR lease area seems to be located on the marine industrial terminal property.

Open Space Tracts

These tracts designated as "Open Space" include the area parallel to the road running along the Glass Breakwater between the Seaplane Ramp, Golf Pier, Hotel Wharf, Pier Dog and Family Beach. Fuel pipelines run partly along this tract between Golf Pier and the Tank Farm on the marine industrial terminal property.

While a specific use has not been identified for the open space tract that fronts the north side of Route 18 and the west side of Route 1, it may be in the Port's best interest to designate this area as Marine Industrial. This would provide potential development opportunities, both private and public, that would be compatible with marine and Port operations and be a potential source of revenue in the future.

Marine Industrial Terminal

The various tenant facilities described under "Marine Industrial Terminal" in Section 2.5.1 are located within this tract including Pier F-1, the cement unloading dock and the equipment/

vessel repair upland and building areas. This tract is designated "Fuel Facilities/ Cement Import".

Seaplane Ramp
This tract consists of the Seaplane Ramp property which is designated "Marine Industrial".

Golf Pier
This tract consists exclusively of Golf Pier, which is also designated "Marine Industrial". This tract is currently leased and operated as a Fueling Pier by Mobil Oil Guam.

Hotel Wharf
This tract consisting exclusively of Hotel Wharf seems to be designated as mixed-use between "Fishing Facilities" and "Dinner Cruise". This area should be reclassified as "Marine Industrial".

Pier Dog & Family Beach
This tract consisting of Pier Dog and Family Beach is designated for "Fishing Facilities" and "Water Recreation". This tract is currently leased to operations that cater to recreational activities. Family Beach is used by local residents and tourists for picnics, jet skiing and swimming.

Explosive Safety Quantity Distance (ESQD)
The military has designated a number of hazard zones called the "Explosive Safety Quantity Zone" in Apra Harbor. Most ESQD zones are in Inner Apra Harbor, which does not seem to impact Port activities and is not shown on the Port website. However, there is one zone in Outer Apra Harbor, which is demarcated as a circumferential boundary at a specific radius from the source of shipboard ordinance and other explosive material stored. The boundary runs through Outhouse Beach between Pier Dog and Hotel Wharf. In general, the following rules apply to areas within an ESQD arc:

- ESQD arc radii are determined by the military based on the extent and nature of the ordinance stored.
- Inhabited Buildings are prohibited within the designated arc.
- Structures that can collapse onto people and endanger lives are also not permitted.
- Recreational facilities (except facilities for large crowds such as grandstands) are allowed within the outer 40 percent of the ESQD arc.
- Ship anchorages and wharves (which moor ships) are generally not allowed within the arc.

The above restrictions would apply to Family Beach and Pier Dog, which are within the arc.

2.3.1. Historic Preservation

The Guam Historic Resources Division, also known as the State Historic Preservation Office (SHPO) is responsible for record keeping, monitoring and enforcement of Guam's regulations regarding development at historic sites.

Project activity related to Phase I-A of the PMP was described to SHPO in December of 2010 as part of a requested Section 106 review and consultation. The SHPO responded in January of 2011 indicating concurrence that no historic property would be affected by this work. With this concurrence came a request to provide photo documentation of any structures 25 years and older. SHPO also advised that the services of an archeologist would be needed to address any inadvertent discoveries of historic property during project implementation.

2.4. COMMERCIAL MARINE FACILITIES

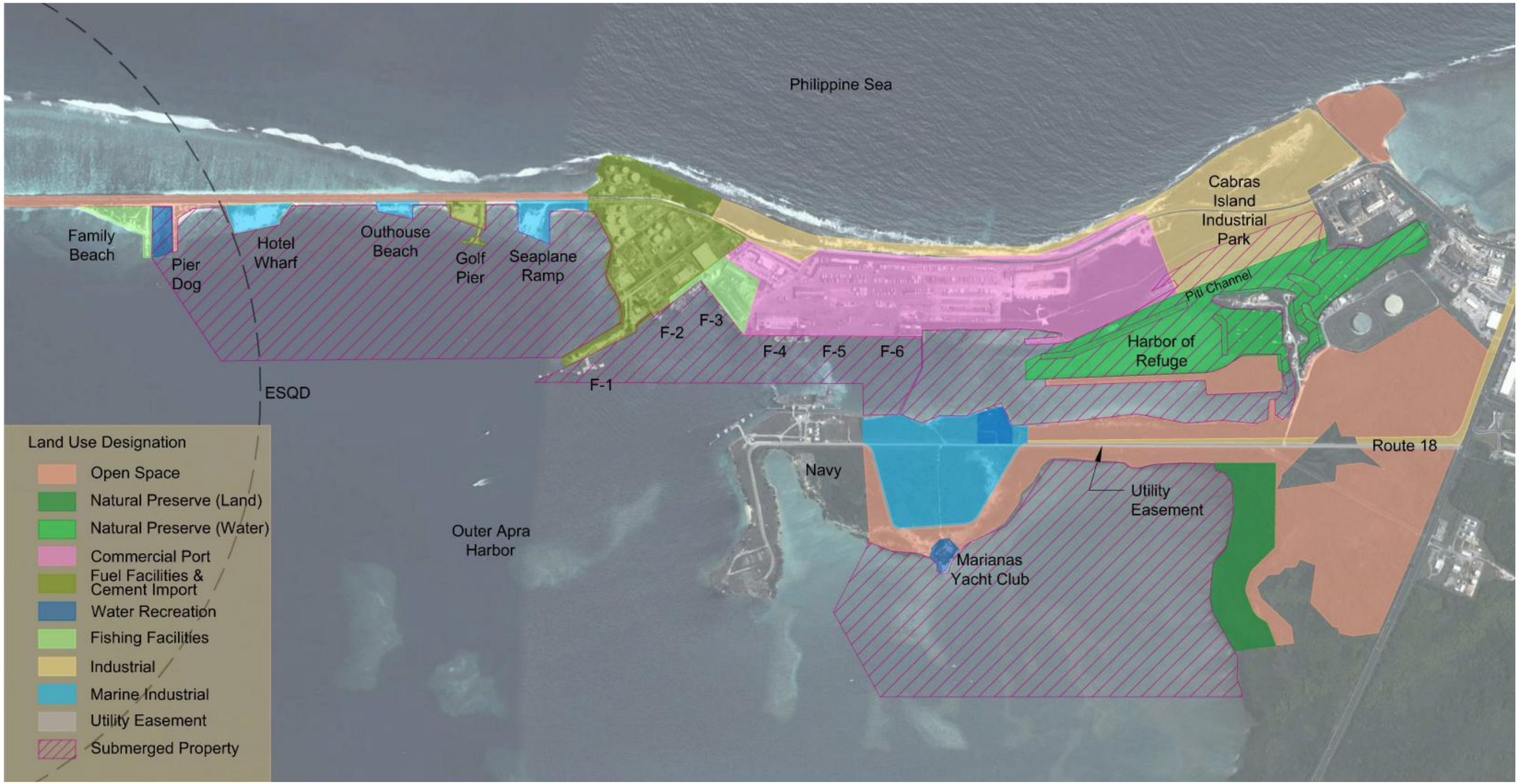
The PAG has a number of commercial marine facilities to support vessel service for the various types of cargo and civilian marine-industrial activities in Guam. Each berth is identified by the letter "F" and the corresponding number 1, 2, and so on. Table 2-2 summaries the characteristics of PAG's marine facilities and Figure 2.3 shows the physical locations of these facilities.

Table 2-2: Marine Facilities and Characteristics

Marine Facility/ Berth	Length (Ft)	Current Depth (Ft)	Location	Current Use
Family Beach	NA	NA	Glass Breakwater	Recreation
Pier Dog	NA	NA	Glass Breakwater	None
Hotel Wharf	500	26	Glass Breakwater	None
Golf Pier	370*	40	Glass Breakwater	Liquid bulk tankers. Operated by Mobil Oil, Guam (*bulkhead), bulk cement facility operated by Cementon Micronesia
Cement	N/A	24	Marine Industrial Terminal	Floating barge for cement unloading
F-1	550	70	Marine Industrial Terminal	Liquid bulk, LP Gas. Operated by Tristar Agility, Guam
F-2	670	26	Marine Industrial Terminal	Fishing fleet repair, leased to Cabras Marine
F-3	750	26-34	Cargo Terminal	General cargo, passenger vessels, fishing vessels
F-4	665	34	Cargo Terminal	Container and general cargo
F-5	665	34	Cargo Terminal	Container and general cargo
F-6	665	34	Cargo Terminal	Container and general cargo

Source: Parsons Brinckerhoff analysis. Data provided by PAG.

Figure 2-3: Commercial Port and Vicinity Land Use Designations



Source: Parsons Brinckerhoff analysis

The various uses and tenants in these Port areas are described in the following sections. PAG also oversees the Harbor of Refuge, Gregorio D. Perez Marina and Agat Marina. These facilities are described in Sections 2.4.9 through 2.4.11 respectively.

2.4.1. Family Beach and Pier Dog

Family Beach is located near the western terminus of Route 11 in the Glass Breakwater area. It consists of an area used by the public for family outings, picnics, commercial water-recreational activities other water-related public activities.

Pier Dog is located adjacent to Family Beach. It is substantially deteriorated constituting a hazard to nearby water recreational activities. It is recommended that appropriate demolition and cleanup be performed to avoid risk and injury to the public.

Family Beach is now leased to several operators for picnics, jet skiing and swimming. All utility service facilities including electrical, domestic water-supply and septic options within Family Beach are provided and maintained by these operators.

2.4.2. Hotel Wharf

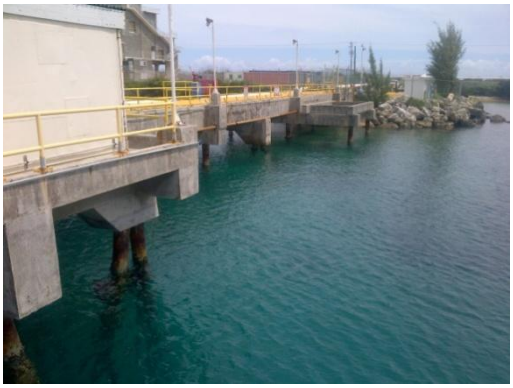
The Hotel Wharf, which was recently returned to PAG control, is located beside the road in the Glass Breakwater area, between the Golf Pier and the Family Beach. The wharf consists of an old seawall structure with a newer modernized center section.

The existing building structures on the Wharf should be removed as they are in very poor condition. The utility service includes potable water supply. Water leaks and corroded piping was visible. Refurbishment of the system is necessary.

The concrete pile cap of the Wharf appears to be in good condition; however, the underlying sheet piling of the wharf has shown extensive corrosion and is structurally suspect. The facility in its current condition should be considered unusable for large vessel mooring and deck surface loading. The facility should be re-built in place and include new sheetpile, sheetpile tieback system, replacement pile cap with bollards, and a suitable fendering system. Current depth of water is 26 feet. Future dredging to support deeper draft vessels is also a consideration in expanding potential marine industrial uses.

2.4.3. GOLF PIER

The Golf Pier is located besides the road in the Glass Breakwater area, between the Seaplane Ramp and the Hotel Wharf.



Golf Pier is operated by Mobil Oil Guam under a use and management agreement. The facility consists mainly of a fueling pier with pile supported trestle, dock and dolphins for berthing and securing vessels. Port-owned fuel lines run the length of the pier and lead to a wye between Port-owned Tank Farm A and Mobile-owned Tank Farm C. Almost all of the current pier structures appear to be in good condition. The fuel lines leading up to the wye junction are in need of replacement.

The catwalks for this facility need upgrading as the graphite walking surfaces do not meet U.S. Coast Guard requirements. The dolphins do not currently have catwalks to them. Vessels have been tying to shore bollards since the dolphins are inaccessible. The Golf Pier manager/ operator expressed concern that without catwalks to the dolphins the escape paths do not have enough distance from the pier in the event of a fire on the pier. The workers would need to get into the water to meet the clear distance needs.

The fencing on the facility is showing signs of corrosion. The fencing should be replaced in the near future.

All utility service facilities including electrical, domestic water supply, and sewer within Golf Pier, are ostensibly maintained on a management agreement allowance basis, by Mobil Oil Guam. As such the Port needs to monitor (through regular inspection) facility condition and the

right-sizing of this maintenance allowance. For repair actions exceeding routine maintenance and repair, the PAG works with Mobile to identify CIP projects. For example, the PAG currently has an active project for replacing the PAG-owned fuel lines.

Mobil Oil Guam has installed a foam fire extinguishing hydrant system at the Golf Pier, and the fire water is supplied by the main water supply pipe network (mixed with the domestic water supply system) extended from the Tank Farm A and Tank Farm C areas.

The fire protection system is fed by three pumps in a networked configuration with Tank Farms A and C. The system contains freshwater stored in Tank 8 of Tank Farm A boosted by a diesel powered pump. If the freshwater supply is depleted, Tank Farm C has one each electric- and diesel-powered saltwater pumps capable of drawing water from Apra Harbor. Periodic cycling of the Tank Farm A pump is done to flush the lines and maintain a ready state. If the fire pumps drawing from Apra harbor are activated, the Tank Farm A pump would be used to flush the lines with freshwater.

Golf Pier is suitable for use by other Port tenants and shippers for unloading liquefied petroleum gas (LPG) and cement. At this time cement offloading is being planned for, but has not yet occurred. Discussions are underway for running a cement line down the pier and installing a motorized valve system to assure there are no safety conflicts between fueling and cement offloading operations.

2.4.4. Seaplane Ramp



Seaplane Ramp is located besides the road in the Glass Breakwater area, between the marine industrial terminal and Golf Pier. It is a very old and abandoned partially submerged reinforced concrete waterfront ramp structure. The ramp originally served as the landing point for military boats and tracked landing vehicles.

There are no existing utilities and permanent buildings at this facility. There are two containers that appear to be somewhat transient.

The ramp is seriously damaged and in need of refurbishment or demolition. If it is to be retained, it should also be cleaned consistent with safety considerations. Along the waterfront the facility consists of a shallow retaining sea wall and rip-rapped embankment which is also in seriously deteriorated condition. At the current time, Smithbridge is the only tenant in this

area with a lease for barge operations, associated maintenance and waterfront repairs activities related to the businesses of Smithbridge.

2.4.5. BERTH F1

Berth F-1 is located on the Industrial Marine Terminal and is used by Tristar for unloading oil tankers and South Pacific Petroleum Corporation (SPPC) for unloading liquefied petroleum gas (LPG). It consists of six berthing and mooring dolphins. The dolphins have cast-in-place concrete caps supported on steel pipe piles. Walkways made of steel trusses are used to connect the dolphins together and provide access to the fenders and the mooring hooks.

Berth F-1*

Berth F-1 Dolphin*

**Berth F-1 Photos from2007 Master Plan. New photos were not permitted at the time of the inspection due to safety regulations at the facility.*

2.4.5.1. Condition Assessment

The pier facility has recently had the catwalks replaced and is in good condition. The fenders on the dolphins and pier are in good shape. The storage tanks are in good shape but the containment area surrounding the tanks has undermining of the slab on the western side of the finger. It appeared that the eastern side has experienced the same issue and was repaired. South Pacific Petroleum Corporation (SPPC) has a project advertised to replace the line from the F-1 manifold to the Lot 2 tank farm manifold.

2.4.5.2. Maintenance and Operational Improvements

The facility is performing its function properly. Shore protection reconstruction is recommended on the western edge of the F-1 finger. The Port indicated the U.S. Army Corps of Engineers (USACE) could not proceed with this shoreline protection as it did not meet their benefit/cost ratio investment criteria. Consequently, PAG must invest in the shore protection at this facility. Not addressing the shore protection and associated undermining occurring could jeopardize this facility. The previous repair to the east side seems to have been done properly. Continued regular periodic inspection of the piles both above and below water is important.

Passive cathodic protection should be installed on catwalks and support structures to prevent accelerated corrosion of structure steel in and above the splash zone. Electrical utilities need to be installed at the western-most dolphin to return the windless back to full operation.

2.4.6. BERTH F2

Berth F-2 is located on the industrial marine terminal and is used for repair and maintenance. These operations are conducted exclusively by Cabras Marine and support Cabras' Guam and Saipan based assets. Cabras Marine acquired the long-term lease that was held by CASAMAR. CASAMAR had a long term lease passed on to the Port through GEDA. They have no intention of moving from these facilities. The draft at F-2 is about 24 to 26 feet. Cabras Marine operates a floating dry dock in the vicinity of F-2 to provide dry dock services for vessels up to 1000 tons.

The Cabras Marine facility access and lease area activities are separate from the cargo terminal access gate and upland activities. Therefore, unlike the Long-liner fishing industry activities, this operation has no significant impact on Port cargo terminal activities.

2.4.7. BERTHS F-3 THROUGH F-6

Berth F-3 is located in the southwest corner of the cargo terminal and is currently used for Long-liner fishing operations and cruise vessel operations. The Long-liners use 75 to 100-foot boats with drafts of 15 to 20 feet. They bring in higher grade tuna to Berth F-3 for processing at their leased facilities in WH1 within the breakbulk area of the cargo terminal.

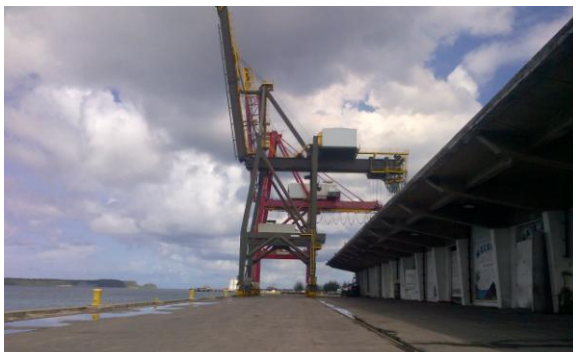
Berth F-3

Berth space at F-3 is tight during peak conditions and sometimes the vessels must breast outboard of other moored vessels.

Cruise ships currently call at Berths F-3 and F-4 depending on availability.

Berths F-4 to F-6 are located in the cargo terminal and accommodate container ships, general cargo vessels, and passenger ships. Each of these three berths can service container vessels with a maximum beam of 107 feet.

Berth F-4



Berths F-3 through F-5, and F-6 were built and placed in service in the 1960s. The wharf structure consists of tied back sheet pile walls with concrete caps (coping beams). Sheet pile walls are also used as the upland anchor (deadman) below ground level.

The Guam earthquake of 1993 severely damaged sections of the wharf structures. Because of this damage, a 560-foot section of the wharf at Berths F-5 and F-6 was replaced by a pile-supported structure. Pre-stressed concrete piles were driven to support cast-in-place concrete

beams and slabs. New sheet pile walls were driven at each end of the new wharf section to contain the fill laterally. The damaged sheet piles were cut near the seabed to suit the new slope under the wharf section. Rip rap was placed above the new slope. A section of the pile-supported beams that carry the crane rails was replaced after the 1993 earthquake. New pre-stressed concrete piles were driven and new sections of the beams were cast next to the existing ones.

2.4.7.1. Condition Assessment

The condition survey did not include observations beneath Berth F5 or update the findings of previous underwater inspections which have been ongoing for the past few years. Instead, it was conducted from the surface. It was clear during the walk around survey that previously discovered damage to fenders and coping beams has not changed for the worse. Previously identified damage to sheetpiles, outfalls, and F5 concrete structures remains. The absence of cathodic protection continues.

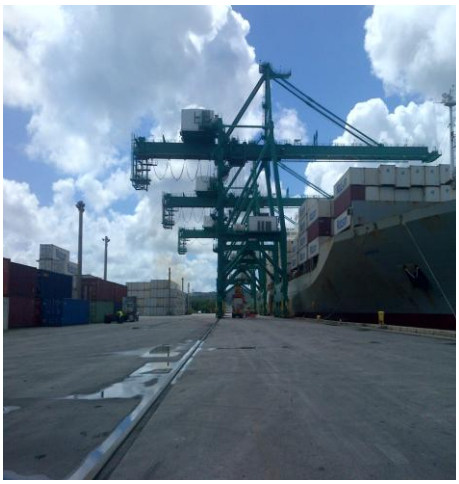
2.4.7.2. Maintenance and Operational Improvements

In 2010, during an inspection of the sheet piles at Berths F4-F6, it was discovered that the underdeck of the concrete wharf at Berth F5 was experiencing an accelerated rate of deterioration. In response to this assessment, a marine Service Life Extension (SLE) project was developed. This project is scheduled for construction in 2013/2014. It will address concrete structure and coping beam repairs, routine sheetpile maintenance, fender replacements and cathodic protection; all of which is designed to extend the service life 15-20 years. The Port should schedule regular (annual or biennial) inspections following SLE work. The condition of the bulkhead should be monitored and preparations should be made for long-term bulkhead replacement when conditions require it. It would be prudent to be prepared for escalating casualty repairs and replacement work 15 years into the planning horizon.

2.4.8. Container Crane Rails at Berths F-4, F-5 & F-6

In 1970, a 50-foot-gauge ship to shore crane runway was constructed at Berths F-4, F-5, and F-6. The concrete runway girders, measuring 2 feet x 2.5 feet in cross section, are supported on vertical steel H piles spaced at nine feet on center. The piles are located in between the tie rods of the sheet pile wall. The rail is held by concrete cross beams spaced at 54 feet on center for the full length of the runway. The crane runway structure is supported independently of the wharf structure.

Crane Rails at F-4, F-5 and F-6



During the 1993 earthquake, damage occurred in the crane runway within the length of the wharf that was damaged during the same seismic event. The lateral movement of the wharf structure caused the crane runway to move laterally and sustain

permanent (plastic) deformation. New piles were added after the earthquake in order to repair the crane runway. The new piles were staggered with the existing ones and spaced at nine feet on centers as well. The existing concrete rail beams were widened to correct the alignment of the rails. The extent of the repair to the crane runway matched the length of the pile-supported wharf that was built to replace the damaged portion of the sheet pile original structure (560 feet).

The crane rails were replaced in 2009 to remedy the difficult movement of the gantry cranes.

2.4.8.1. Condition Assessment

A detailed survey of the entire crane runway was not conducted. Only the end portions, away from the cranes, were accessible. Those portions did not show major deficiencies in terms of the components of the rail.

2.4.8.2. Maintenance and Operational Improvements

As part of the SLE project, connectivity to the gantry rail spur that was constructed in 1997 is being removed. The gantry cranes no longer have the ability to articulate the casters to utilize it and are causing operational safety concerns in the container yard.

2.4.9. Harbor of Refuge

The Harbor of Refuge, located at the eastern end of Piti Channel, is a location where boats can obtain shelter from winds during typhoons. Secondarily, it is used for long-term moorage to accommodate owners who leave the island for extended periods. Long-term moorage requires a lease that is limited to one year and requires the owner to leave their vessel in "super typhoon" ready condition. The harbor has moorage for approximately 52 vessels with each vessel requiring four concrete anchor blocks for moorage.

Marine concessions ring the harbor. The concessions primarily serve the tourism industry in Guam and have both in-water and on-land facilities. Their sites are leased from the PAG. The concessions change over time as a result of market conditions and business successes.

Adjacent to the Harbor of Refuge is the Aqua World Marina, an area leased and managed by Aqua World, Inc. Aqua World manages boat slips as well as landside leases.

2.4.9.1. Condition Assessment

A visual assessment was performed on the waterfront facilities in the Harbor of Refuge area. The floats along the eastern shore are in good condition and the short section of sheetpile bulkhead was observed to be in fair condition.

It was observed that the inverted "L" shaped finger area separating the eastern area and the larger western basin is being utilized to put boats in dry dock. The ground surface, in some cases, was not properly covered to contain sediment and spills. Improper protection of the ground surface leaves the area vulnerable to sediment runoff or contamination by paint or cleaning chemicals that may be used.

Oceaneer Enterprises performed two dive inspections in 2011 and 2012. Significant deficiencies were identified and documented. The Port is preparing a solicitation to engineer a solution and address relevant environmental concerns.

2.4.9.2. Maintenance and Operational Improvements

The Port is actively addressing deficiencies identified during 2011 and 2012 inspections. Once repairs have been affected, regular inspections should continue. At a minimum, anchorage blocks, chains and attachments should be cleaned of marine growth annually before each typhoon season. Once every five years, and after every typhoon, a detailed underwater inspection of the anchorages should be performed.

Piti Channel is subject to sedimentation from currents and erosion from the shoreline. Depending on the need to maintain small boat passage, consideration should be given to conducting a hydrographic survey and conducting planned dredging and bank protection.

There are sunken vessels at Aqua Marine World that are evidence of the last typhoon event. These should be removed. There are also three wrecks along Piti Channel near the main terminal. Long-term presence has lead to these becoming a marine habitat. Consideration should be given to their removal to minimize environmental challenges to future berth expansion.

For several years there has been talk of the need for a boat haul-out facility at the Harbor of Refuge. There is a need on the island for a location to haul boats out of the water for inspection and repair. Currently, boats can be hauled out of the water for inspection at Hagåtña Marina; however repairs are not allowed there. Although the Harbor of Refuge seems to be filling that need, a facility should be constructed to better address the need for boat

inspection and repair and that protects the environment. A user survey should be conducted to determine the extent of the need, how often a relocated inspection and repair facility would be used, and what services are desired. The user survey should consider the potential elimination of the haul-out ramp at the Gregorio D. Perez Marina should that marina be reconfigured in the future for additional slip spaces.

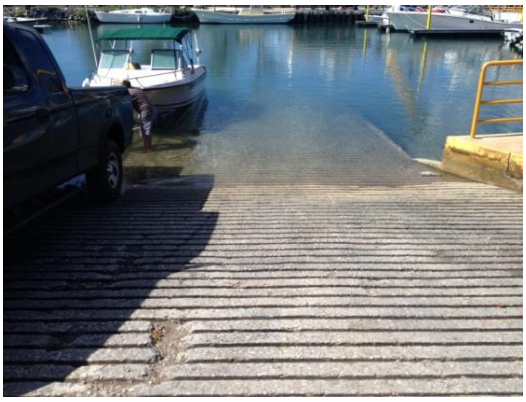
2.4.10. Gregorio D. Perez Marina

The Gregorio D. Perez Marina (also known as Agaña Boat Basin, Hagåtña Marina) is located in the village of Hagåtña and is the marina nearest to Guam's downtown center. The marina basin was originally constructed prior to World War II and consists of two lagoons. Several breakwaters provide protection from offshore waves and swells as well as additional protection for the marina floats within the South Basin.

The USACE constructed the marina and basin in 1977 under authority of Section 107 of the Rivers and Harbors Act of 1960. It consists of an entrance channel 860 feet long, 120 feet wide, 12 to 15 feet deep; a 1.2-acre turning basin 12 feet deep; main access channel 540 feet long, 80 feet wide, 10 feet deep; a revetted mole 1,135 feet long, an east breakwater 200 feet long, a west breakwater 525 feet long; a 250 foot long wave absorber; three circulation channels; and navigation aids. The lagoon (Agaña Marina North) contains floating slips and moorings and has a total capacity of about 122 boats.

Gregorio D. Perez Marina South consists of an East and West Basin separated by a fill area that provides parking and also holds the Harbor Patrol Offices and restroom facility. The East Basin and West Basin contain marina floats for approximately 45 recreational, charter and public agency (fire and police department, Port of Guam) boats. There are two boat ramps in the West Basin. The fueling facility (not operated by the PAG) is in the East Basin. A sanitary sewer pump-out is located on the concrete structure near the fueling facility. Public Law 17-071 transferred authority of Guam's public harbors, small boat marinas and facilities from the Department of Parks and Recreation to the PAG. The language in the Public Law stated that the PAG has expertise in the area of managing harbors, ship docking, and implementing harbor safety as evidenced by its success at the Port. It also stated that the PAG is financially able to take on additional responsibilities in the development of marine resources. Since that transfer, the PAG has been providing financial support for the facility.

2.4.10.1. Condition Assessment



The marina is currently being renovated. The West Basin has been updated with new sheet piles and new floats as a first phase of repairs. The floats in the East Basin have been replaced under this first phase of construction. The second phase is ongoing and is replacing the sheet piles around the eastern boat basin. Two concrete boat ramps serve the West Basin. The newer one nearest the highway is used by recreational boaters with smaller trailerable boats. The southern ramp has no boarding float so boats dropped off in the water have no choice but to temporarily tie up to leased slips, someone else's boat or the concrete bulkhead. There is a rinse-down station at the staging area. There is inadequate amount of trailerable parking area for boaters using the facility. Some boaters park their trailers in unauthorized areas and create operational problems for others. A second concrete ramp in the West Basin serves larger trailerable boats, as well as large boats that are being pulled out for inspection or minor maintenance. Boats on blocks are temporarily stored on the inner wall breakwater. This western ramp also has no boarding float.

There is a fueling facility in the East Basin. While PAG does not own the fueling facility, it does own the bulkhead. Boaters desiring fuel must tie up to the bulkhead and climb a ladder to get to the pumps. There is a stormwater outfall in the corner of the East Basin. The containment surrounding the fuel pumps is incomplete and would be insufficient to contain a spill.

A sanitary sewer pump-out station is located on the concrete structure near the fueling facility but is not functional. This pump-out station is owned and operated by others. A functioning sewer pump-out station is needed at this marina.

2.4.10.2. Maintenance and Operational Improvements

From discussions with the PAG Engineering Staff, the third phase of the renovations will replace the sheet pile bulkhead along the northern edge of the marina. Phase 1 of the boat basin renovations has been completed. As part of that project, there are new floats in both the East Basin and West Basin with power and water services at the boat slips. Phase 2 is replacing the bulkhead around the East Basin and is moving along at a rapid pace.

The following projects were completed with federal assistance from the Department of the Interior US Fish and Wildlife Service, which provides Sport Fish Restoration funds to the Guam Department of Agriculture. The projects had a cost share 82.5% federal and 17.5% local (PAG).

- Dock A – dock was replaced with composite decking and marine-treated wood framings (Completed July 2011)
- Dock B – dock was replaced with composite decking and aluminum framings (Completed November 2012)
- Dock C - dock was replaced with composite decking and aluminum framings (Completed February 2013)
- Pile Extensions at Docks A & B –20 steel piles were extended by five feet to prevent the walkways from rising above the piles during storms (Completed December 2012)

The navigation aids at the Agaña Boat Basin are in place. There are two range towers on shore that identify the channel into the marina.

2.4.11. AGAT MARINA

Agat Marina is located in the village of Agat on the west coast of Guam near Gaan Point. It is a small boat harbor (often called Agat Small Boat Harbor) that was excavated from a coral reef flat and is protected by a detached breakwater. The boat harbor basin construction was completed in 1989 with contributions from the USACE and the PAG. Shoreside facilities were completed in 1990.

The USACE describes the site as follows: "The project consists of an entrance channel 930 feet long, 120 feet wide, 14 feet deep; a turning basin 120 feet long, 150 feet wide, 7 to 11 feet deep; a main access channel 500 feet long, 75 feet wide, 9 feet deep; two breakwaters 985 feet long and 50 feet long, respectively; and two revetted moles 180 feet long and 300 feet long. The protected basin provides berthing areas for up to 150 boats."

The floats are manufactured by Meeco and are constructed of timber decking and whalers, polyethylene flotation tubs, and vinyl fenders. Steel pipe guide piles are used to secure the floats in position. The marina consists of four dock systems, numbered A through D. The main walks are 7-feet-wide and the finger floats are 3-feet-wide. Utility services include potable water (double hose bibs at slips) and electrical power (Midwest receptacles). Guide piling consist of 9-inch diameter painted and concrete-filled steel pipe piles. The fixed guide piles are not tall enough to prevent the docks and guides from floating above them and breaking free during a typhoon event.

The boat basin also includes a wide concrete boat ramp, a concrete fuel and loading dock. Upland facilities include a parking area for vehicles and vehicle/boat trailer combinations, an administration office, and a restaurant/gift shop.

2.4.11.1. Condition Assessment

The conditions of the marina floats have deteriorated further since the last update and are in fair to poor condition. Timber decking has recently been replaced

in areas. Some of the longer finger floats exhibit warping, evidenced by a twisting of the floats along their longitudinal axis.

As observed previously, the concrete fuel pier and loading dock is damaged and is unsafe for vehicular traffic. Access is gated and signed as unsafe. The condition of the railing and lighting is poor.

The concrete boat ramp surface is good; however, the timber fender system along the fixed boarding piers is poor. The end of one of the boarding piers has a damaged foundation pile and has caused the end of the pier to settle. The steps from the concrete structure to the float are in poor condition.

2.4.11.2. Maintenance and Operational Improvements

Maintenance items identified as needing improvement include raising the height of the guide piling to accommodate typhoon storm surges which, in the past, have been so high that the floats actually came off the tops of the piling and were left hanging after the water receded. A sanitary sewer pump-out is located on the concrete structure but is not functional. A functioning sewer pump out-station is needed at this marina.

Vessel size limits need enforcing. The mooring of boats that are more than 10 percent longer than the slip they occupy should not be allowed. Additionally, boats which are too heavy for the dock system should not be allowed to moor at the slips. These boats can cause expensive damage to the marina floats, which were not designed for these heavier vessels. Clearer warnings should be included in the marina lease agreements so that enforcement is possible.

For the marina to accommodate heavier and larger vessels, a heavier duty float system is needed. The PAG should consider replacing Dock A with a heavy duty concrete float system that would be designed for heavier boats. The Port would then have at least one dock where heavier boats can be berthed.

Since the breakwater does not enclose the marina, wind-driven wave surges result in strong current flow into the marina near Dock D. Not only does the strong current flow affect the boats at Dock D, but flows have deposited sediments making access to Dock D difficult and, in some areas, unusable. The area around Dock D needs maintenance dredging. A longer-term solution requires reducing the wave-driven currents into the marina. A study should be undertaken to determine the best solution to the problem. A complete connection of the existing breakwater to shore, or a full height breakwater, may not be necessary or even desirable, to adequately address the problem.

The three Federal buoys at the entrance to Agat Marina are in place.

2.5. PAG LANDSIDE FACILITIES

Table 2-3 summarizes PAG's landside facilities by physical location and function. Please refer to Figures 2-2 and 2-3 for the locations of these facilities.

Table 2-3: Commercial Port Areas

Commercial Port Areas	Acres	Berths	Use
Marine Industrial Terminal	50	F-1, F-2	Liquid fuel, fishing and marine industrial use
Cargo Terminal	62	F-3 to F-6	Commercial cargo terminal
Terminal Expansion Area	37	N/A	3.5 acres for new gate complex (2015) 4.5 acres for expanded container yard (2015) 29 acres of vacant land designated for terminal use

Source: Parsons Brinckerhoff analysis. Data provided by PAG.

2.5.1. MARINE INDUSTRIAL TERMINAL

The marine industrial terminal, including the Oil Tank Farm north of Route 11 (Parcel 2), is located in an area to the northwest of the commercial terminal on about 45 acres of land. As shown in Figure 2-4, facilities include oil tanks and pipelines (Parcel 2 and Parcel 1 Lots 1/2/3/7), reinforced concrete (RC) warehouses (Lot 4, GEDA-owned area), RC cement silo (Lot 6), and light-gauge sheds (Lot 5) scattered inside this land area. The marine industrial terminal area has been leased to private companies since 1969/1970. The tank farm located on Parcel 2 has been in management agreement since 1990. Very little information about the facilities in this area was available from the records or the site survey.

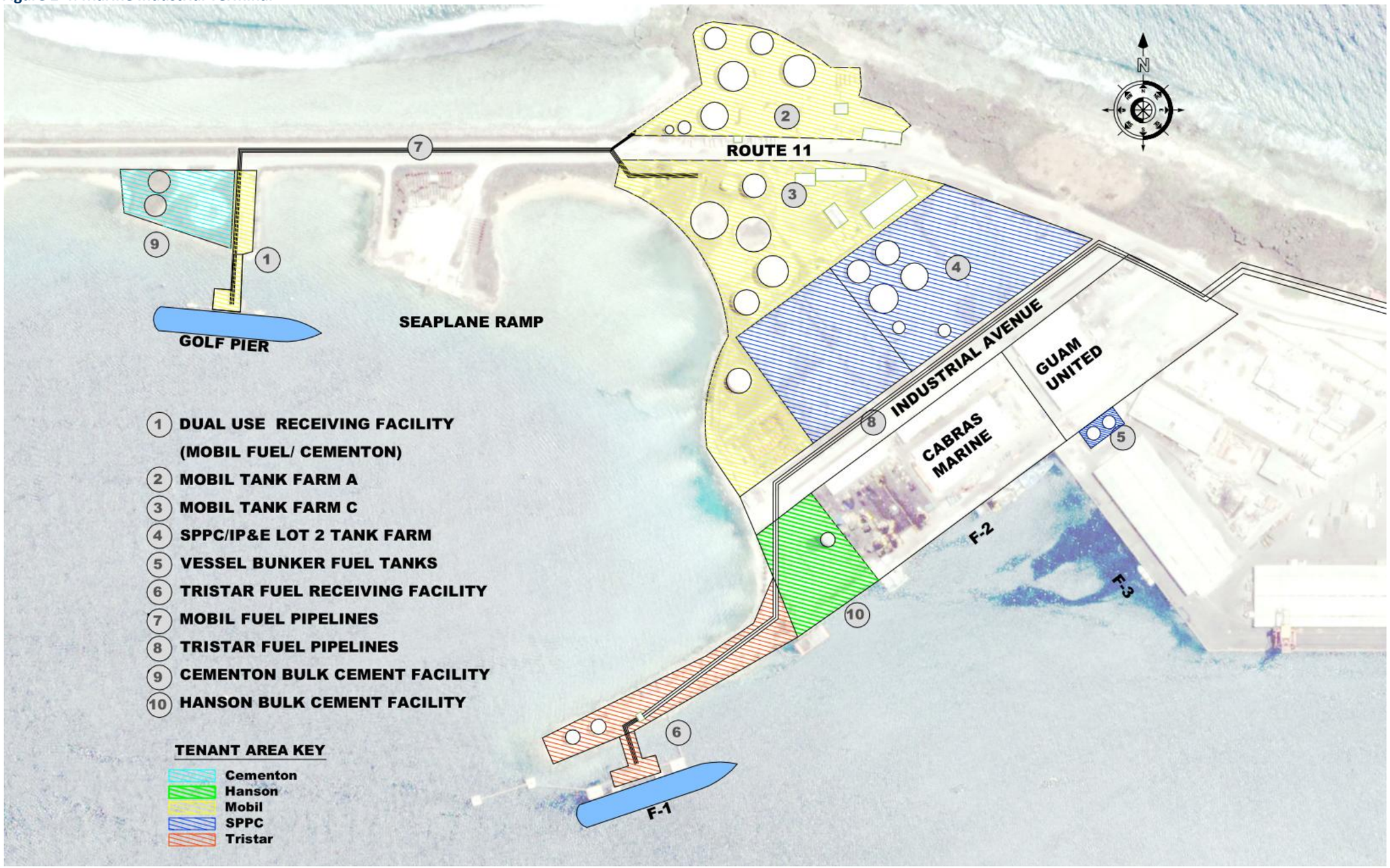
Table 2-4 indicates the Oil Tank Farm Area Tenants.

Table 2-4: Oil Tank Farm Area Tenants

Tenant	Lot No.	Lease Start Date	Area (SF)	Purpose
Mobil Oil Guam	1	1970/03/20	248,873	Oil Company
South Pacific Petroleum	2	1969/10/01	217,800	Oil Company
South Pacific Petroleum	3A	1971/01/08	140,002	Oil Company
Mobil Oil Guam	3B	1971/03/04	82,799	Oil Company
Guam United Warehouse	4			GEDA-owned area
Cabras Marine Guam	5	1970/04/01	223,865	Fish ship/net repair
Hanson Cement Inc.	6B	1971/01/04	71,773	Cement Supplier
Tristar	7 F-1 Fingertip	1969/06/13	698,247	Oil Company

Source: Parsons Brinckerhoff analysis. Data provided by PAG.

Figure 2-4: Marine Industrial Terminal



Source: Parsons Brinckerhoff analysis

2.5.1.1. Tank Farm A

Tank Farm A is Port-owned and leased to Mobil. It is located on the north side of Route 11, west of Industrial Avenue north of the marine industrial terminal area in Parcel 2. The area is comprised of seven tanks within containment walls. The condition of the facility is very poor and is need of replacement if it were to be utilized for fuel operations.

The pipes that supply the tank farm are disconnected at the wye that originates from Golf Pier. Most of the piping internal to the facility has been removed and what remains is not salvageable for use with the exception of the fire supply lines for the facility.

The majority of the tanks date to the 1960s-1970s and have not had preventative maintenance performed since 2003. The newest tank was installed after Typhoon Paka in 1998 and received its final painting in 2002. The salt spray and the debris that has blown off the adjacent embankment have pitted the paint and accelerated the corrosion.

The loading rack structure is in good condition with some spalling. All of the piping has been removed on the rack and the existing piping underground appears to be in very poor condition. The layout of the facility allows the movement of service vehicles near to the tanks with the road network. The fire protection of the facility is described in Golf Pier Section 2.4.3.

2.5.1.2. Tank Farm C

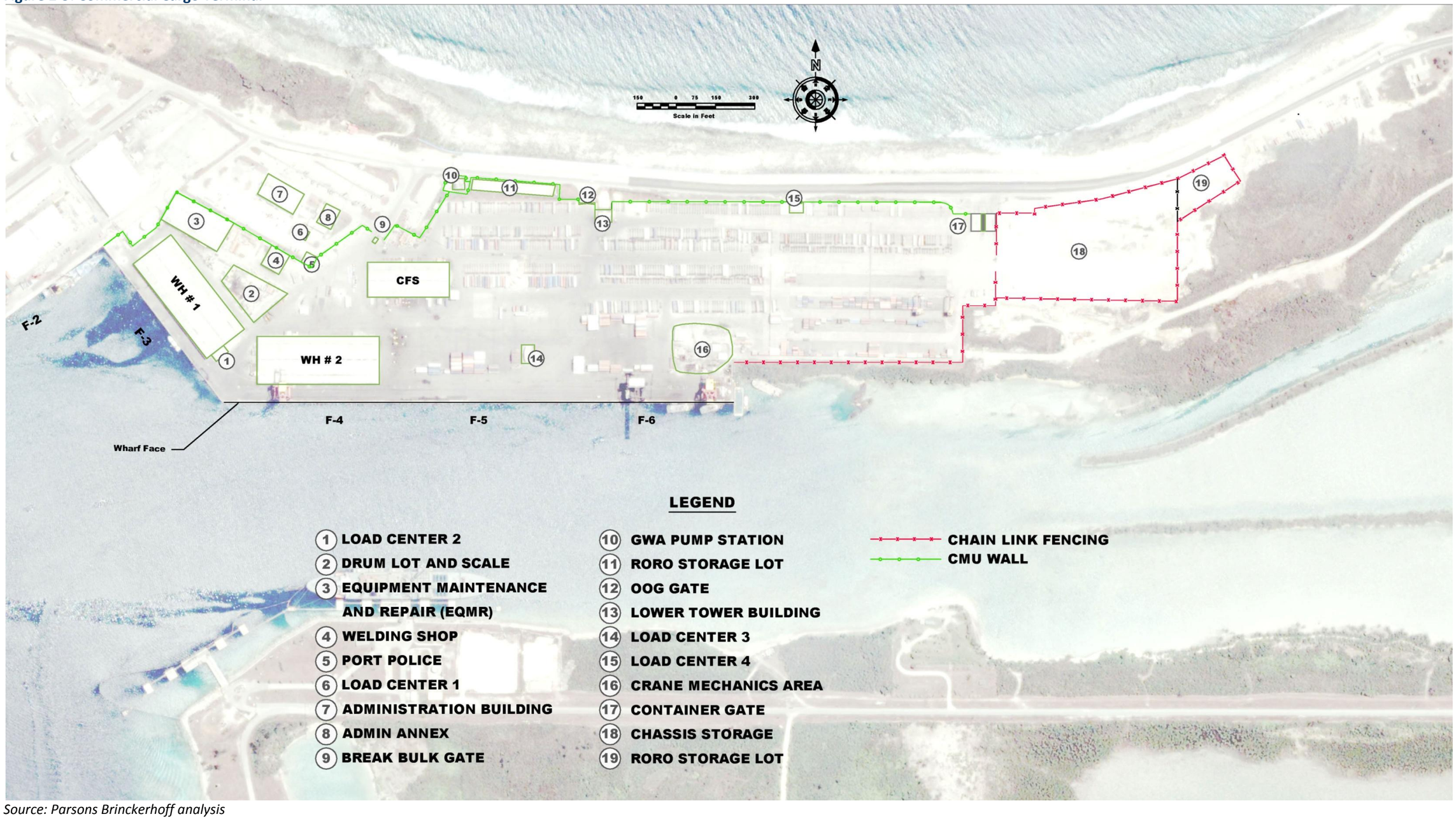
Tank Farm C is owned by Mobil. It is located on land leased from the Port across from Tank Farm A on the south side of Route 11 west of Industrial Avenue within the area of the Marine Industrial Terminal. The area is comprised of five tanks within containment walls on Lot 1 and additional tank on Lot 3B. The condition of the facility is very good. The facility is due for its biennial painting program.

The pipes that supply the tank farm originate from Golf Pier. The facility is able to receive fuel from F-1 through cross piping in the SPPC facility. The fire protection of the facility is described in Golf Pier Section 2.4.3.

2.5.1.3. Cement Unloading Terminal

Hanson Permanente Cement leases and operates the cement unloading terminal located in the Marine Industrial Facilities area. The company operates a 161-foot, 9,000-ton-capacity cement silo on the 1.6-acre site. There are some imports of cement in super bags through the Cargo Terminal, but this is incidental. Virtually all of the 100,000 tons of cement that was used in Guam in 2012 was imported by the Hanson Permanente Cement company. In the future, Cementon Micronesia utilizing cement discharge lines plans to be located on Golf Pier.

Figure 2-5: Commercial Cargo Terminal



Source: Parsons Brinckerhoff analysis

2.5.2. CARGO TERMINAL

The commercial cargo terminal physically includes the facilities shown within the fence or International Ship and Port Security (ISPS) barrier depicted in Figure 2-5.

2.5.2.1. Container and Cargo Storage Yard

The container and cargo storage yard area is comprised of 26.5 net acres used for container and breakbulk storage space, along with maintenance and repair facilities encompassing approximately 27,600 square feet (SF), and two warehouses, CFS and WH1, providing approximately 71,000 SF of floor space. The storage yard provides space for containers, automobiles, and general cargo. The container yard also includes 112 stalls equipped with plug-ins to serve refrigerated containers. At the conclusion of the PMP project activity managed by MARAD, the facility will expand by 8.7 acres and have one less warehouse, i.e., WH2 will be removed.

The existing operation supports a combination of wheeled and grounded storage for containers. Wheeled storage is currently available for:

- Full standard containers arriving from the U.S. West Coast on Matson vessels
- Reefer containers
- Out-of-Gauge (OOG) containers
- Hazardous cargo containers
- Full standard containers arriving at the terminal for loading onto Matson vessels

Grounded storage is currently available for:

- Full standard containers arriving for transshipment
- Standard Asian service containers
- Empty containers

The container and cargo storage yard was constructed over three stages starting in 1969 and was confined by Concrete Masonry Unit (CMU) walls and chain-link fences.

The first stage was constructed by the Department of the Navy in 1969 and is recognizable by the container tie downs behind Berths F-4, F-5 and F-6. The pavement also surrounds the CFS and WH2 buildings and continues along the waterfront to Berth F-6. The pavement section for this initial phase is 3 inches of asphalt over 8 inches of compacted base material.

The second stage was constructed starting in 1984, and it filled the space between the initial container yard and the area bounded by the 1980 relocation of Route 11. The pavement in this phase was constructed of 3 inches of asphalt over 8 inches of compacted base material.

The third stage was constructed starting in 1990. The stalls for the chassis parking are constructed of 6 inches of asphalt on top of a 4-inch sub base and 8-inch base course.

The existing terminal yard pavement was designed to support three block-stacked 40-foot containers, as well as provide a travelling surface for Port equipment. The pavement adjacent to Berth F5 was partially retrofitted in 1997 due to earthquake damage. This comprised and area of approximately 818-foot by 255-foot, and consisted of 24-inch-thick reinforced concrete that was integrated with the beams and piles making up the pier structural system.

During a condition survey of the existing pavement performed in December 2009, only minor cracks were observed. No noticeable structure deficiencies were observed. Ponding of water in limited areas was found. In April 2010, evidence of settlement or sinkholes appeared. Terminal layout and design is driven by the physical layout of the property, the transportation infrastructure, and the type of container handling system selected by the Terminal Operator.

During a review of the Master Plan Update2007 Report, PAG selected the "Combination Wheeled + Top-Pick System" as the preferred alternative. Full containers were proposed to be stacked in a block arrangement up to four high. This was confirmed in the Final Terminal Development and Operations Plan Report, and adopted as the standard for the Container Yard expansion being designed and constructed by MARAD.

Condition Assessment

Surface spalling was observed in the 1990 expansion area. Additionally, broken trench drains and wheel stops were also observed in the entire container yard area. Ponding was observed in some limited areas.

Maintenance and Operational Improvements

In addition to regular maintenance, a pavement repair program, including the reconstruction of many drainage grates and troughs, is required to correct yard paving deficiencies. All yard pavement should be progressively replaced during the 20-year planning horizon. Maintenance and operational improvements should be accomplished through a series of projects that limit disruption to terminal operations and that integrate with the progressive replacement of underlying utilities.

2.5.2.2. Truck Gates

An entrance gate for container trucks is located at the northeast corner of the container yard and serves as the primary check point into and out of the container terminal area. The gate was built in 1991. It is comprised of four lanes. Individual lane queuing is very limited as the terminal entry process is currently being handled at a walk-up window. The turn pocket on Route 11 does not provide adequate queuing length to prevent additional backup on the westbound travelling lane.

The gate is a reinforced concrete structure, 19 feet in height, and a footprint that is 80 feet wide by 64-feet-long. A single floor reinforced concrete administration area (10-feet-high with a footprint that is 14-feet-wide and 64-feet-long) is located at the center span. Each lane is 15-feet-wide and has an overhead clearance of 16 feet.

The structural elements of the gate are:

- Spread footing CF1 66 x 66 x 16 inches
- Spread footing CF2, CF3 72 x 72 x 16 inches
- Spread footing CF4 90 x 90 x 16 inches
- Strip footing (booth) 18-24 x 12 inches
- Column 24 x 20, 20 x 20, 20 x 16, 16 x 16 inches
- Beam B=12-18 inches, D=24-36 inches
- Roof t=5 inches
- On-grade Slab (booth) t=5 inches
- Wall 8-inch CMU

The Port also maintains a separate OOG gate located near the reefer storage area along the northern boundary of the cargo terminal and a breakbulk gate in the northwest corner of the cargo terminal.

Condition Assessment

The main gate structure is in physically fair condition with some spalling of concrete in the center of the administration area. Due to the orientation of the gates, queuing length for trucks for entry or exit is limited.

Maintenance and Operational Improvements

The current plans being developed by MARAD are to construct a new gate complex with queuing lanes and trouble-truck bypass lane and parking, automated entry and exit processing with man booths, pedestals and a weather protection overhead canopy. This will allow speedier truck processing and provide off-road queuing. This would utilize the existing Administration Building for trouble trucks that require more time as to not delay the queuing at the new gate booths. Future plans for the building will likely include enclosing the additional lane space under the existing canopy to accommodate expansion of the inside working space as the Port expands.

2.5.2.3. Fencing

Two types of yard fence were observed: (1) CMU wall with one side outrigger with three strands of barbed wire angled outward; and (2) chain-link fence with vinyl coated fabric and galvanized pipe posts.

Some chain-link fence gates, either for vehicles (by-parting type, w=24-60 feet) or for pedestrians (swing

type, w=3.5 feet), were observed along the north and west boundaries. USDA traps for Brown Tree Snake are attached to the fences around the yard.

Condition Assessment

Significant corrosion was observed on the metallic part of gates and fences.

Maintenance and Operational Improvements

The chain-link fencing surrounding the eastern end of the container yard will be replaced as part of the MARAD program in 2014/2015. Where practical, chain-link fencing should be replaced with CMU fencing. Future chain-link fencing should incorporate concrete posts and anticipate replacing the chain-link fencing fabric at a regular interval.

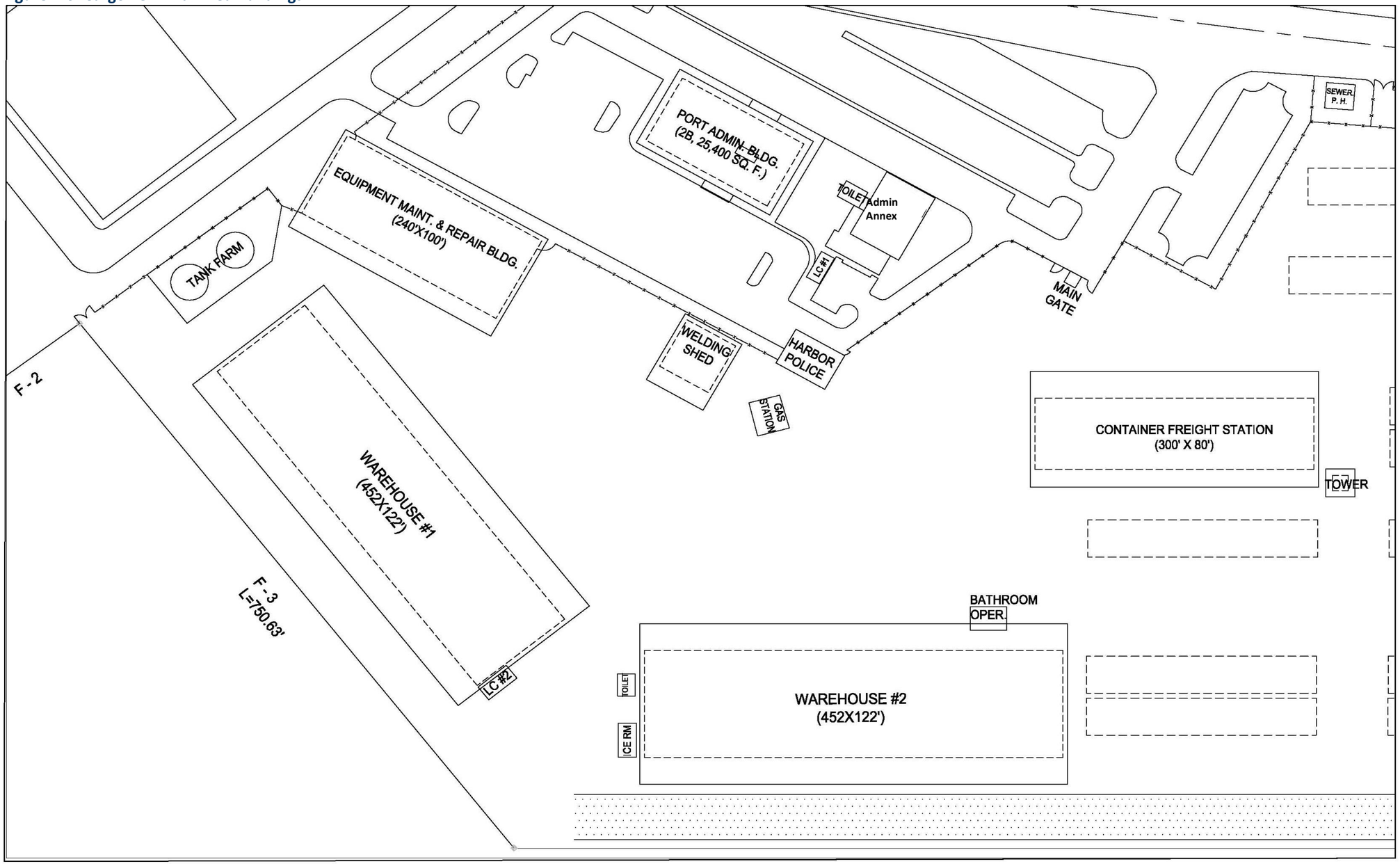
2.5.3. BUILDING STRUCTURES

Most of the building structures in the Port were built in the late 1960s. They were designed to military standards, built to withstand the extremely high wind conditions caused by typhoons. The majority are constructed of 3,000 PSI (pounds per square inch) concrete and 20,000 PSI reinforcement steel. The lateral force was dominated either by wind load (160 MPH/200 MPH for Working Stress Design and Ultimate Strength Design [WDS/USD] methods) or earthquake load (Zone 3 per the Uniform Building Code 1964 edition).

Shallow footings (spread type or strip type), 1.5-3 feet below the finish floor elevation of the first floor, were utilized to support the building/structures. The allowable soil pressure was designed based on 1,100 PSF (pounds per square foot) for footings 2.5-feet-wide, and 2,500 PSF for footing width greater than 10 feet. Straight-line interpolation applied for footing widths between 2.5 feet and 10 feet.

Figure 2.6 shows the layout of existing buildings in the cargo terminal area. The following sections present the condition assessments of each major building.

Figure 2-6: Cargo Terminal Area Buildings



Source: Parsons Brinckerhoff analysis

2.5.3.1. Port Administration Building

The Port Administration Building serves as the administrative headquarters of the PAG, and also accommodates many of the shipping and shipping related organizations. PAG is the landlord for these tenants.

The building is essentially a two-story structure, built with reinforced concrete with seven grids (Grid 1-7, transverse frame spanning 25 feet typically) along E-W axis, and four grids (Grid A-D, longitudinal frame spanning 25-30-25 feet) along S-N axis, cantilevered eave extended 7.5 feet on four sides. The central stair-core protrudes through the roof to provide access to a small third floor observation area (Harbor Master's Office). Table 2-5 presents selected characteristics of the Port Administration Building's tenants.

Table 2-5: Port Administration Building Tenants

Tenant	Rm. No.	Lease Start Date	Area (SF)	Purpose
Ambyth Shipping & Trading	A222	5/1/2009	502	Agent
American Bureau of Shipping	A223B	5/1/2009	192	Marine Surveyor
Cabras Marine Corporation	A111	5/1/2009	980	Administration
Cabras Marine Corporation	A110	5/1/2009	366.25	Administration
COAM Trading Co. LTD	A219	7/11/2011	216	Agent
CTSI Logistic	A108/A109	12/1/2009	557	Agent Administration
Inchcape Shipping Services	A116	7/22/2010	846.25	Agent
Marianas Steamship	A116A	6/20/2011	378.75	Agent/Carrier Office
Matson Navigation Company	A215	5/1/2009	2,755	Agent/Carrier Office
Matson Navigation Company	A103-104	5/1/2009	435	Agent/Carrier Office

Source: PAG Commercial

Some overall metrics describing the building are listed below; a list of as-built drawings referenced is provided in Appendix 2-2.

- Date of construction: 1967-1968
- Number of floors: 2
- Building footprint: 152.4 x 82.4 feet
- Building floor area: 25,400 SF
- Height of roof eave above ground (no included the protrusion) Approx. 28 feet
- Primary load structural system: RC columns with Flat Slab
  Perimeter columns 24 x 14 inches
  1F Interior column 18 x 18 inches with drop panel 10 x 10 feet x 5 inches

	2F Interior column 14 x 14 inches with drop panel 10 x 10 feet x 5 inches
	Flat Slab (2F & RF) t=10 inches
• Foundation system:	Spread footing 11 x 11 x 2 feet
	Strip footing 5 x 1.67 feet
	Slab-on-grade t = 5 inches
• Wall	RC t=10-14 inches for exterior wall
• Stair & Step	RC with steel pipe handrail
	2 @ fire escape stairs (1F & 2F)
	1 @ interior stairs (1F & 2F)
	2 @ steps (entrance)
• Miscellaneous	2 @ RC Entrance Canopy 35 x 16 feet
	Rigid frame (bm/col) system for interior stair core & duct shaft
	Roof Protrusion: Area 23.5 x 10 feet, H = 9.5 feet

Condition Assessment

This building has reached its design-life expectancy. The building needs substantial retrofitting (HVAC, plumbing, communications, finishes) internally and substantial envelope repair to remedy spalling concrete and water intrusion. It is likely that building replacement, possibly done in phases, would likely be more practical and economical than a major renovation that would trigger mandatory compliance with updated building codes.

Maintenance and Operational Improvements

The building does not meet current code requirements. Restoration of this facility would require all modifications to meet current code requirements. It is recommended that a new large building be constructed adjacent to this building, and the existing building be demolished, after completion of the new Administration Building.

2.5.3.2. Admin Annex (formerly Horizon Lines Building)

The Admin Annex has not been leased since the departure of Horizon Lines in 2012. The building has two sections: the high roof (HR) located on the north side and the low roof (LR) located on the south side. The electrical LC1 is located behind this building. Table 2-6 indicates that the Admin Annex currently has no tenants.

Table 2-6: Admin Annex Building Tenants

Tenant	Rm. No.	Lease Start Date	Area (SF)	Purpose
Currently vacant	AA	N/A	4,155	Agent/Carrier

Some overall metrics describing the building are listed below. A list of as-built drawings referenced is provided in Appendix 2-2.

- Date of construction: 1967-1968
- Number of floors: 2
- Building footprint: 89.6 x 40.0 feet (High Roof portion, HR)
  64.6 x 62.0 feet (Low Roof portion, LR)
- Building floor area: 10,400 SF
- Height of roof eave above ground: Approx. 18 feet
- Primary load structural system: RC columns with Flat Slab
  Columns 24 x 24 inches (HR)
  9-inch shear wall (LR)
  Flat Slab (HR, RF) t= 14 inches
  Flat Slab (LR, RF) t = 6 inches minimum
- Foundation system: Spread footing 9.5 x 9.5 x 2 feet
  Strip footing 6.5 x 2 feet (HR)
  Strip footing 2.5 x 1.5 feet (LR)
  + Slab-on-grade t = 5 inches
- Wall RC t = 9 inches(exterior) or 7 inches (interior)
- Stair & Step 1 @ fire escape stair, steel step with steel pipe handrail
- Miscellaneous Second floor wood deck with steel floor joists was added in HR area in 1995.

Condition Assessment

Substantial corrosion was observed on the exterior stairs. No other visible building deficiencies were noted during the assessment.

Maintenance and Operational Improvements

The building appears to be underutilized. The HR section of the building has operations on the second floor and the first floor is occupied by the Board Room and Transportation Worker Identification Credential (TWIC) office. The LR section of the Admin Annex is now vacant and used for training and readiness exercises. The building appears to be in good shape. However, for such buildings constructed 35+ years ago, a code compliance check (especially seismic design aspects) is highly recommended.

2.5.3.3. Container Freight Station

The CFS, vacant due to construction of additional office space as part of the MARAD Program, will be available for operations in 2014. PAG Transportation Division is using the area under the eave and will relocate following the construction project. At the completion of construction, they will return with operations in the transportation office in 2014.

The building is a reinforced concrete structure with 11 grids (Grid 1-11, transverse frame spanning 30 feet typically) along E-W axis and two grids (Grid A & C, longitudinal frame spanning 80 feet) along S-N axis, cantilevered canopy extended from north and south elevations. Some overall metrics describing the building are listed below; a list of as-built drawings referenced in Appendix 2-2.

- Date of construction: 1968-1969
- Number of floors: 1
- Building footprint: 300 x 80 feet
- Roof projection 310 x 130 feet
- Building floor area: 24,000 SF
- Height of roof eave above ground: Approx. 26 feet
- Primary load structural system: RC spatial rigid frame System
  Perimeter column (tapered bottom) 66 @ 42 x 28 inches
  Beam (taper) 28 x 94.5 inches (transverse frame, mid-span of Grid 2-10)
  Beam (taper) 28 x 48 inches (transverse frame, mid-span of Grid 1 & 11)
  Beam 16 x 74 inches (longitudinal frame, Grid A & C)
  Ridge beam 2 @ 16 x 27 inches (longitudinal frame, Grid B)
  Beam 20 x 34 inches (longitudinal frame, between Grid A-B & B-C)
  Beam 20 x 34 inches (longitudinal frame, between Grid C & edge beam)
  Edge beam 20 x 20 inches (longitudinal frame, edges of cantilever canopy)
  Pre-cast panel (RF) t = 8 inches
- Foundation system: Spread footing 20 x 14 x 2.83 feet (Grid 2-10)
  + Spread footing 13 x 10 x 1.83 feet (Grid 1 & 11)
  + Strip footing 5.0 x 1.5 feet (Grid A & C)
  + Strip footing 6.5 x 1.5 feet (Grid 1 & 11)
  + Slab-on-grade t = 8 inches
- Wall RC t = 12 inches (Grid A & C) or 10 inches (Grid 1 & 11) for exterior wall

Condition Assessment

Concrete patching was found on columns and walls probably due to seismic damage. Spalling has been observed in the eaves on the building on the northern side. Downspouts require replacement within the next five years. Inspection and repair as required of roof membrane and ventilation is strongly encouraged. No other visible building deficiencies were noted during the assessment.

Maintenance and Operational Improvements

The building appears to be acceptable for its intended use. However, for such buildings constructed 35+ years ago, a code compliance check (especially seismic design aspects) is strongly recommended. At the same time, care should be exercised in establishing internal storage facilities or office space and hanging things from structural members as time goes on. It is easy when dealing with stout construction such as this to inadvertently compromise structural integrity.

2.5.3.4. Equipment Maintenance & Repair (EQMR) Building

The EQMR building is located behind WH1. It is used for maintenance and repair by the equipment maintenance and repair personnel. The building presently hosts the Parts Room administered by Financial Services, the Preventative Maintenance Shop (corrosion control/painters), the Yard Maintenance Shop, Facilities Maintenance Shop, Maintenance Management and Administration offices, and the work planners.

The building is a reinforced concrete structure with 13 grids (Grid 1-13, transverse frame spanning 20 feet typically) along E-W axis, and four grids (Grid A-D, longitudinal frame spanning 30-40-30-feet) along S-N axis, cantilevered canopy extended from south elevation. Two small areas of mezzanine (440 SF for office & 600 SF for tool room) are located inside the building. An open yard space (100 feet by 60 feet) for equipment storage and staging is located at the east side of the EQMR building. Some overall metrics describing the building are listed below; a list of as-built drawings referenced is provided in Appendix 2-2.

- Date of construction: 1967-1968
- Number of floors: 1
- Building footprint: 240 x 100 feet
- Roof projection 250 x 125 feet
- Building floor area: 24,000 SF
- Height of roof eave above ground: Approx. 25 feet
- Primary load structural system: RC spatial rigid frame System
  Perimeter column Grid A (tapered bottom) 42 @24 x 26 inches
  Perimeter column Grid D 18 x 26 inches
  Inner column 18 x 18 inches
  Beam (taper) 26 x 42 maximum inches (transverse frame, Grid 1-13)
  Beam 16 x 42 inches (longitudinal frame, Grid A & D)
  Beam 16 x 20 inches (longitudinal frame, Grid B & C)
  Ridge beam 2 @ 16 x 20 inches (longitudinal frame, between Grid B & C)
  Edge beam 16 x 16 inches (longitudinal frame, edges of cantilever canopy)
  Pre-cast panel (RF) t = 8 inches
- Foundation system: Spread footing F1 9 x 9 x 2 feet
  Spread footing F2 11 x 11 x 2.25 feet
  Spread footing F3 12 x 12 x 2.5 feet
  Spread footing F4 7 x 7 x 2 feet
  Spread footing F5 9 x 10 x 2 feet
  + Strip footing 4.5 x 1.25 feet (Grid A & D, between Grid 1 & 6)
  + Strip footing 4.0 x 1.25 feet (Grid A & D, between Grid 6 & 13)
  + Strip footing 6.5 x 1.25 feet (Grid 6)

+ Strip footing 3.0 x 1.25 feet (Office Area)
+ Slab-on-grade t =7 inches

- Wall — RC t=10 inches for exterior wall & interior wall (Grid 6)
- Miscellaneous — 5 @ RC ramp 10 x 10.2 feet (t = 7 inches)
  RC Service Slab 100 x 60 feet (t = 7 inches)

Condition Assessment

Concrete patching was found on columns and walls probably due to seismic damage. No other visible building deficiencies were noted during the assessment. All downspouts will require replacement within the next five years. It is strongly encouraged to inspect and repair as required the roof membrane and roof vents to prevent water intrusion.

Maintenance and Operational Improvements

The building appears to be acceptable for its current use. However, for such buildings constructed 35+ years ago, a code compliance check (especially seismic design aspects) is strongly recommended. At the same time, care should be exercised in establishing internal storage facilities or office space and hanging things from structural members as time goes on. It is easy when dealing with stout construction such as this to inadvertently compromise structural integrity.

2.5.3.5. Warehouses 1 & 2

WH1 and WH2 are twin-structures, standing side-by-side behind Berths F-3 & F-4. WH1 is being occupied by Fishery and PAG (Operations Department, Riggers, Police, etc.). Table 2-7 indicates the current status of tenants in WH1.

The buildings are reinforced concrete structures with 16 grids (Grid 1-16, transverse frame spanning 30 feet typically) along E-W axis and four grids (Grid A-D, longitudinal frame spanning 40 feet typically) along S-N axis, cantilevered canopy extended from north and south elevations.

The electrical LC is attached to the east side of WH1. Two bathrooms (public toilet) and ice maker facility house (footprint 40 x 18.3 feet) are located on the west side of WH2 and are slated for demolition along with WH2 in 2013-2014. Some overall metrics describing the building are listed below; a list of as-built drawings referenced is provided in Appendix 2-2.

- Date of construction: 1967-1968 (WH1), 1968-1969 (WH2)
- Number of floors: 1
- Building footprint: 452 x 122 feet
- Roof projection 560 x 180 feet
- Building floor area: 54,000 SF
- Height of roof eave above ground: Approx. 28 feet

- Primary load structural system: RC spatial rigid frame System
  Perimeter column Grid A & D (tapered bottom) 66 @ 42 x 28 inches
  Inner column Grid B & C 24 x 24 inches
  Beam (taper) 28 x 74 maximum inches (transverse frame, Grid 2-15)
  Beam 28 x 104.5 inches (transverse frame, Grid 1 & 16)
  Beam 16 x 66 inches (longitudinal frame, Grid A & D)
  Beam 20 x 34 inches (longitudinal frame, Grid B & C)
  Beam 20 x 34 inches (longitudinal frame, between Grid A & B, Grid C & D)
  Beam 20 x 34 inches (longitudinal frame, between Grid A, D & edge beam)
  Ridge beam 2 @ 16 x 27 inches (longitudinal frame, between Grid B & C)
  Edge beam 20 x 16 inches (longitudinal frame, edges of cantilever canopy)
  Pre-cast panel (RF) t = 8 inches
- Foundation system: Spread footing 18 x 13 x 2.33 feet (Grid A & D)
  Spread footing 16.25 x 10.25 x 2.17 feet (Grid B & C)
  Spread footing 10 x 13 x 1.5 feet (Corner)
  + Strip footing 5.0 x 1.5 feet (Grid A & D w/o RC slope)
  + Strip footing 3.0 x 1.5 feet (Grid A & D w/ RC slope)
  + Strip footing 6.5 x 1.5 feet (Grid 1 & 16 w/o RC slope)
  + Strip footing 1.67 x 3.17 feet (Grid 1 & 16 w/ RC slope)
  + Slab-on-grade t = 8 inches
- Wall RC t=10 inches for exterior wall
- Miscellaneous 16 @ RC slope 20 x 10.2 feet (t = 7 inches)
  bathrooms & Ice maker facility house RC 1F structures

Table 2-7: Warehouse 1 Tenants

Tenant	Bay No.	Lease Start Date	Area (SF)	Purpose
Lotus Pacifica Trading Inc.	B13	8/1/2012	1,100 +316.25	Fishery Warehouse and Office
Sanko Bussan Guam	B11/12	9/1/2012	3,600 +900 +126	Fishery Warehouse, Office and Open Space
Renolith Resources	B13	5/1/2012	200	Agent Fishery Office
Tyco Electronics Subsea Company LLC	B5/6	5/1/2009	7,200	Fishery Warehouse
Tyco Electronics Subsea Company LLC	B7/8	3/1/2011	7,200	Fishery Warehouse
Tidewater Distributors Inc.	B13	5/1/2010	3,280	Fishery Warehouse
Tidewater Distributors Inc.	B12	5/1/2010	1,920 +320 +160	Fishery Warehouse, Office and Open Space
Tidewater Distributors Inc.	B12	3/1/2010	320	Fishery Under Eave

Condition Assessment

Concrete patching was found on columns and walls probably due to seismic damage. Spalling of concrete is visible on eaves of the warehouse. Salt penetration is visible on the interior roof and vertical structural elements indicate that water and salt intrusion are occurring. The CMU walls internal to WH1 are in poor shape. The office spaces constructed as a second floor in the bay 2 and 3 of the building should be reconstructed in the near future and detached from the existing warehouse structure. The current office construction is compromising the ability of the main structure to absorb seismic forces.

Maintenance and Operational Improvement

Warehouse 1 appears to be acceptable for its current use. However, with the completion of the CFS offices in 2013-2014, space currently utilized by Operations will shift and leave vacant space. Engineering and Safety divisions would be better suited in the Admin Annex so the second floor in bays 2 and 3 can be removed. Crane Mechanics should relocate to WH1. Drainage spouts will require replacement within the next 5 years. Continued inspection and repair of the roof membrane is needed. Repair to concrete in areas of exposed repair should occur as soon as possible to preserve the integrity of the structure. However, for such buildings constructed 35+ years ago, a code compliance check (especially seismic design aspects) is strongly recommended.

Warehouse 2 will be demolished as part of the MARAD Program in 2013-2014.

2.5.3.6. Welding Shed

The Welding Shed is located at on the east side of the EQMR building. The building is a reinforced concrete structure with four grids (Grid 1-4, transverse frame spanning 20 feet typically) along E-W axis and three grids (Grid A-C, spanning 30 feet typically) along S-N axis, cantilevered canopy extended from south elevation.

Some overall metrics describing the building are listed below; a list of as-built drawings referenced is provided in Appendix 2-2.

- Date of construction: 1968-1969
- Number of floors: 1
- Building footprint: 61 x 60 feet
- Roof projection 80 x 70 feet
- Building floor area: 3,600 SF
- Height of roof eave above ground: Approx. 22 feet
- Primary load structural system: RC spatial rigid frame System
  Column Grid A (tapered bottom) 42@ 24 x 26 inches
  Column Grid B & C 18 x 18 inches
  Beam (taper) 26 x 42 maximum inches (transverse frame, Grid 1-4)

Beam 16 x 42 inches (longitudinal frame, Grid A & C)
Beam 16 x 20 inches (longitudinal frame, Grid B)
Edge beam 16 x 16 inches (longitudinal frame, edges of cantilever canopy)
Pre-cast panel (RF) t = 8 inches

- Foundation system: Spread footing F1 9 x 9 x 2.0 feet
  Spread footing F2 8 x 8 x 2.0 feet
  Spread footing F3 10 x 10 x 2.5 feet
  Spread footing F4 7 x 7 x 2.0 feet
  + Strip footing 4.5 x 1.5 feet (Grid 1 & 4)
  + Strip footing 3.0 x 1.5 feet (Grid C)
  + Strip footing 14 x 14 inches (Grid A)
  + Slab-on-grade t = 8 inches
- Wall: RC t = 10 inches for exterior wall
- Miscellaneous: 1 @ RC slope 60 x 10 feet (t = 8 inches)

Condition Assessment

Concrete patching was found on columns and walls probably due to seismic damage. No other visible building deficiencies were noted during the assessment.

Maintenance and Operational Improvements

All downspouts will require replacement within the next five years. It is strongly recommended to inspect and repair the roof membrane and roof vents to prevent water intrusion.

The building appears to be acceptable for its current use. However, for such buildings constructed 35+ years ago, a code compliance check (especially seismic design aspects) is strongly recommended.

2.5.3.7. Miscellaneous Buildings

Port Police Station

This building is occupied by federal government authority U.S. CBP, and is located near the main gate. The building is a reinforced concrete structure and, from its appearance, would have been built after 1970. As-built information is not available for this building. Site inspections indicate that the building is in fair condition. Port Police will have additional space in the EOC which will facilitate space relief and a possible small interior renovation of the existing Port Police Station.

Electrical Load Centers

Four electrical Load Center buildings are located inside the Port. LC1 is located behind the Admin Annex; LC2 is attached to the east side of WH1; LC3 & LC4 are located in the container yard. LC3 is on the south side near Berth F5 and LC4 is located against the fence wall at the north boundary.

All these LC buildings are reinforced concrete structures, and are relatively new (erected between 2003-2004). No noticeable building deficiencies were found in the survey. However, entry doors and roll-up doors need to be maintained and replaced as required.

As MARAD will add LC5 and PAG will develop additional reefer outlets over time, consideration will be given to substation (equipment) load distribution changes. Similarly, as PAG acquires additional backup power generators, provision will need to be made to house these generators within the existing LCs.

Control Tower

The Control Tower was constructed between 1968-1969. It is a three-story reinforced concrete structure, located at the east side of the CFS building.

The building is 33 feet in height, with roof coverage area of 31.3 x 31.3 feet. An exterior stair is attached to the north side of the building.

The building is supported by strip footing, bearing wall/spandrel beam at 1F & 2F, a column/beam at 3F, and RC Slab/Roof.

Metrics describing the structure include the following.

- Strip footing 6.5 x 1.5 feet
- Wall t = 12 inches
- Column 12 x 12 inches
- Spandrel beam 16 x 24 inches (1F & 2F)
- Beam 30 x 16 inches (3F)
- Slab t = 12 inches (1F & 2F)
- Roof (tapered) t=13 inches (maximum)

A list of as-built drawings referenced is included in Appendix 2-2.

Another tower structure is located at the north boundary.

No visible building deficiencies were noted during the survey. Concrete patching was found on columns and walls probably as a result of seismic damage.

Gas Station

The Gas Station is located on the south side of the Port Police Station. The Port has indicated that this building is being occupied by maintenance staff. This building will be demolished as part of the MARAD Program in 2013-2014.

Sewer Pump House

The Sewer Pump House is located at the northern fence-line, near Route 11, and it is isolated by a concrete masonry unit wall/chain-link fence.

The Sewer Pump House was observed to be a single-story reinforced concrete structure. This building is owned and maintained by GWA.

2.6. CONTAINER & CARGO HANDLING EQUIPMENT

The vessel cargo at PAG is handled by equipment that includes four rail-mounted ship-to-shore Gantry cranes and one Mobile Harbor crane. A fifth crane (Gantry 2) was recently transferred to the General Services Administration (GSA) for sale and removal. PAG is instituting a structured maintenance program to assure that the remaining cranes remain in good operating condition. On occasion, some visiting vessels will use ship's gear to load and off-load cargo. Roll-on/Roll-off (Ro/Ro) vessels will load and offload certain cargo via vessel ramps down to the wharf surface.

Once off the vessel, grounded storage containers are handled by yard tractors and four toplifters. Wheeled cargo is handled by 25 yard tractors and chassis (carrier-supplied). Breakbulk cargo is currently handled using forklifts varying in capacity from 5 to 20 tons and the mobile crane. Note: while rubber-tired gantry cranes (RTGs) are currently located on the site, they have long been out-of-service and have been transferred to the GSA for removal from the terminal.

The maximum reach from the waterside rail by the land-based gantry cranes with spreader is 115 feet. Tables 2-8 and 2-9 provides additional information on the cranes and other cargo handling equipment, all of which is owned by PAG and currently in use at the Port.

Table 2-8: Port-Owned Cranes

Name or Designation	Age	Capacity	Height Above WS Rail
Gantry 2	1978	40 Long Ton	72 feet
Mobile Harbor Crane	2001	104 MT Under Hook	N/A
Gantry 3	1983	40 LT	80 feet
POLA 1	1983 Re-powered and strengthened 2009	40 LT	85 feet
POLA 2	1983 Re-powered and strengthened 2009	40 LT	93 feet
POLA 3	1983 Re-powered and strengthened 2009	40 LT	93 feet

Table 2-9: Port Owned Cargo Handling Equipment

Equipment	No.	Age	Capacity
Top Picks	2(1) 2(1)	2009 2010	40 Short Ton – 5 High 40 Short Ton – 5 High
Yard Tractor	7 8 10(1)	1998 2007 2010	Commando 50 YT-50 YT-50
Forklift	1 1 4 8 1	1996 2008 2008 2007 1988	20 Short Ton 20 Short Ton 10 Short Ton 5 Short Ton 3 Short Ton

(1) Indicates equipment recently acquired for the Phase IA project.

2.7. COMMERCIAL PORT AREA UTILITIES

A field survey and interviews with various departments of PAG were conducted in order to obtain the following information and inventory of site utilities at the Port. Findings on the current major site mechanical, electrical, and plumbing (MEP) facilities are listed in Table 2-10 for easy reference. Details of each system are discussed in the following section.

Table 2-10: Major Site Utilities

Equipment Details		Current Capacity	Remarks / Comments
Container Yard Lighting			
50-foot Steel Pole			In general, 1,000 to 1,500 watt Metal Halide Lamps
5 x Lamps		17 Ea.	
4 x Lamps		11 Ea.	
50-foot Concrete Pole			
5 x Lamps		1 Ea.	
4 x Lamps		2 Ea.	
3 x Lamps		1 Ea.	
2 x Lamps		1 Ea.	
1 x Lamps		1 Ea.	
80-foot Pole			
4 x Lamps		1 Ea.	
3 x Lamps		2 Ea.	
2 x Lamps		1 Ea.	
Electrical Supply			
GPA Supply		13.8kV	Limited by the underground line supplying PAG.
LC1	Tx.	2000kVA 13.8kVDelta-480 v / 277 volt 3ph/4wire wye	
	Gen.	625kVA 480 v / 277 volt 3ph/4wire wye	Generator has been relocated to LC4. There will be a new 750kVA generator installed to replace the generator set that moved. The load supported by the 625kVA generator was at 45% with 344kva of remaining capacity available. With separate fuel tank (600Gal) outside LC.
LC2	Tx.	1000kVA 13.8kVDelta-480 v / 277 volt 3ph/4wire wye	
	Gen	344kVA 480 v / 277 volt 3ph/4wire wye	Currently it is experiencing almost Full Load. Set mounted oil tank. With WH2 demo the port electrician is calculating that its load will be reduced to 50% of current capacity.
LC3	Tx.	750kVA 13.8kVDelta-480 v / 277 volt 3ph/4wire wye	
	Gen.	344kVA 480 v / 277 volt 3ph/4wire wye	Separate fuel tank next to Gen. With Matson and Horizon moving out of CFS the load has dropped. With the current demands and the construction of office space, the port electrician calculates there is capacity to grow.

Table 2-10 (Cont.): Major Site Utilities

Equipment Details		Current Capacity	Remarks / Comments
LC4	Tx1	2000kVA 13.8kVDelta-480 v / 277 volt 3ph/4wire wye	Supplied by GPA
	Tx2	1500kVA 13.8kVDelta-240Volt/3ph./3 wire Delta	Supplied by GPA
	Gen1	625kVA 480 v / 277 volt 3ph/4wire wye	At 55% with 280kva avail. Backup only loads connected to GPA supplied Tx1. load. With separate fuel tank (600 Gal) next to Gen. Only runs the 480V Reefers/ Gate house/ Yard lighting
Lightning Protection System			
No lightning protection system provided to buildings, cranes or lamp poles.			
Water Supply			
Main Supply Water Pipe from GWA		16 inches	Water pressure is high enough to have direct feed and no pumps required to be installed for water supply. Gate valves for the underground water supply systems are, in general, not in good condition.
Fire Services			
Fire Hydrant, Sprinkler and Fire Alarm		Fire Hydrant and Sprinkler systems are direct fed from the GWA water pipe	As the fire hydrant and sprinkler systems are direct fed from the GWA water supply main, there is no water storage tank or fire service pumps currently installed. This will be remedied in 2014-2015 as part of the PMP project activity managed by MARAD. There is no direct link between the fire alarm system and the local fire station.
Air Conditioning System			
Central A/C system with air-cooled chiller is provided to the Administration Building and the Admin Annex. Other small buildings are in general using either split A/C or window A/C system.			
Sewage System			
Gravity fall system is used and no sewage pumps have been installed. The sewer is fall by gravity to a sewage pump house with the capacity of 150gpm provided by GWA near the main gate.			

Note: This matrix is a compilation of current equipment based on information received.

2.7.1. Electrical Service and Load Centers

The power supply to the Port originates from the GPA 13.8kV line along Route 11 outside of the Port, and this line also feeds the other piers and facilities along the road. The line is radial fed and without ring arrangement.

There are two incoming feeders originating from the GPA line to feed the primary electrical substations (Load Centers) of the Port. There are four Load Centers namely LC1 to LC4 installed in and servicing the entire Port. Each Load Center has an emergency diesel generator to back-up the essential loads. Figure 2-7 shows the GPA power supply schematic for PAG.

2.7.1.1. Incoming Service

PAG receives power by GPA distribution feeder P-003 from Piti Substation with a radial fed 13.8kV line routed through an underground system from PITI Substation to the GPA Cabras Facility then to an underground system built in 2012 under Route 11. GPA is currently working on as built drawings to reflect the system changes in Route 11.

2.7.1.2. Switchgear – Primary Distribution

LC1 is fed from a GPA 600amp, 13.8kV, 15kV manual switchgear and then connected to one un-fused incoming disconnect switch and three fused disconnect switches with one feeding LC1 distribution transformers and the other two switches feeding LC2 and LC3.

- LC2 contains of one fused disconnect switch
- LC3 contains of one fused disconnect switch
- LC4 is fed from a GPA 600amp, 13.8kV, 15kV manual switchgear
-

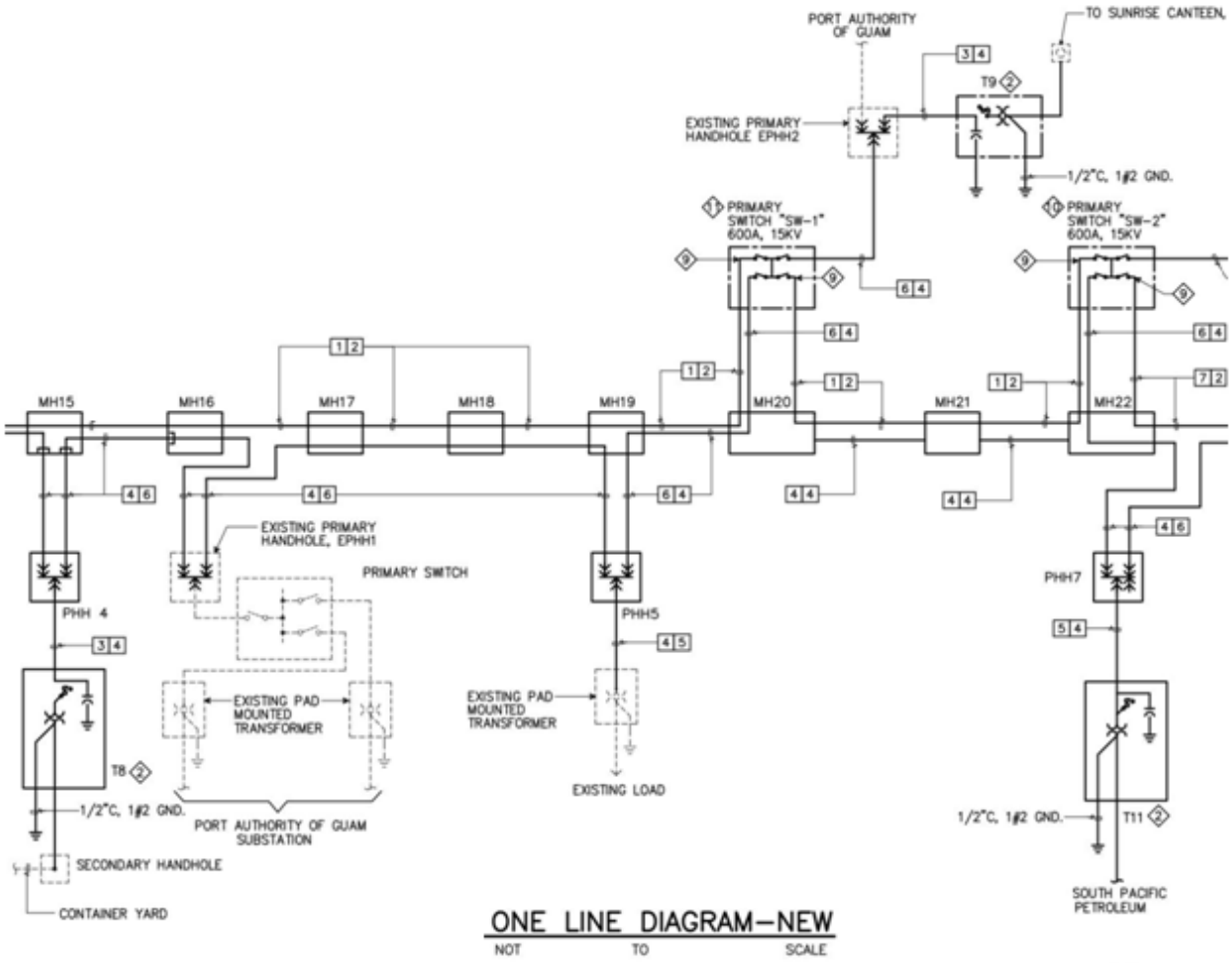
2.7.1.3. Switchgear – Secondary Distribution

LC1 secondary distribution switchgear contains one 1200 amp 480 v/277 volt, 3ph./ 4 wire wye distribution panel completed with one 4-Pole 1200 amp Automatic Transfer Switch (ATS) connected to the emergency generator. LC-1 supplies power to the Administration Building and the vicinity areas including the Port Police Building, the Admin Annex, EQMR parking lightings, etc.

LC2 secondary distribution switchgear contains of one 1200 amp, 480 v/277 volt, 3ph./ 4 wire wye distribution panel completed with one 4-Pole 1200 amp ATS for the connection of the emergency generator. LC2 supplies power to WH1 and WH2 and vicinity including the service outlets along F-3 and F-4.

LC3 secondary distribution switchgear contains one 1200 amp, 480 v/277 volt, 3ph./ 4 wire wye distribution panel completed with one 4-Pole 1200 amp ATS for the connection of emergency generator. LC3 supplies power to the CFS Building, Low Tower, High Tower and vicinity including the service outlets along F-5 and F-6 and the container yard lighting.

Figure 2-7: GPA Power Supply Schematic for PAG



LC4 secondary distribution switchgear contains one 2000 amp, 480 v/277 volt, 3ph./ 4 wire wye distribution panel completed with one 4-Pole 2000 amp ATS for the connection of an emergency generator and one 3000 amp, 240 volt, 3ph./ 3 wire Delta distribution panel. LC4 is to be upgraded with ATS for 3000 amp service with 937 kVA, 240 Delta under the current generator set procurement.

LC4 supplies power to the Gate house Building and vicinity including the reefer outlets and container yard lighting.

2.7.1.4. Transformers

The transformers in the Load Centers are as follows:

- LC1 – one 2000kVA, 13.8kV Delta-480v/277 volt, 3ph/4 wire wye
- LC2 – one 1000kVA, 13.8kV Delta-480v/277 volt, 3ph/4 wire wye
- LC3 – one 750kVA, 13.8kV Delta-480v/277 volt, 3ph/4 wire wye
- LC4 – one 2000kVA, 13.8kV Delta-480v/277 volt, 3ph/4 wire wye and one 3200kVA, Delta/Delta 13.8kV/240 volt.

2.7.1.5. Emergency Generators

Emergency diesel generators are installed in each Load Center to back-up and maintain the essential service in each Load Center. The details of the generators in the Load Centers are:

- LC1 – Recent failure of the genset at LC4 required the relocation of this generator. Currently the Load Center has no genset, with one separate diesel fuel tank (600 Gal) outside LC1. It is planned to replace the generator with a 750 kVA generator.
- LC2 – one 344kVA, 480v/277 volt, 3ph./4 wire wye with one set integral diesel fuel tank. Currently has oil leak on the transformer.
- LC3 – one 344kVA, 480v/277 volt, 3ph./4 wire wye, with one separate diesel fuel tank in LC3.
- LC4 – one 625kVA, 480v/277 volt, 3ph./4 wire wye, with one separate diesel fuel tank (600 Gal) in LC4. It is planned that a 937kva-240 volt service will be added to the building to accommodate the 240 volt reefers and to replace the current generator set with a 750 kVa-480 volt generator. The current LC4 generator will move to LC2 when the new generator sets arrive.

Generator upgrade procurements are currently underway by PAG.

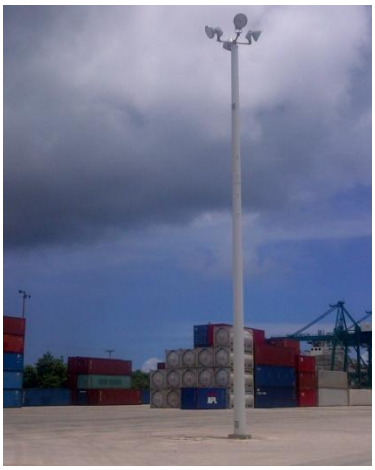
2.7.1.6. Condition & Maintenance Issues

The equipment reviewed in the field for LC1 and LC4 was relatively new and appeared to be in physically good condition. According to Port maintenance staff, LC1 and LC4 have undergone major upgrades recently (2003). However, the equipment in LC2 and LC3 is relatively old and appears to have deteriorated with age. According to the Port electrician, the Port replaced all the main circuit breakers and power panels in 2008 for LC1 and LC4. The task of upgrades of LC2 and LC3 to match with the capacity of LC1 and LC4 never occurred. Future upgrades need to be determined and scheduled for completion as sustainability projects.

2.7.1.7. Future Capacity for Expansion

With the upgrade of LC4 and the reduction in demand for LC2 and LC3, a substantial amount of spare capacity in the secondary distribution voltage level (i.e., 480/277 volt) should be available.

2.7.2. YARD LIGHTING



50 and 80 foot high pole-mounted flood lights with 1000W metal halide lamps are installed to light-up the majority of the existing container yard. There are thirty-four 50-foot poles and four 80-foot poles to serve the yard areas. The numbers and configuration of the flood lights of each pole are different to suit the location. (Refer to Table 2.10, List of Site Utilities, for details).

Lighting poles inside the yard are supported by RC spread footing (7 x 7 x 1.5 feet) and 28 x 28 inch pedestal, the bottom elevation of footing is located 6 feet under finished grade.

The Port replaced the 50-foot and 80-foot existing container yard poles and lights in 2012 as part of a security grant project. These were replaced in their original locations. Five 100-foot poles will be added during the next two to three years; two in the breakbulk area and three in the small container yard expansion area. With the addition of these new poles, all high mast lights (50, 80 and 100 feet) will likely remain where placed for the 20-year planning horizon unless the Port acts to make minor adjustments associated with future pavement replacement.

Yard reconfiguration and systems upgrades accomplished over the next three to five years are expected to address cargo capacity handling demands for the next 20 years. Having said that, the Port will have the option, as it progressively replaces yard pavement, to add flexibility where cargo is ultimately stacked. In the process of doing that, selected hi-mast lighting could be raised to 100 feet to allow higher stacking of container boxes in selected new areas.

2.7.3. STORM WATER DRAINAGE SYSTEM

Gravity drainage system consists of underground pipes (12-30 inch diameter RCP), sump pits and surface drain channels (36 x 34 inches) which are provided to collect the storm water and directly discharge to the sea without using pumps or passing through an oil water separator. There are two outfalls in F-3, four outfalls between F-4 to F-6 and two in the Piti Channel area.

Oil Water Separators are planned to be installed on all outfalls as part of the MARAD program currently underway and is expected to be completed in 2015.

As part of the new container yard expansion and gate complex, MARAD is planning on adding an additional outfall. This outfall will also be protected by an oil water separator.

2.7.4. Sanitary Sewer System

The Port is currently served by a gravity sewer system which consists of underground pipes (-2 to -11 feet from grade elevation) and sump pits. The sewage is collected at the central lift station (pump house) provided by GWA, which is located near the main gate. The GWA lift station pumps sewage to the gravity line in Marine Drive which flows to the Hagåtña Treatment Plant. The existing GWA lift station system is designed for a capacity of 150gpm. Port maintenance staff indicated that blockage of the sewage is very rare.

2.7.5. Domestic Water System

There is one 16-inch main water supply pipe from GWA located at the eastern end of the Port to provide water supply for the Port and properties west of the Port terminal. The 16-inch mainline is reduced to 12 inches and continues to the parking area in front of the Administration Building. After the abandoned water meter chamber located in the southeast corner of the yard, a 12-inch pipe is tapped off from the 16-inch pipe to supply the tenants outside the Port in the Industrial Park and on the Breakwater. It is unknown if the two 12-inch lines connect at the point of convergence west of the Port Administration Building parking area.

The water system built with the original Port buildings in 1970 contained a 10-inch looped system that covered the waterfront and the Port buildings on the west end of the terminal. Six-inch lines were connected from the 10-inch lines to fire suppression systems within the buildings and hydrants in the container yard. Smaller lines were connected to the buildings for potable water service. The previous Master Plan had identified that Port maintenance staff stated that piping in the terminal is asbestos. The pipe materials for this are unknown from drawings reviewed but Asbestos Concrete Pipe was of common use in this period. As part of the MARAD program currently underway, the intention is to install new separate piping off of the GWA mainline that crosses in front of the Administration Building in Route 11. This should result in an upgraded system built to today's drinking water standards.

2.7.6. Fire Protection System

Fire hydrants and sprinklers are directly tapped off the main water supply pipe network (mixed with the domestic water supply system) within the Port. Hoses are not currently in place adjacent to the fire hydrants. This lack of fire hoses is a concern that must be addressed by the Port.

There is no direct link between the Port fire alarm systems and the local fire station. A Fire alarm raised in the Port would need to be reported to fire station by telephone. The closest fire station is three minutes away from the Port.

The current water supply system does not provide sufficient fire fighting pressure or volume. This was a major concern addressed in the preliminary Phase I-A design. This system upgrade is currently being addressed in the MARAD program and will bring pressures and flows up to an acceptable level to achieve required capability. As discussed in the above section, the potable water service is being separated from the fire service. A new tank and fire pumps are being installed and existing piping in the yard will be utilized to convey the fire water.

The age of the existing waterlines in the terminal is addressed in the future CIP sustainability project listing. The water lines that surround the buildings and supply fire hydrants along the waterfront date from 1970 and are nearing the end of their life expectancy. These should be progressive replaced during the 20-year planning horizon.

2.7.7. Other Building Services

No lightning protection devices have been found in the buildings, lamp poles or cranes to protect the Port facilities. Suitable lightning protection devices should be considered to protect the Port facilities and the operators. Lightning protection will be installed on future high mast light poles to be installed by MARAD.

A central air conditioning (A/C) system with air-cooled chiller is provided to the Administration Building and the Admin Annex. Other small buildings are in general using either split A/C or window A/C systems. This combination of equipment is considered suitable for the current facilities layout and avoids the need to run extensive services underground to serve isolated small buildings.

2.8. Port Security

Meetings were held with the Port's security staff, Harbor Master, other key staff, the Coast Guard and U.S. and Guam Customs to review the existing security systems and arrangements that are in place. Prior to the last Master Plan Update, PAG had completed a Port Facility Security Assessment and a Port Facility Security Plan. Since that time, the port police have developed a Control and Compliance Plan. This report is provided in Appendix 2-5. The following is an update of the Port security summary from the Master Plan Update 2007 Report.

The Port security staff polices the Port, Agat and Gregorio D. Perez Marinas, and Harbor of Refuge over two 12-hour shifts per day. The existing functional areas within the Port will continue to exist in the proposed Master Plan and include:

- Oil Tank Farm
- Office and Warehouses
- Container Yard
- Berths
- Other properties
- Family Beach
- Hotel Wharf
- Golf Pier

- Marinas (Gregorio D. Perez, Agat, Aqua World, Harbor of Refuge)
- Cruise Ship and Fishing Facilities

2.8.1. Security Condition

Harbor and Terminal Security comprise the security functional divisions at the PAG. Harbor Security uses several long-range cameras to monitor the harbor. Additionally, there are separate Harbor Masters for the PAG and U.S. Navy controlled inner Apra Harbor. This Master Plan will focus on the terminal security needs for the PAG.

The Port has video cameras installed throughout the terminal facilities, and they are not maintained. Additionally, the existing camera system does not provide complete coverage of the terminal.

Existing buildings have locks where padlocks and keys are changed every three months.

There is no permanently assigned K-9 unit. If one is needed at the Port, a unit must be borrowed from the airport.

Cruise ship calls at the Port and providing cruise ship security is difficult, labor intensive, slow and offers poor amenities for passengers. The PAG would like to increase the number of cruise ships that call at the Port.

The PAG security staff lacks enough officers and asks security staff to work additional hours to meet the security needs of the Port. Finally, retention of security staff is difficult. The PAG offers a good package of training programs; however, often the trained officers move to other security/law enforcement positions (outside of the Port).

2.8.2. Port Facility Security Plan Requirements

With a new Master Plan for the PAG, the existing Port Facility Security Plan (PFSP) must be reviewed to ensure it adequately addresses the Port facility, ships, personnel, cargo, cargo transport units and ship's stores within the terminal.

Compliance with the Maritime Transportation Security Act of 2002 (MTSA) regulations satisfies the International Ship and Port Facility Security (ISPS) code for U.S. ports. The PFSP for the PAG meets those requirements. The ISPS code addresses both operational and physical requirements. Ultimately, it will be the PAG's responsibility to create the processes and procedures to meet the operational and physical requirements of the ISPS Code.

2.8.2.1. Maritime Security Levels

Port security currently follows the Maritime Security (MARSEC) system. Security level 1 is the minimum appropriate protective security measures maintained at all times. This can be considered normal security.

Security level 2 entails additional specific protective security measures maintained for a period of time as a result of a heightened risk of a security incident. This is the heightened level of security.

Security level 3 entails further specific protective security measures maintained for a limited period of time when a security incident is probable or imminent. This is the exceptional level of security.

2.8.2.2. Port Operations Security Requirements

The PAG must address Port operations including securing cargo handling, unaccompanied baggage, and ship's stores. The security of the Port must be monitored, access to the Port facility should be limited, and restricted areas within the Port must be designated. The U.S. Coast Guard recommends use of Title 33, Code of Federal Regulations, Part 6 as an applicable regulatory reference for the PAG.

Cargo Handling

Secure cargo handling must ensure there is no tampering of cargo and that only the correct cargo is accepted and loaded onto the ship.

Methods of securing cargo include checking of seals or other methods to prevent tampering and using scanning/detection equipment, mechanical devices, or dogs.

Handling Unaccompanied Baggage

This could include any baggage and personal effects which is not with a passenger or member of a ship's crew. Methods of handling unaccompanied baggage include using X-ray machines to scan unaccompanied baggage (including the possibility of viewing it from at least two angles.

Inspection of Ship's Stores

This can be accomplished using scanning/detection equipment, mechanical devices or dogs.

Monitoring the Security of the Port Facility

Monitoring methods include lighting, security guards (foot, vehicle, and waterborne patrols), automatic intrusion detection devices and surveillance equipment, and audible and/or visual alarms.

Limiting Access to the Port Facility

Methods to limit access to the Port facility might include restricting areas by fencing or other barriers, inspecting vehicles used by those seeking entry to the Port, and verifying the identity of all Port personnel and their vehicles.

Designating Restricted Areas within the Port Facility

Restricted areas are established and have been identified in the PFSP. Methods to restrict access to areas within the Port include providing barriers and/or fencing to surround restricted areas, access points where access can be controlled by security guards, and automatic intrusion

detection devices and surveillance equipment or systems to detect unauthorized access into or movement within restricted areas.

2.8.3. Security Improvements

In order to secure the Port facility and ships, personnel, cargo, cargo transport units and ship's stores, the following security recommendations should be considered as part of the Port Master Plan Update and PFSP. Aesthetics are not being addressed at this time.

2.8.3.1. Fencing and Barriers

The perimeter must be secured, which would entail fencing (at least 10-feet in height) with potentially barbed and/or razor wire on the top of it and barriers built with materials that will provide a useful lifespan in the Port's corrosive environment. The fencing should be designed with a minimum of access points. Any secondary entrance or exit facilities should be locked at all times when not being used and have barriers at the gates. The barriers would be moved when the secondary entrance or exit facilities are required. The primary exit and entrance facility should be appropriately sized to meet the peak traffic demands of trucks and personnel entering and exiting the facility without excessive queuing.

That exterior fencing should have cameras installed near it and sensors installed on it to monitor any activity near the perimeter. These devices should be wired back to a central security monitoring and control facility at the Port. As the Port operates 24-hours a day, there should be security staff on site and within the monitoring and controlled facility at all times.

Within the terminal, nested perimeters would be established to separate restricted areas, military operations, cargo handling areas, cargo storage areas, cruise ship areas, and utility (power and telecommunications) entrances with fencing and/or barriers. Again, this fencing may have barbed and/or razor wire on top. This interior fencing should also have cameras and sensors installed to monitor a breach in security.

2.8.3.2. Entrance/Exit Facility

There will be a central entrance and exit gate for the entire Port. Given the increased number of military personnel inhabiting the area and the increased amount of commercial traffic expected, it is recommended that there be a separate lane(s) and an identification system for the three operations, namely, commercial/cargo, cruise ship passenger, and military operations. There should be no reason why anyone should pass through the Port of Guam terminal facilities to get to the public facilities. Therefore, only people who have a reason to access the Port should be entering the facility. Automated gates may be used for commercial/cargo operations and military operations, while cruise ship passenger operations would require the gates to be staffed.

There should be turn-around areas immediately after the initial gates and before a vehicle entry areas for all three operations should a vehicle need to be detained or turned away. It is recommended that the vehicle entry areas will have cameras with OCR software to be used to verify container numbers, license plates and other markings on vehicles.

The gates should be constructed in a way so that, during high traffic times, they could be reversed to minimize queuing. In addition to cameras and OCR technology, the gate area should be developed so that radio frequency identification (RFID) readers could be installed in order to verify the integrity of any electronic seals added to sealed containers.

2.8.3.3. Lighting

The entire facility must have lighting, to serve as a deterrent, improve visibility of cameras, and aid security officers. Lighting should be installed around the exterior perimeter, interior perimeters, and within the facility.

Additionally, if it is contemplated that security devices will be installed on lighting poles, the poles must have continuous power. Energy saving devices that only turn the power on to the poles when the light level drops to a level where the lights are activated should not be installed on those light poles. The security devices will need a permanent power source.

2.8.3.4. Scanning Devices

Scanning devices may be used for ship stores, container seal verification, and radiation monitoring. Within the entrance/exit facilities, stores handling, vehicle/documentation inspection area, and cargo handling and storage areas, scanning devices should be installed to ensure the security of stores and cargo. Even if these devices are not installed initially, it is important to set aside space for these devices and develop the power and communications infrastructure to support operation of these devices. Ultimately, these devices will be wired back to the central security monitoring and control facility.

These devices may include X-ray machines, RFID readers, mobile gamma ray imaging, and fixed radiation portal monitors.

2.8.3.5. Cameras

Cameras (both fixed and pan-tilt-zoom) should be installed along fence lines, within restricted areas, on and within restricted access buildings. Additionally, cameras should be installed at all entrance and exit facilities. An image of all license plates and transport vehicles and container markings entering and exiting the facility should be recorded and verified. This can be accomplished via cameras aimed at license plates and vehicle marking areas, and OCR software. Cameras will be a combination of visual, thermal and infra-red. All cameras will be wired back to the central security monitoring and control facility.

Camera height is dependent on how high the containers are stacked. Since the hi-mast lights in the terminal yards vary between 50 feet, 80 feet and 100 feet, mounting heights for cameras will vary. When pavement is replaced, the Port may choose to create higher density (go from 3-high to 4-high or 5-high) stacking. At that time, hi-mast lights may be selectively replaced and camera mounting heights adjusted accordingly. Typically, a camera height over 80’ would be required to deal with containers stacked 5 high. But this can also be impacted by aisle width and the number of stacking rows involved. It is recommended that if pavement is replaced and

stacking locations and heights are adjusted, that a lighting study be conducted to confirm hi-mast lighting requirements and security camera mounting heights.

2.8.3.6. Sensors

Sensors should be placed along fences, within restricted areas and buildings to detect security breaches. Sensors can detect the change of temperature, light, and heat. Sensors can also detect motion. These sensors would be wired back to the central security monitoring and control facility.

2.8.3.7. Access Control

Any restricted access to buildings or areas should have access controlled by electromagnetic locks, position switches, card readers (possibly with personal identification numbers and/or biometric input), and cameras. In case of a power failure, the doors with electromagnetic locks should have a mechanical key and access must be limited for those keys. Under this type of system, mechanical keys are the backup procedure. Currently, the mechanical locks are changed every three months at the Port. With mechanical keys as a backup mechanism, it will be easier to institute a security program where it is known who has access keys to selected areas.

The electronic access control devices should be wired back to the central security monitoring and control facility.

2.8.3.8. Audible/Visible Alarm System

As part of the alarm system, an audible and/or visual alarm system may be included so that responders on the property would know where the security breach had occurred. The audible system would add loudspeakers and a paging system, and the visible system would add flashing lights to the alarm system. Of course, personnel in the central security monitoring and control facility would know where the security breach had occurred via the electronic alarm system. The audible and visible alarm systems would be wired back to the central monitoring and control facility.

2.8.3.9. Utilities

The site will be served by exterior power (electrical and gas) and communications (telephone, Internet, radio communications) utilities. The utility entrance onto the facility must be secured and, optimally, there would be redundant and diverse feeds for these services. This utility entrance should be one of the restricted access facilities within the Port property.

Within the site, these utilities must be distributed to the central security monitoring and control facility, buildings within the facility and, ultimately, to the electronic security devices.

A duct bank system will distribute power and communications within the Port. The duct bank system may be encased in concrete and the manholes should have locking and tamper-proof covers.

There should be redundant and back-up utility services throughout the Port. For example, there should be back-up/generator power for all necessary devices including some security devices. There should be both wire-line and wireless communications. Data should be distributed through a self-healing network topology.

2.8.3.10. Central Security Monitoring and Control Facility

The Port central security monitoring and control facility will be located on the Port property and will be the local monitoring point for all of the electronic security devices. There should be a communications link between this central security monitoring and control facility, first responders, emergency operations staff, and military security staff. This central security monitoring and control facility should be one of the restricted access facilities within the port property.

This is also the place where the cameras are recorded, and all cameras should be recorded. Decisions will need to be made regarding if the cameras regarding the compression rate of the video streams. Additionally, it must be decided how long to store the video locally. The consequences of full motion recording and length of storage are requirements will determine the number and size of storage devices. A final decision will need to be made regarding long-term storage of video images off-site.

The control room must have space for officers on duty with desks/consoles, monitors appropriate task lighting. Also, the security officers must be able to see alarm notification and easily search stored video images. This Port central control facility will most likely be the head end of all the security and communications systems.

It is recognized that the military operations will likely have a separate security monitoring facility. However, the military and terminal facilities should be linked electronically in order to inform each other of existing situations and possibly act as a secondary operations center in case the monitoring facilities goes down.

The Port Security Enhancements Project (PSEP) Design Build Project is under way to provide a centralized location within the port footprint to monitor the CCTV and Access Control of the secure terminal. It will be the designated building to interface with outside agencies via a teleconference room and a Port Emergency Operations Room.

2.8.3.11. Staffing

Staffing is required to take these electronic security devices and security measures from MARSEC level 1 to level 2 to level 3. The devices, alone, will not meet the increasing demands of the security levels. Even security level 1 requires staffing and an operational plan. This facility will not operate properly without local security officers.

With the advent of the TWIC card requirements, it is necessary to conduct background checks on all personnel who regularly enter the commercial facilities. This will take additional time and expense to get personnel approved to enter the port.

Finally, from the initial interview with the Port Security Officer, it is clear that there is not enough security staff to manage security at the current facility. Under the proposed Master Plan, and with the ever-increasing international security requirements, it will be crucial to fully fund the security program. This includes not only security devices, but also security staff to operate, maintain, and monitor the security devices.

2.8.3.12. Cyber-Security

Most of the security devices will be connected to a local area network (LAN) and possibly the Internet. While not addressed specifically within the ISPS code, cyber-security must be maintained. ISO 17799 lays out the guidelines for cyber-security and it is recommended that the Port operator apply the ISO 17799 guidelines to the networks that will be installed throughout this facility.

2.8.3.13. Wired vs. Wireless Communications

For the security devices at this facility, it is recommended that a wired communications network be installed to support them. Wireless networks are less expensive to install, but wired networks provide a greater level of security and dependability. It is more difficult to intercept a signal on a wired network than on a wireless network. Additionally, wireless networks will be installed for Port communications systems and it may become difficult to eliminate interference between these systems that will need to coordinate their frequency plans.

Most security devices will require power; therefore, extending a wired communications network to them will be of nominal additional cost.

2.8.3.14. Electronic Manifests

The PAG had developed its own electronic manifest system; however, the PAG does not require its operators, consignees, and shippers to use electronic manifests. The PAG staff enters data, from paper records, from several of its shippers into their electronic system. Some terminal operators at the Port use a graphical system to place and then locate a container.

Going forward, the PAG should work with its shippers, consignees and operators to develop an electronic system that meets the user's needs and find ways to show its customers the value of migrating to an electronic system from a paper system.

Finally, it is recommended that the PAG develop a data infrastructure to support its own electronic operations as well as its shippers, terminal operators and Customs officials. Ultimately, all entities involved in the supply chain will migrate to an electronic manifest system, so it will be crucial for the PAG to have the infrastructure in place to accommodate this change. The infrastructure includes sizing the duct banks adequately for substantial growth, as well as constructing their own data network to grow over time.

2.8.3.15. Security Operational Plans

The PFSP should include a section covering the security operational plans. First responders should be identified and their incident management plans should be reviewed or developed. Working with the first responders, the PAG security staff should cooperatively maintain a

security operational plan. That plan should identify who should respond to what type of incident and in what manner.

Additionally, there needs to be communications links (clear, redundant, and reliable communications paths) between the responding and responsible agencies, both in terms of person-to-person communications and data communications as addressed in maritime security regulations.

Finally, interoperability must also be addressed in the security operational plan. Interoperability includes policies and protocols, and equipment that work together. In developing an interoperable communications system, the following factors should be considered:

- Training and familiarization with the facility
- Joint table-top and full-scale exercises with all the first responders and appropriate security personnel
- Clear lines of communications and responsibility with agencies and individuals (both primary and secondary)
- Compatible radio communications between agencies
- Development of underwater surveillance protocols with other relevant security agencies

2.8.3.16. Cruise Ship Operations

Providing security for the cruise ship dockings currently requires a large amount of security planning and staffing. As there is a desire to increase the number of cruise ship dockings, it will be crucial to streamline the security process. There needs to be a process improvement for scanning ship's stores, scanning baggage, and faster movement of passengers and staff on and off the ships. Some of this improvement can be achieved through electronic equipment, ready access to K-9 units, and temporarily dedicated lanes for entry/exit of vehicles serving the cruise ship docking. Much of this improvement can be achieved through operational process improvements.

2.9. ENVIRONMENTAL CONSTRAINTS

2.9.1. FEDERAL & LOCAL PERMIT AND APPROVAL REQUIREMENTS

Projects and initiatives arising from this Master Plan Update are partially underway. Projects previously identified in the Master Plan Update 2007 Report and later defined in the Implementation Plan being executed for PAG by MARAD are currently in varying stages of design and construction. They are components of Phase I, and in particular Phase I-A, of the PMP as approved by the Guam Legislature and enacted into Public Law. These projects include:

- Container Freight Station Renovation
- Breakbulk Yard Reconfiguration and Expansion
- Warehouse 2 Demolition
- Container Yard Expansion
- Reconfigured and Expanded Gate Complex
- Additional Load Center (power substation)
- Stormwater System Improvements
- Firewater System Improvements
- Miscellaneous Demolition Projects

These projects are federally funded, are located within 200 feet of the shoreline, and require programmatic review under the National Environmental Policy Act (NEPA). Accordingly, prior to commencing this construction, the U.S. Maritime Administration, acting as federal overseer of the NEPA process, completed an Environmental Impact Assessment, consulted with federal and local regulatory agencies, and issued a finding of No Significant Impact. The PAG also completed Environmental Site Assessments, Phases I and II, and established environmental protection protocols relevant to the planned construction.

It is noted that any deferred projects initially included in the proposed action and deemed to be a future continuation of that action (the original full-size PMP program) would be covered by the NEPA documentation already completed. Such projects could surface or be advanced by a sudden change in the pace or scale of the Military Alignment on Guam. Examples of such projects include:

- Optical Character Recognition Portals and Canopies (originally identified, now being deferred by a few years)
- Radiation Portal Monitors (originally identified as possible, but not currently required)
- Further Yard Expansion (originally identified, but now not currently planned)
- Additional Pavement Replacement with new Hi-Mast Lighting in Existing Terminal Yards (originally identified, but now not currently planned)

It is also noted that future projects that fall into the routine maintenance and repair, utilization improvement, or sustainability category, have independent utility, are not federally funded or are not currently funded by any means, do not need to be considered as a continuing PMP

action with NEPA compliance constraints. These projects, if they have an environmental impact, will have their own local permitting requirements that still address project specific environmental concerns. Examples of these projects include:

- TOS Upgrade
- GOS Acquisition
- FMS Upgrade
- Gantry Crane Demolition
- Buildings (WH1, EQMR, CFS, High Tower, Gate Admin) Renovation
- Pavement Replacement
- Utilities Replacement
- Security Fencing and Gate Replacement
- Code Compliance Adjustments
- Hotel Wharf Replacement (not in the original program; now viewed as operational enhancement with independent utility, has separate NEPA requirements as an independent project)
- Administration Building Replacement (originally viewed as an expansion, now viewed as sustainability replacement, likely smaller in size and deferred several years)

2.9.2. List of Anticipated Federal & Local Permits

It is anticipated that the following environmental permits and approvals may be required to implement certain sections of the recommended near-term and long-term development.

2.9.2.1. Federal Permits and Approvals

- NEPA (completed for Phase I-A of PMP by MARAD)
- USACE Section 10/404 Permit (needed for Hotel Wharf, possibly satisfied by Nationwide Permit No. 3). Port would work directly with USACE to obtain this.

2.9.2.2. Local Permits and Approvals

Some local permits and approvals are needed for ongoing PMP projects, while some will be needed for future individual maintenance and repair or sustainability projects.

- Guam Environmental Protection Agency (GEPA) administered Section 401 Water Quality Certification
- Guam Bureau of Statistics and Plans - Coastal Zone Management Federal Consistency Program
- Guam Development Permit (if dredging seaward of the mean high water line)
- GEPA Erosion Control Plan Approval/Permit
- GEPA Environmental Protection Plan (EPP) Approval
- GEPA administered National Pollution Discharge Elimination System (NPDES) storm water general permit for construction activities
- GEPA Test Boring Permit (needed for Hotel Wharf and Access Road). Contractor permit.
- GEPA Dewatering Permit (if needed)

2.9.2.3. Federal Regulations Governing the Recommended Development

Some of the following permits have been completed during the existing NEPA documentation for the PMP components that are underway and contemplated within the next five years. Others will be completed when future projects are defined and budgeted during the 20-year planning horizon.

- Clean Water Act (Sections 401, 402, 404)
- Rivers and Harbors Act (Section 10)
- Coastal Zone Management Act (Section 307)
- Endangered Species Act (Section 7)
- Fish and Wildlife Coordination Act
- Magnuson Stevens Act
- National Historic Preservation Act (Section 106)
- Federal Clean Air Act
- Migratory Bird Act

If contaminated soil, sediment, or groundwater will be encountered during construction of the recommended development, the following federal regulations may be applicable depending on the characterization of the materials:

- Resource Conservation and Recovery Act
- Comprehensive Environmental Response Compensation and Liability Act
- Toxic Substances Control Act

2.9.2.4. Local Regulations Governing the Recommended Development

Construction of the Recommended Development will require compliance with the following local regulations:

- Guam Water Quality Standards
- Guam Coastal Zone Management Program Policies
- Guam Environmental Protection Act (Public Law 11-191)
- GEPA Soil Erosion and Sedimentation Control Regulations
- Chapter 49, Title 10 of the Guam Code Annotated, Air Pollution Control Act (P.L. 10-74)

2.10. TENANTS

As of January 2013, PAG maintained 82 leases and agreements with more than 50 tenants. Some companies held multiple leases for the use of separate PAG properties. This review compared existing leases between PAG and its lessees in order to determine if current agreements conflict with the stated aims of the Master Plan. Additionally, a review was completed of the obligations of signatories to the leases and agreements, the areas of the property under lease or (other use agreement), and the expiration dates of these agreements. Reviews of long-term leases in prior deliverables included interviews with lessees and tours of the property to relate the leased areas to future development plans. The Consultant continued

to evaluate existing leases and other user arrangements in light of the proposed facility uses in the Master Plan Update 2013.

Since completion of the Master Plan Update 2007 Report, many of the long-term tenants have vacated PAG premises in anticipation of future facility use changes included in the Master Plan. This is in addition to leases that were not renewed for business reasons specific to each firm. Of the leases categorized as major in the previous Master Plan Update, the following tenants have now vacated PAG facilities: CASAMAR, Guam YTK Corporation, Horizon Lines, PRI South Pacific, Pacific Demolition and Dismantles, Shell Guam Inc., APL/Sealand, and V. Angoco Trucking.

Within the Port, no existing leases between PAG and tenants stand as obstacles to realization of the promulgated Master Plan or this latest Master Plan Update. Most of the leases are extended month to month, and could be modified at a future date. However, at the present time, most of the month-to-month leases have no provisions for the escalation of monthly rent. Additionally, some of the recreational facility uses may eventually need to be relocated to accommodate increased cargo movement capacity in the Port, should import demand grow at faster than current projections forecast.

Table 2-11 presents a summary of the major tenants (those whose leases or user agreements total more than $20,000 in revenues to PAG annually) as of January 3, 2013, with details pertaining to size of the lease holding, period of the agreement, and rate at which the facility is rented. A complete tabulation of tenants and lease agreements for all PAG facilities is provided in Appendix 2-4.

Table 2-11: Summary of Major Tenants and Lease Agreements (Ranked by Revenue, 2013 Annual)

Lessee	Operation/Facility	Area (SF)	Term
Mobil Oil Guam Inc.	Management agreement, GEDA Lot 1	248,873	10 years, from 3/20/2010
South Pacific Petroleum	Management agreement, GEDA Lot 2	217,800	20 years, from 11/30/2000
Cementon Micronesia	Management agreement, Golf Pier	78,336	20 years, from 12/1/2009
Tristar Agility	Management agreement, Main Pipeline	324,198	3-5 years, from 11/6/2006
Hanson Pemante Cement	Management agreement, GEDA	71,874	10 years, from 2/12/2011
Isla Petroleum and Energy Holdings	Management agreement, F3	75,347	20 years, from 5/20/2010
Tyco Electronics Subsea Co.	Warehouse space, Bay 5/6	7,200	Monthly, from 5/1/2012

Table 2-11: Summary of Major Tenants and Lease Agreements (Ranked by Revenue, 2013 Annual) Continued

Lessee	Operation/Facility	Area (SF)	Term
Tyco Electronics Subsea Co.	Warehouse space, Bay 7/8	7,200	Monthly, from 5/1/2012
Matson Navigation	Office space, Administration Building	2,755	Monthly, from 5/1/2009
Smithbridge Guam Inc.	Construction support, Seaplane Ramp	640	Monthly, from 5/1/2009
Cabras Marine Corporation	Management agreement, Lot 5 GEDA Tract	Not Available	10 years, from 8/1/2011
Tristar Agility	Management agreement, F1 Fingertip	78,651	3-5 years, from 11/6/2006
Sunbay Corp.	Concessionaire, Agat Marina	1,839	Monthly, from 4/10/2006
Scuba Marine Sports	Water sports, Family Beach	6,000	Monthly, from 5/1/2009
Sanko Bussan Guam	Warehouse space, Bay 11	3,600	Monthly, from 9/1/2012
Aqua World	Tour operator, Harbor of Refuge	65,430	Monthly, from 1/1/1985
Tidewater Distributors Inc.	Warehouse space, Bay 13	3,280	Monthly, from 5/1/2010
Guam Dolphin Marine Sports Club	Water sports, Family Beach	4,757	Monthly, from 5/1/2009
Guam Response Service Limited	Warehouse space, Harbor of Refuge	2,752	Monthly, from 2/25/2010
Guam Response Service Limited	Office space, Harbor of Refuge	1,249	Monthly, from 2/25/2010
Atlantis Guam	Submarine tour facility, Harbor of Refuge	4,000	Monthly, from 5/9/2009
CTSI Logistic	Truck parking, Truckers Lot		Monthly, from 4/1/2011
Cabras Marine Corp.	Office space, Administration Building	980	Monthly, from 5/1/2009

Note: Only leases associated with over $20,000 in annual revenues to PAG are included in this table.

SECTION 3. CARGO TRENDS AND PROJECTIONS

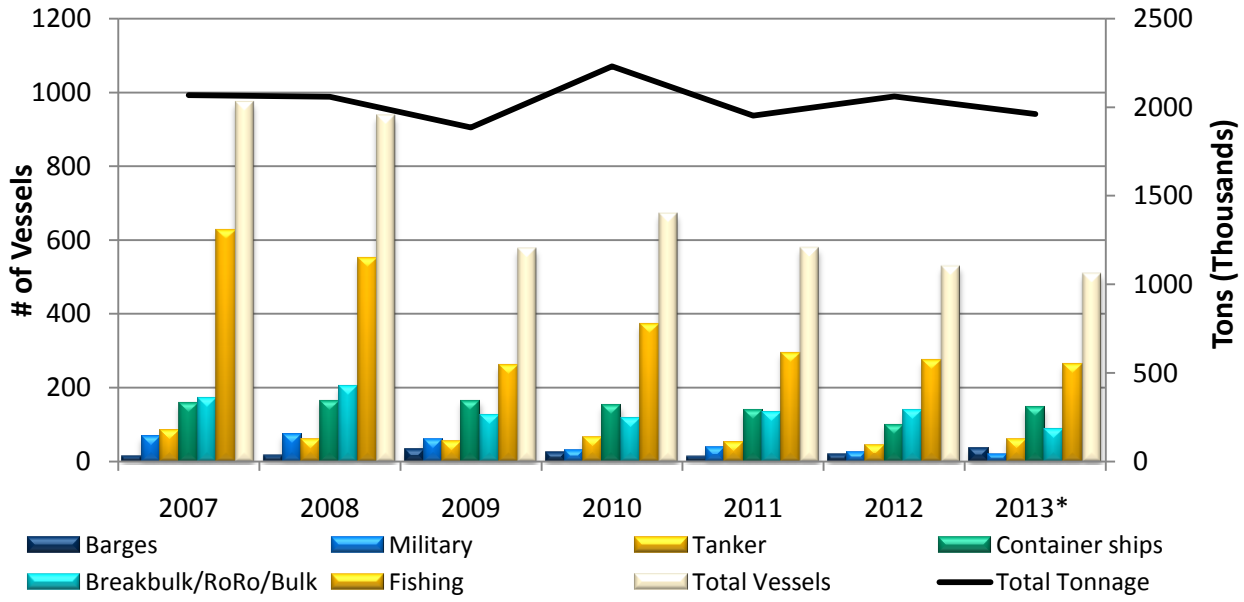
This section reviews and updates historic trends and assumptions used in the Master Plan Update 2007 Report and subsequent Cargo Forecast with Military Program Impacts Report (2010) to forecast future cargo volumes. It also details these forecasts by cargo type and demand scenarios used to investigate terminal throughput capacity, equipment needs, capital and operating costs and to support the follow-on analysis of transshipment rates (i.e., crane surcharge and petroleum tariffs).

3.1. CARGO TRENDS

3.1.1. VESSEL TRAFFIC

Of the 530 commercial and military vessels that entered Apra Harbor in 2012, 458 commercial vessels called at the Port carrying approximately two million tons of cargo. Figure 3-1 summarizes the number of vessels that have used facilities in the harbor in the past five years and the annual tonnage handled at the Port for the same period of time.

Figure 3-1: Historic Annual Vessel Traffic in Apra Harbor & Port Throughput



*2013 annualized projection

Source: Parsons Brinckerhoff analysis. Data provided by PAG.

While the total number of commercial vessel calls at the Port has steadily decreased over the past five years from a high of 821 in 2007, the annual tonnage throughput has remained relatively constant, indicating that higher volumes of cargo are being carried by fewer vessels. The increased utilization of these vessels allows ocean carriers serving Guam to reduce service costs and captures greater economies of scale. As cargo volumes increase in the future

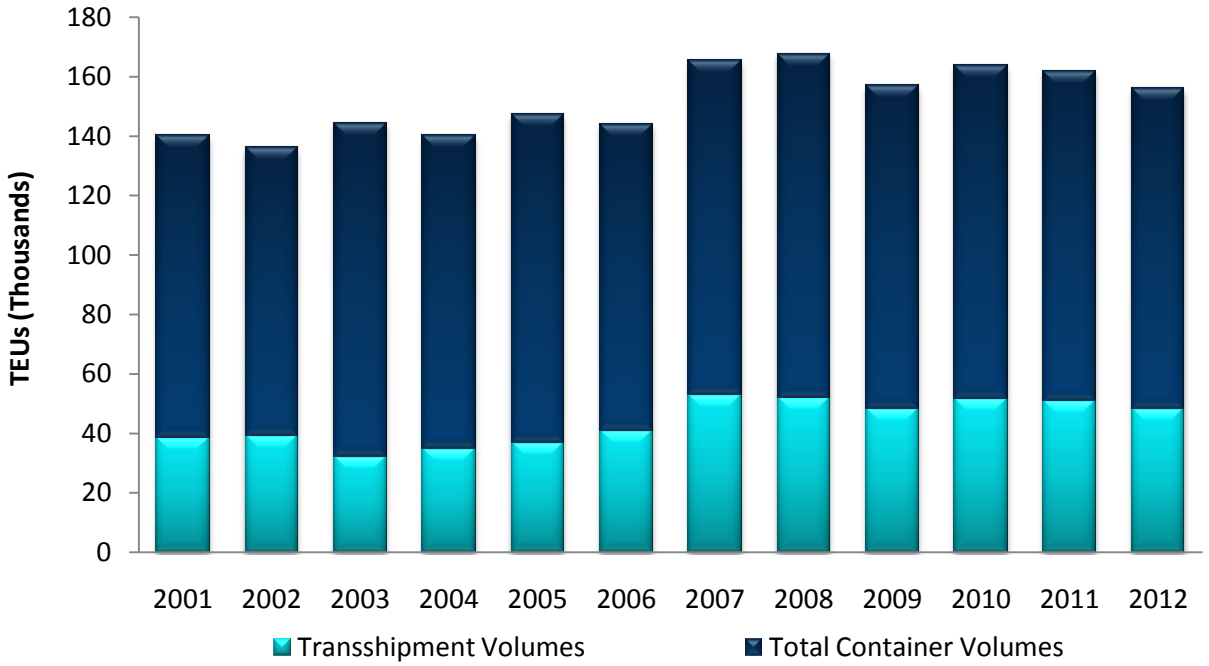
resulting from the military build-up, it is anticipated that ocean carriers may deploy larger vessels, rather than additional vessels, on this trade route to further benefit from economies of scale. However, current berth draft restrictions will limit the size of cargo vessels that will be used.

The trend of decreasing vessel deployments has positively impacted the navigational channel occupancy in the Outer Apra Harbor. Based on historic vessel traffic in Apra Harbor provided by PAG, it is estimated that channel occupancy decreased by about 46 percent from 2007 to 2012, corresponding to the total decline in vessel traffic of 973 vessels in 2007 to 530 in 2012. Even after allowing for priority vessels such as aircraft carriers and weather interruptions, the harbor has significant capacity for additional commercial vessel traffic.

3.1.2. CONTAINER TRENDS

The Port has averaged about 152,000 twenty-foot equivalent units (TEUs) of containerized cargo per year between 2001 and 2012, ranging from a minimum of 136,000 TEUs in 2002 to a maximum of 168,000 TEUs in 2008. Containers handled at the Port typically include 20-foot, 40-foot and 45-foot lengths. Currently, a container averages approximately 1.71 TEUs in Guam.

Figure 3-2: Port of Guam Container Trends



Source: Parsons Brinckerhoff analysis. Data provided by PAG.

As shown in Figure 3-2, overall container volumes have been relatively steady, growing at a compound annual growth rate (CAGR) of 1.28 percent from 2001 to 2012. Since 2007, transshipment containers have maintained a steady share of about 31 percent of the total container cargo. These containers arrive full in Guam from the U.S. West Coast (USWC) and Asia and then move outbound to the CNMI, FSM/MI and Palau. Transshipment containers are

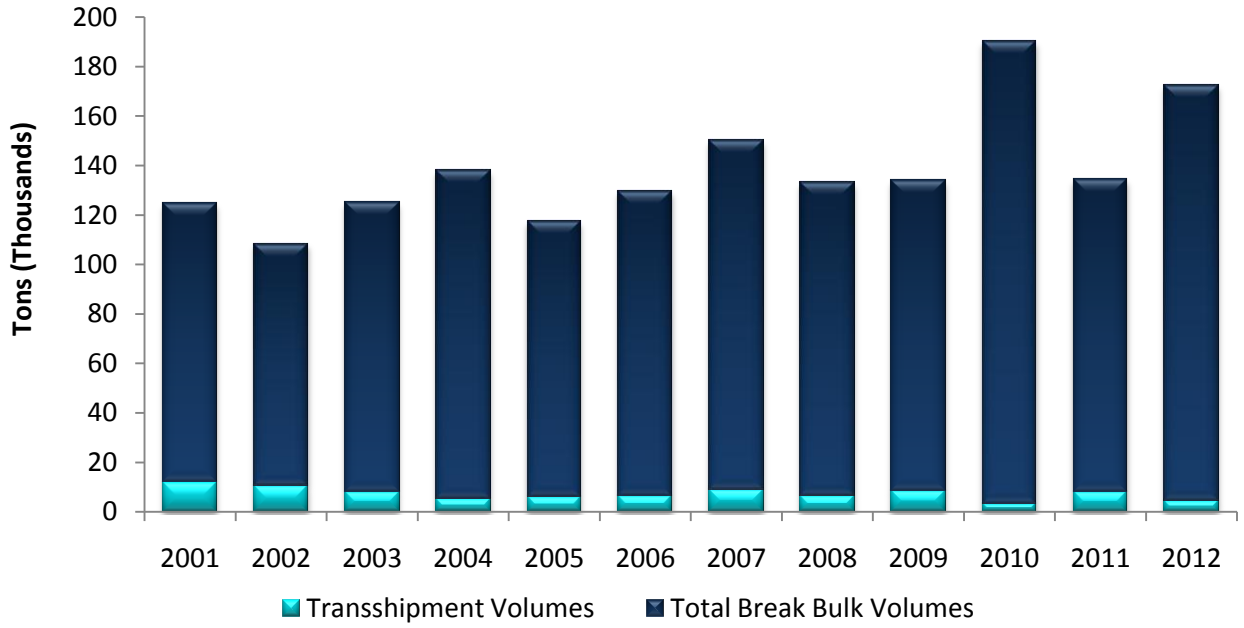
handled four times at the Port—inbound from USWC/Asia, outbound to CNMI/FSM (mostly full), back inbound to Guam (mostly empty), and outbound to USWC/Asia. Since transshipment is cost-sensitive in most areas, the PAG has worked with the carriers to set a rate structure conducive to attracting and retaining transshipment volumes.

3.1.3. BREAKBULK TRENDS

Breakbulk cargo includes a variety of commodities that cannot fit into containers or are more economically transported in breakbulk form (e.g., steel plates, sheets and pipes, cement in super bags, asphalt and aggregates). Most of the breakbulk cargo inbound to Guam is for the construction industry with smaller portions serving the local market (automobiles) and military (equipment and vehicles). Most of the outbound breakbulk is construction materials (moving on transshipment routes) as well as breakbulk commodities such as fish, scrap metal, roll-on/roll-off automobiles and a variety of other cargos. Figure 3-3 shows the breakbulk trends for the Port.

From 2001 to 2012, breakbulk cargo at the Port of Guam increased at a CAGR of 3.69 percent. Total breakbulk cargo volumes handled at the Port ranged from a low of 98,000 tons in 2002 to a maximum of 187,000 tons in 2010.

Figure 3-3: Port of Guam Breakbulk Trends



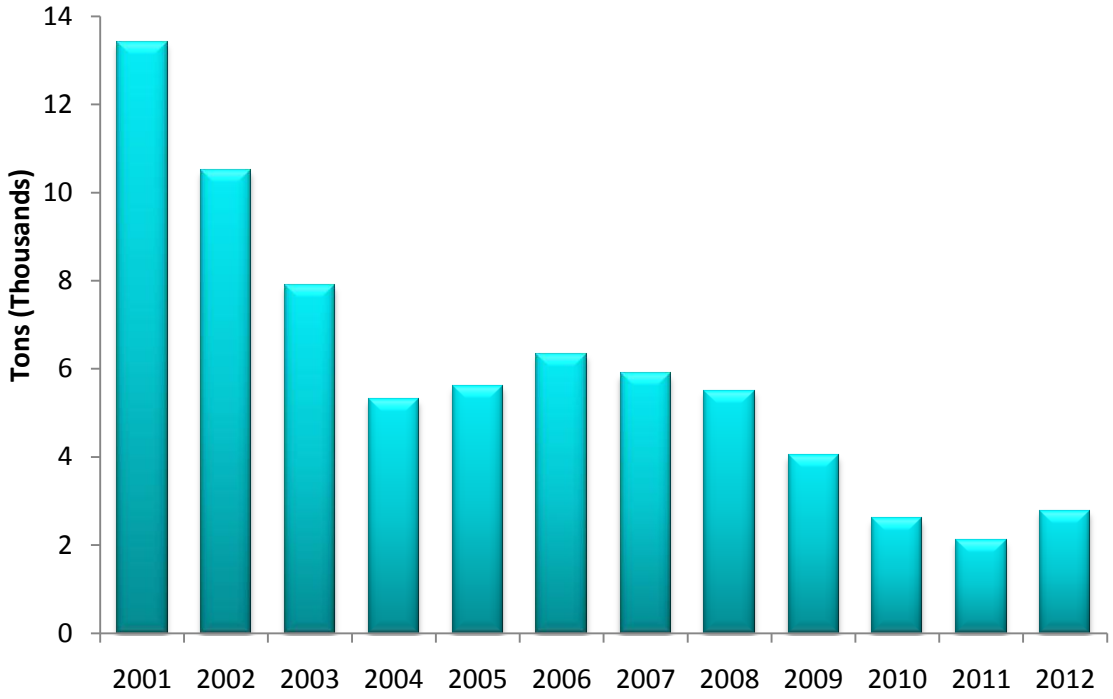
Source: Parsons Brinckerhoff analysis. Data provided by PAG.

Breakbulk cargo volumes have continued to increase in the past five years, while transshipment volumes have declined over the same period.

3.1.3.1. Fisheries

As shown in Figure 3-4, transshipment of tuna has steadily declined, as the fishery grounds moved to more distant locations and fishing regulations have changed. The transshipment of tuna has primarily moved from Guam to Outer islands and Asian markets by air and sea services.

Figure 3-4: Tuna Transshipments via Guam



Source: Parsons Brinckerhoff analysis. Data provided by PAG.

The decline in transshipment volumes after 2001 was largely a response to the Shark Finning Act of 2000, which prevented vessels from transshipping through Guam if their country was engaged in shark finning. Because of this U.S. law, the Taiwanese fleet moved into the Indian Ocean. The Patriot Act and Marine Transportation Act of 2002 also impacted transshipment activity through Guam by increasing the costs to the fleet serving Guam, which is the most highly regulated Port in the region.

Despite these constraints, Guam has a relative advantage for transshipment because of its location to the harvest areas, political stability, expansion of the market for tuna (especially in China), and its infrastructure (Port, airport, fish processing, and similar facilities and services). However, due to overfishing, the volumes transshipped through Guam are expected to remain at the lower level of the past few years; therefore, it is expected that the fisheries operation at the Port will have limited, if any, impact on other commercial cargo activities.

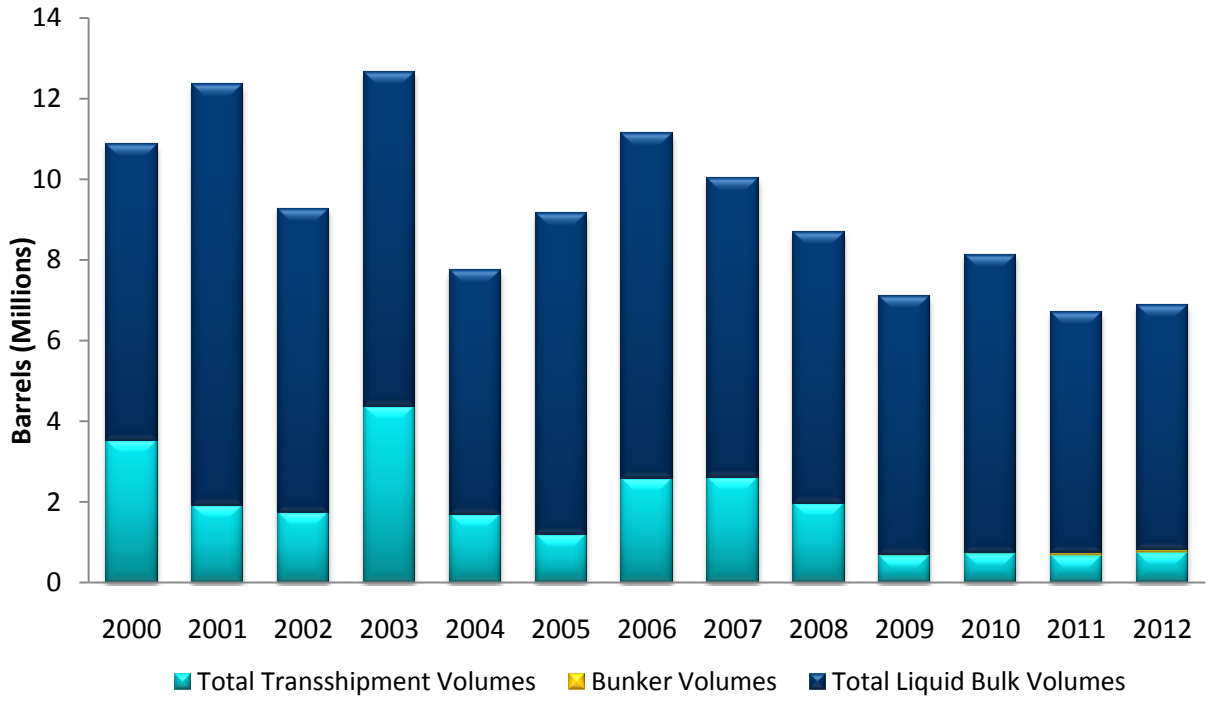
3.1.4. LIQUID BULK TRENDS

A variety of refined petroleum products (e.g., motor gasoline, aviation gasoline, jet fuel, automotive diesel oil and LPG are delivered by ship to the Port for storage in onshore non-production storage and distribution facilities in the Marine Industrial Terminal. Bulk fuels from Mobil Oil and Tristar Agility are delivered to their storage tanks from the adjacent Golf Pier marine transfer facility or from Berth F-1 through cross piping in the SPPC facility.

Typically, liquid bulk products are delivered in bulk to the terminal via tanker vessel every twenty days. These products are then distributed by pipeline from their storage tanks to their loading racks, where the products are loaded into tank trucks and distributed to service stations and commercial and government accounts throughout the island. A portion of the bulk fuels are reloaded at the pier to coastal tankers for distribution to Micronesia, Rota and Tinian islands in the CNMI.

Liquid bulk cargo at the Port declined at a CAGR of -5.18 percent from 2001 to 2012. The highest throughout of 12.6 million barrels occurred in 2003 and the lowest throughput was in 2011 at 6.7 million barrels. Liquid bulk imports and exports at the Port averaged approximately 10.3 million barrels per year from 2001 to 2007.

Figure 3-5: Port of Guam Liquid Bulk Trends



Source: Parsons Brinckerhoff analysis. Data provided by PAG.

As shown in Figure 3-5, liquid bulk throughput at the Port has declined in the past five years to average about 7.5 million barrels, partially due to the decreasing volumes of liquid bulk products transhipped to the islands through Guam. Transshipment volumes of liquid bulk

products at the Port were as high as 34 percent of total volumes in 2003 but substantially decreased after 2008 to represent approximately 11 percent of total volumes annually.

3.1.5. Cruise Vessel Trends

Given that this Master Plan Update is primarily focused on cargo operations, a detailed analysis and assessment of cruise activity trends and projections is not included in this report. The review described below was performed for the purpose of assessing the impact of cruise vessel traffic on commercial cargo movements.

The Port's cruise operation shares berth space with fishing and other cargo industries at Berth F-3. Guam has received seven calls per year on average in the past five years (5 calls in 2011 and 9 calls in 2012) with approximately 600 passengers per call. The current vessels range in length from 400 to 800 feet and carry between 350 and 950 passengers. The vessels stay a partial day in Guam (i.e., arrive 8 am and depart 6 pm).

Since access to these facilities are through the cargo terminal, cruise vessel arrivals impact cargo and fishing vessel operations. Sometimes cargo operations have been halted during Cruise Vessel calls due to safety and security considerations. There are no separate facilities available for customs, scanning and processing of visitors. The water depth is currently about 28 to 30 feet at mean lower low water, which is adequate to accommodate some smaller cruise ships. The Cruise Terminal Location Report provided to the PAG in 2009 recommended that cruise operations be relocated to Hotel Wharf, which was considered the best location, not only to avoid conflicts with other port traffic and cargo operations, but also to accommodate larger cruise vessels.

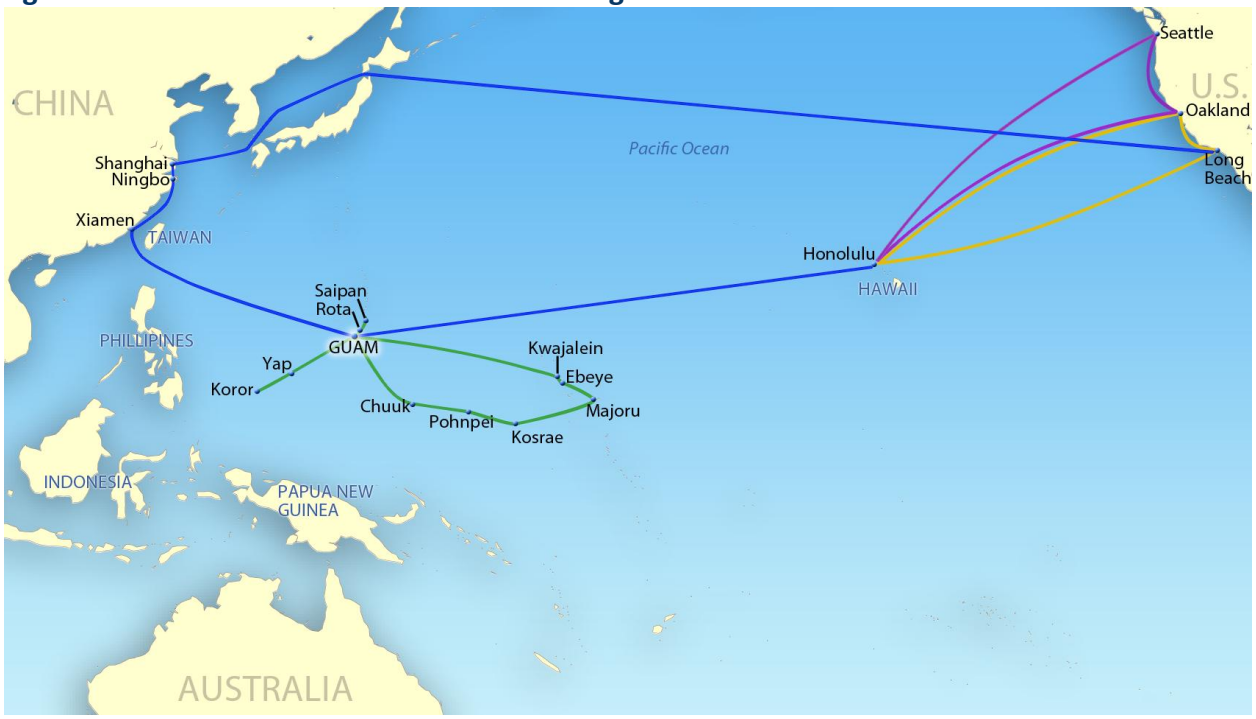
3.1.6. Carrier Services

Vessels serving Guam are involved in three trade routes: Trans Pacific, Asia Pacific, and Micronesia transshipment services. These vessels carry containers only, breakbulk only or a combination of containerized and breakbulk cargo, which is most often the case. On Trans-Pacific routes, approximately 51 percent of breakbulk was handled on vessels that also carry containers (Matson) and 49 percent was carried on breakbulk only vessels. On Asia Pacific services, approximately 43 percent of breakbulk was handled on vessels that also carry containers (primarily Kyowa) and 57 percent was carried on breakbulk only vessels.

3.1.6.1. Trans Pacific Service

The primary carrier on the Trans-Pacific routes is Matson Navigation Company (Matson). The service currently employs five containerships in a string that carries cargo from the U.S. Pacific Coast to Honolulu, then to Guam. As shown in Figure 3-6, the vessels continue to China, where they are loaded with cargo to be discharged in Long Beach (blue lines). Horizon Lines operated a similar weekly service between Hawaii, Guam, China and the U.S. West Coast; however, the service was discontinued in 2011.

Figure 3-6: Matson Trans-Pacific Service through Guam



Source: Parsons Brinckerhoff, based on Matson Service Schedule

Matson vessels serving Guam range from a capacity of 2,200 to 2,600 TEUs. As shown in Table 3-1, Matson carried an average Guam payload of 1,142 containers on 26 vessel calls during six months in 2012/2013. During a similar period in 2007, Matson deployed more vessels in the rotation (35 calls to Guam); however, the average payload was nearly half the average 2012 volumes.

Table 3-1: Comparison of Vessel Calls and Average Payload for 6-Month Period in 2007 and 2012/2013

	2007	Containers per call (average)			2012/2013	Containers per call (average)		
Service	**Voyages**	**Import**	**Export**	**Total**	**Voyages**	**Import**	**Export**	**Total**
USWC/Asia								
Matson	35	396	294	**690**	26	584	558	**1,142**
Asia								
CTSI MELL	33	197	79	**276**	33	111	124	**235**
Kyowa	29	57	42	**99**	20	98	124	**221**
Transshipment								
Seabridge	49	70	25	**95**	36	37	42	**80**
Matson	17	195	173	**368**	10	208	188	**396**

Source: Parsons Brinckerhoff analysis. Data provided by PAG.

3.1.6.2. Asia Pacific Services

Asia Pacific trade routes are served by Kyowa Shipping Co. (Kyowa) and Marianas Express Lines Limited (MELL). Kyowa operates multiple feeder services that connect with Hanjin, Hyundai, MOL and NYK out of Busan (Figure 3-7). The vessels (i.e., Kyowa Hibiscus, Kyowa Cattleya, and Pacific Condor) are multi-purpose and carry containers, Ro/Ro and breakbulk cargos on a weekly service to the Port. In addition to transporting automobiles and breakbulk tonnage, the vessels can store about 415 TEUs. Marianas Steamship Agencies (MSA) is the agent for Kyowa Shipping Co.

Figure 3-7: Kyowa Asia Pacific Service through Guam

Source: Parsons Brinckerhoff, based on Kyowa Shipping Co., Ltd. Service Schedule

The number of Kyowa vessels calling at the Port over a 6-month period has decreased in the past five years, while the average payload of vessels has increased from 99 containers in 2007 to 221 containers in 2012, which includes transshipment as well as direct Guam service.

In December 2012, Matson and Kyowa announced a space chartering and connecting carrier agreement for service between Asia and Guam/Micronesia. Under the agreement, the two companies will partner in operating a three ship rotation serving ports in Korea, Japan, Guam, CNMI, the Republic of Palau (Koror), the FSM and the Republic of the Marshall Islands.

MELL provides weekly service to Guam, deploying five vessels having an average capacity of 1,340 TEUs. The rotation for the Micronesia Express Service (MXS) is Hong Kong, Kaoshiung, Saipan, Guam, Yap, Koror (Figure 3-8). MELL has maintained a similar vessel call schedule and average payload in the past five years. CTSI is a logistics provider that acts as general agent for MELL.

Figure 3-8: MELL Asia Pacific Service through Guam

Source: Parsons Brinckerhoff, based on MELL Service Schedule

In September 2013, Swire Shipping began calling at the Port as part of its North Asia service that connects Taiwan, China, Korea and Japan to Guam, Papua New Guinea, New Caledonia and New Zealand. Four multipurpose vessels carry containers, Ro/Ro and breakbulk cargos to/from the Port every 17 days. According to China Navigation, new-build S Class vessels will be progressively deployed into the rotation throughout 2013. The revised southbound route will include vessel calls at Yokohama, Japan before reaching Guam, followed by a call at the port in Lae, Papua New Guinea.

3.1.6.3. Transshipment Services

Seabridge Inc., a subsidiary of Cabras Marine Corporation, operates a feeder carrier service that carries cargo to/from Guam and the CNMI for Matson and other carriers. In the past, Seabridge deployed the MV Super Shuttle vessel, which can carry 132 20-foot containers or their equivalent, and has a Guam-Saipan transit time of 12 hours.

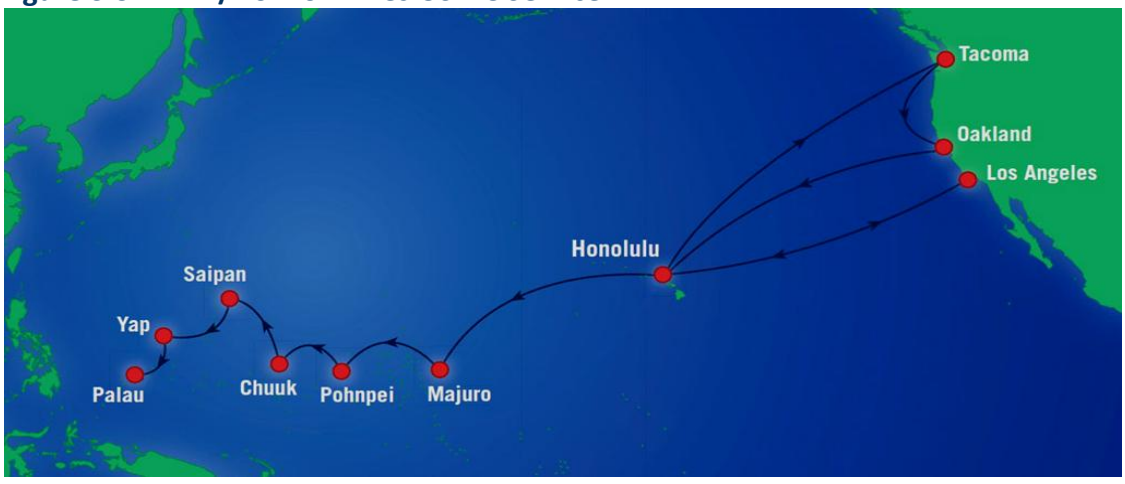
However, Seabridge ceased operation of the MV Super Shuttle in late 2012 and switched to a U.S. flag tug and barge operation as a result of declining volumes and new regulation affecting CNMI immigration that made it difficult to sustain foreign flag service between the islands. The use of the U.S. flag tug and barge has increased Seabridge's labor costs, as they must employ U.S. crewman who are licensed by the U.S. Coast Guard. The number of Seabridge vessel calls has decreased over the past five years as well as the average payload from 95 to 80 containers per vessel. Marianas Steamship Agencies (MSA) is the agent for Seabridge.

Prior to signing the chartering agreement with Kyowa in late 2012, Matson operated a separate transshipment service in partnership with MELL from Guam to FSM, Palau and Marshall Islands. The vessel Islander had a capacity for 650 TEUs. The Kyowa service has now replaced this bi-weekly ship service operating from Guam. Cargo originating on the Pacific Coast and in Hawaii is sent to Guam on the weekly Guam vessel and transferred to the Kyowa vessels that sail every two weeks to Yap and Palau (refer to green lines shown in Figure 3-6). This service also calls at ports on the islands of Saipan, Chuuk, Ebeye, Kwajalein, Majuro, Kosrae, and Pohnpei.

Along with Kyowa, Saipan Shipping provides an inter-island service between the islands of Guam, Saipan, Rota and Tinian. The company primarily carries U.S. West Coast cargo to Saipan via transshipment at Guam. MSA is the shipping agent for Saipan Shipping.

MELL also changed their transshipment operation in 2012 by shifting their transshipment hub from Guam to Majuro and entered into a partnership with Horizon Lines. Prior to the shift, MELL transshipped about 150 containers each week through Guam. Currently about 100 containers are transshipped through Majuro each week via vessels coming in from Honolulu, while only 30 containers go through Guam every two weeks. Figure 3-9 illustrates the new service rotation. Horizon Lines provides service between the USWC and Hawaii, and MELL serves the Pacific Islands.

Figure 3-9: MELL/Horizon Lines USWC Service



Source: MELL Website

3.1.7. POPULATION

Population information for Guam was provided by the Government of Guam Bureau of Statistics and Plans, the Central Intelligence Agency (CIA) World Factbook for Guam, the U.S. Census Bureau, and the Socioeconomic Impact Assessment Study (SIAS) contained in the November 2009 environmental documentation on the military program released by JGPO and the Navy titled "Draft Environmental Impact Statement/Overseas Environmental Impact Statement, Guam and CNMI Military Relocation, Relocating Marines from Okinawa, Visiting Aircraft Carrier Berthing, and Army Air and Missile Defense Task Force".

Over the past 60 years, Guam's population has grown from 59,498 in 1950 to 159,358 in 2010, according to the U.S. Census Bureau. Table 3-2 shows the historic growth rate of Guam's population since 1950. The population growth rate from 2000-2010 of 0.29 percent per year is substantially less than the 1.5 percent increase per year that occurred between 1990 and 2000.

Table 3-2: Guam Historic Population Growth Rates

Year	1950-1960	1960-1970	1970-1980	1980-1990	1990-2000	2000-2010*
Annual Population Increase	1.2%	2.4%	2.2%	2.3%	1.5%	0.29%

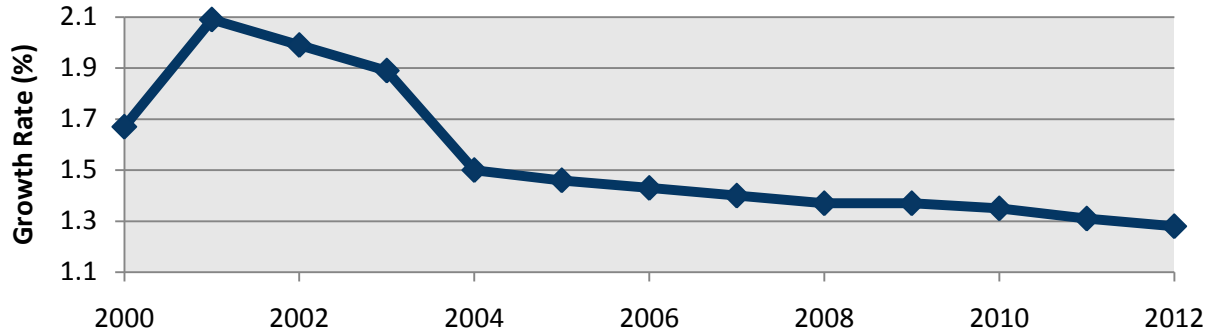
*Source: U.S. Census Bureau. * Updated 2010 U.S. Census Bureau Growth Rate*

A linear extrapolation of these population growth rates for the past 60 years provided a trend line to predict Guam's population growth rates for the next 20 years. The results of this trend analysis present an average annual population growth rate of 1.09 percent from 2010 to 2020 and an average annual growth rate of 0.86 percent for 2020 to 2033.

The CIA World Factbook also provides yearly population growth rates based on the average annual percent change in the population, resulting from a surplus (or deficit) of births over deaths and the balance of migrants entering and leaving a country. Figure 3-10 displays the CIA World Factbook estimates for Guam's population growth rate from 2000 to 2012.

The figure shows that the growth rate was 2.1 percent at its peak in 2001. However, the growth rate has steadily declined since 2004 and is projected to continue to taper off. While the population has grown from 2000 to 2012, the rate of growth has decreased each year from 2001 to 2012.

Figure 3-10: Guam Population Growth Rate



Source: CIA World Factbook, 2012 (Est.)

Similar to the 60-year trend line analysis, a five year linear regression of annual population growth rates from the CIA World Factbook 2007-2012 estimates was used to estimate an average population growth rate for the forecast period. According to the five year population growth rate trend line, the annual population of Guam will grow at an average rate of about 1.13 percent for 2010 to 2020 and at an average rate of 0.87 percent for 2020 to 2033.

By using the 60-year and five year projected population growth rates and extrapolating those data points for the years 2010 to 2020 and 2020 to 2033, an average growth rate of 1.1 percent is derived for the first decade and an average growth rate of 0.9 percent is derived for years beyond 2020. These projected growth rates were used in the forecast analysis of the Organic Growth Scenario contained in this report. These growth rates do not take into account the military build-up anticipated to begin in 2016. As shown in Table 3-3, these growth rates align closely with the rates estimated by the U.S. Census Bureau in 2008 and in the Guam and CNMI Military Relocation SIAS Report.

Based on the CIA World Factbook estimate of Guam's 2013 population of approximately 160,000, the island's population is expected to reach about 173,000 in 2020 without the military build-up.

Table 3-3: Guam Projected Organic Growth Rates

	2010 – 2020	2020 – 2033
50-Year Trend Analysis Projected Growth Rate	1.09%	.86%
5-Year Trend Analysis Projected Growth Rate	1.13	.87%
Guam and CNMI Military Relocation SIAS Projected Growth Rate [1]	1.18%	NA
2008 U.S. Census Bureau Projected Growth Rate[2]	1.2%	0.9% (2030)
2013 Master Plan Update Projected Organic Growth Rate	1.1%	0.9%

Source: Parsons Brinckerhoff analysis and Guam and CNMI Military Relocation SIAS, Appendix F

[1] Source for population growth without the build-up project is the SIAS Appendix F, Table 2.3-1. Drivers for Deriving Numbers of Permits from Proposed Action (Unconstrained), Population Without Project. Population growth from 180,692 in 2010 to 203,216 in 2020 assumes an annual growth of 1.18 percent. The military population was projected to remain constant.

[2] Guam and CNMI Military Relocation SIAS, Appendix F, Page 3-47.

3.2. CARGO PROJECTIONS

Forecasts of expected volumes of containerized, breakbulk and petroleum cargos to be shipped through the Port over the next 20 years are used as the foundation for this Master Plan Update. Forecasting involves benchmarking against historical trends and performing sensitivity analysis looking forward.

3.2.1. METHODOLOGY

The cargo volumes were forecast based on sustained increases under the Organic Growth Scenario for the anticipated population on Guam and the Micronesian region and supporting three separate scenarios (Organic, Mid Build-up, and Full Build-up) for the proposed military realignment and expansion program on Guam.

3.2.1.1. Military Build-up

As noted previously, the DOD is planning a major military build-up on Guam, which is expected to increase the Port's cargo levels. The build-up will impact cargo volumes in three ways:

- First, during the construction period, DOD contractors will import substantial volumes of materials and supplies. These supplies will come in containerized, breakbulk, and liquid bulk handling modes.
- Second, the DOD will bring in additional active duty personnel and their dependents. This will also increase the flow of household goods, personal vehicles and goods sold at the commissaries and at local businesses. This will primarily impact containerized volumes but will also have an impact on breakbulk and liquid bulk cargos.
- Finally, the build-up will require additional workers from off-island both during and after construction.

The previous Master Plan update, prepared in 2007,[3] included forecasts of cargo due to the DOD military build-up on Guam, and other Guam infrastructure driven by the DPRI. The military build-up was based on information provided by the military at that time. An assessment of spending plans by local government agencies and conditions based on tentative data available in late 2007 provided information for Guam's infrastructure.

At that time, little information was available on the specific buildings or facilities and the extent of the construction work that would be needed for the military base construction project. The program would fund approximately 40 separate military projects. General information was available including budgets established by the U.S. Federal Government and Congressional Authorizations. No information was available on the extent of the horizontal construction, such as acreage, utilities or infrastructure needed to support the proposed facility or project.

[3] Jose D. Leon Guerrero Commercial Port of Guam, Master Plan Update 2007 Report, April 2008.

Representatives from DOD's Joint Guam Program Office (JGPO), Naval Facilities Engineering Command (NAVFAC), and Surface Deployment and Distribution Command (SDDC) worked with the PAG and Parsons Brinckerhoff to further define the various aspects of the build-up. The results of these discussions led to the development of a 2010 report entitled "Cargo Forecast with Military Program Impacts" as a part of the Port of Guam Modernization Program. The report estimated the levels and types of cargo that would have to be imported into Guam in order to support the military build-up and sustain a long-term military relocation.

In 2012, DOD announced a projected downsizing of the military build-up for Guam. The differences in the DPRI program elements in 2010 and 2012 include:

- Six year delay of military build-up program (now starting in 2016) with a two year increase in the build-up duration (from five to seven years)
- 2010-2016 schedule shifted to 2015-2023 with Record of Decision in 2015
- Current planned military build-up approximately 60 percent of original forecast for full relocation
    - 5,000 vs. 8,600 operational marines ≈ 42 percent reduction; applicable to vertical construction and a lesser impact on horizontal construction and equipment requirements for the build-up
    - 1,300 vs. 9,000 dependents ≈ 86 percent reduction
    - 1,666 marines and 1,300 dependents in permanent change of station (PCS) status residing in housing ≈ 83 percent reduction
    - 3,333 marines in rotational status (6 month +/-tours) residing in barracks; a component that will grow
    - Program budget cut from $10.3 billion to $8.6 billion ≈ 17 percent reduction

3.2.1.2. Forecast Scenarios

The cargo volumes are forecasted for three scenarios: Organic Growth (Low), Current (Mid) Build-up and Full (High) Build-up. The Organic Growth Scenario considers that the military build-up will not materialize and the civilian and military populations residing in Guam will increase at an organic rate. The cargo forecast for the Organic Growth Scenario is derived from the assessment of cargo and population trends. The Organic Growth Scenario includes a growth rate of 1.1 percent up to 2019 and 0.90 percent from 2020 onwards as described in Section 3.1.7.

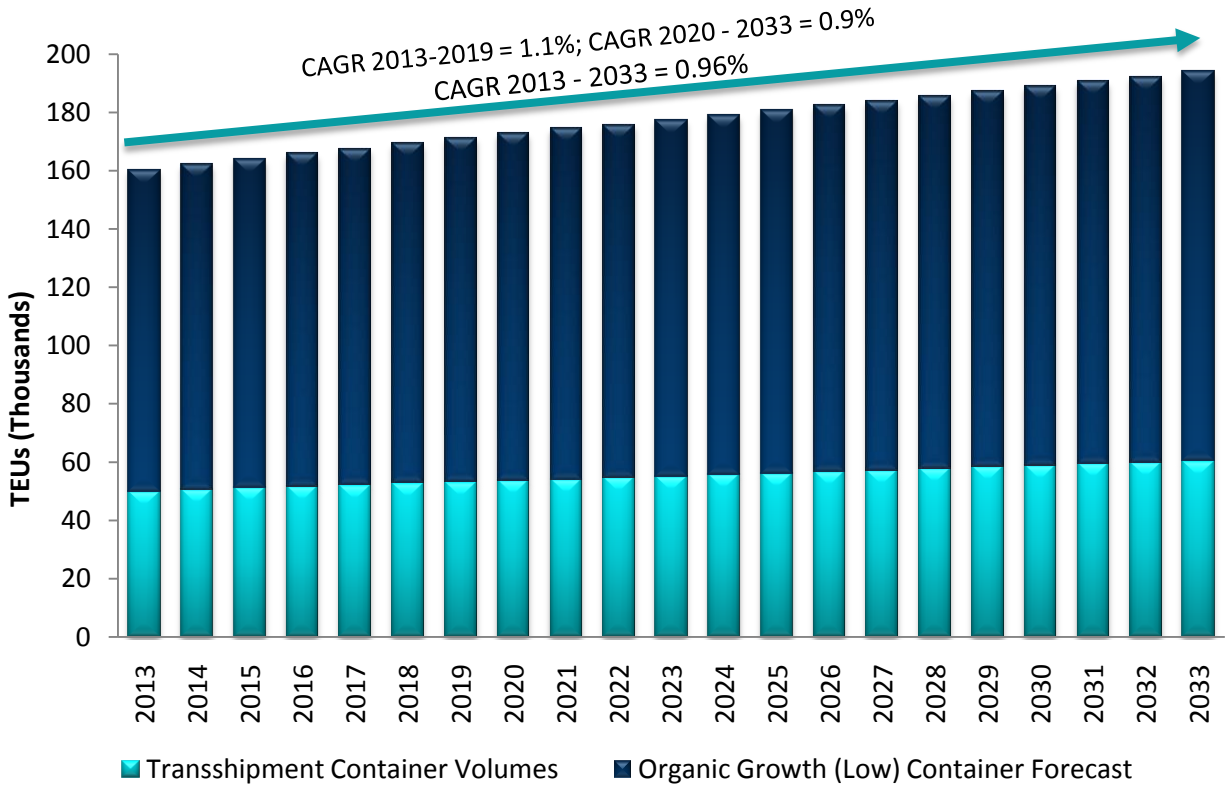
The Mid Build-up Scenario (6,300 military personnel and dependents and $8.6 billion budget) is based on the planned build-up from the 2010 Cargo Forecast with Military Program Impacts report, along with current JGPO estimates reflecting a reduction in the military population base. The cargo volumes for the Current (Mid) Build-up Scenario are 60 percent of the original planned build-up. The Full (High) Build-up Scenario considers that all the military build-up will materialize as previously planned (17,600 military personnel and dependents and $10.3 billion budget). Based on the information from JGPO, the cargo projections for the Full (High) Build-up

and the Current (Mid) Build-up Scenarios were spread over a period of seven years starting from 2016 and peaking at 2022.

3.2.2. Container Cargo Forecast

Figure 3-11 shows the container forecast for the Organic Growth (Low) Scenario from year 2013 to 2033. The containers are projected to increase from about 160,000 TEUs in 2013 to 194,000 TEUs in 2033 with a steady share of transshipment containers at 31 percent.

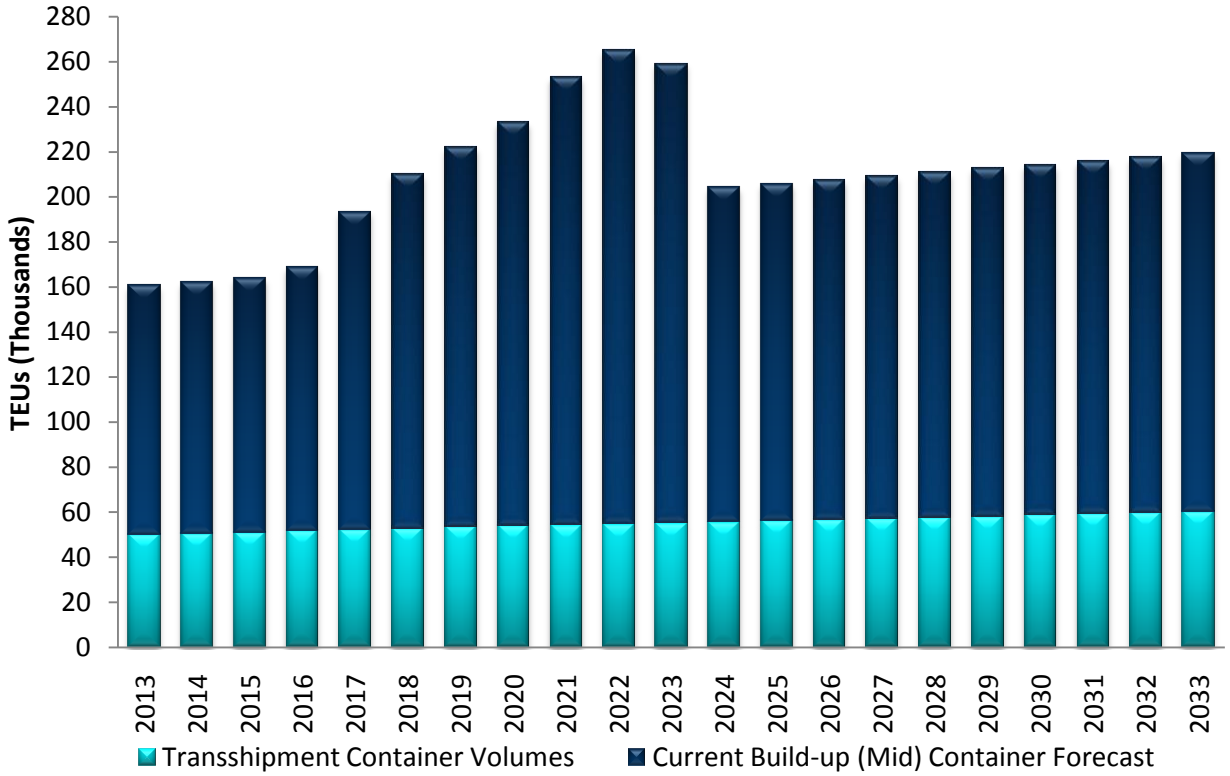
Figure 3-11: Container Forecast – Organic Growth (Low) Scenario



Source: Parsons Brinckerhoff analysis. Data provided by PAG.

Figure 3-12 shows the container forecast for the Current Build-up (Mid) Scenario with the peak volume of cargo occurring during years 2016 through 2022 due to the military build-up. The containers are projected to increase from 160,000 TEUs in 2013 to 265,000 TEUs during the peak build-up in 2022 and then decreasing after the peak to 204,000 TEUs in 2024 and then increasing at the Organic Growth rate to 219,000 TEUs in 2033.

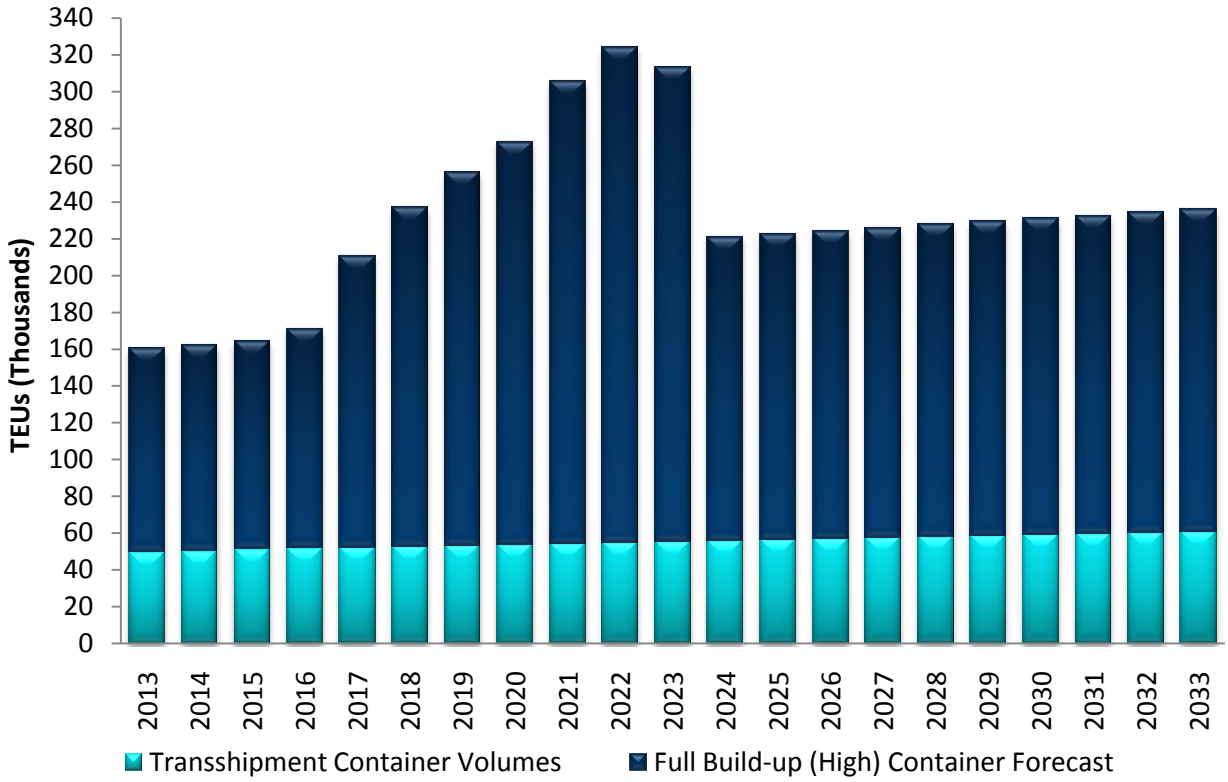
Figure 3-12: Container Forecast – Current Military Build-up (Mid) Scenario



Source: Parsons Brinckerhoff analysis. Data provided by PAG.

Figure 3-13 shows the container forecast for the Full Build-up (High) Scenario. The Full Build-up Scenario has a similar peak period as the Current Build-up (Mid) Scenario with build-up occurring between 2016-2022. The containers are projected to increase from 160,000 TEUs in 2013 to about 324,000 TEUs during the peak of the build-up in 2022 and then decreasing after the peak to 221,000 TEUs in 2024 and then increasing at the Organic Growth rate to 236,000 TEUs in 2033.

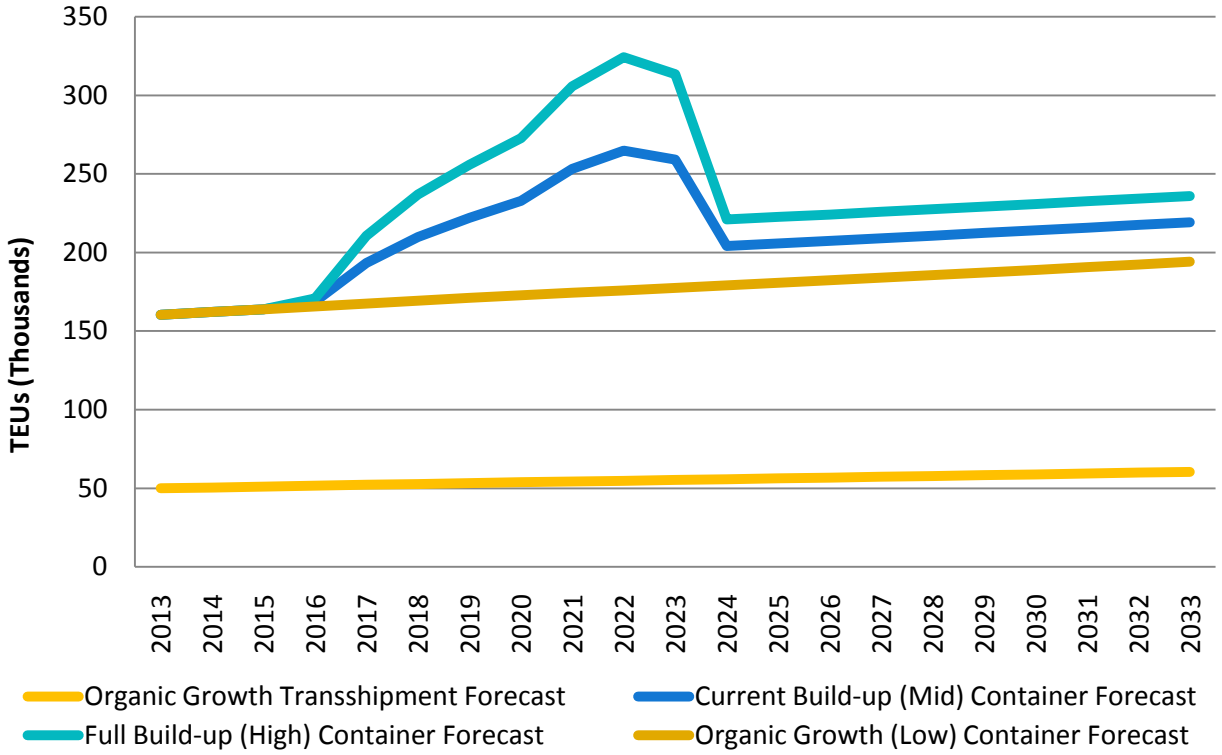
Figure 3-13: Container Forecast – Full Military Build-up (High) Scenario



Source: Parsons Brinckerhoff analysis. Data provided by PAG.

Figure 3-14, shows the comparison between the Organic, Current Build-up and Full Build-up scenarios. Appendix 3-1 provides a yearly breakdown of the container cargo forecasts for the three growth scenarios.

Figure 3-14: Container Forecast – Comparison of Growth Scenarios



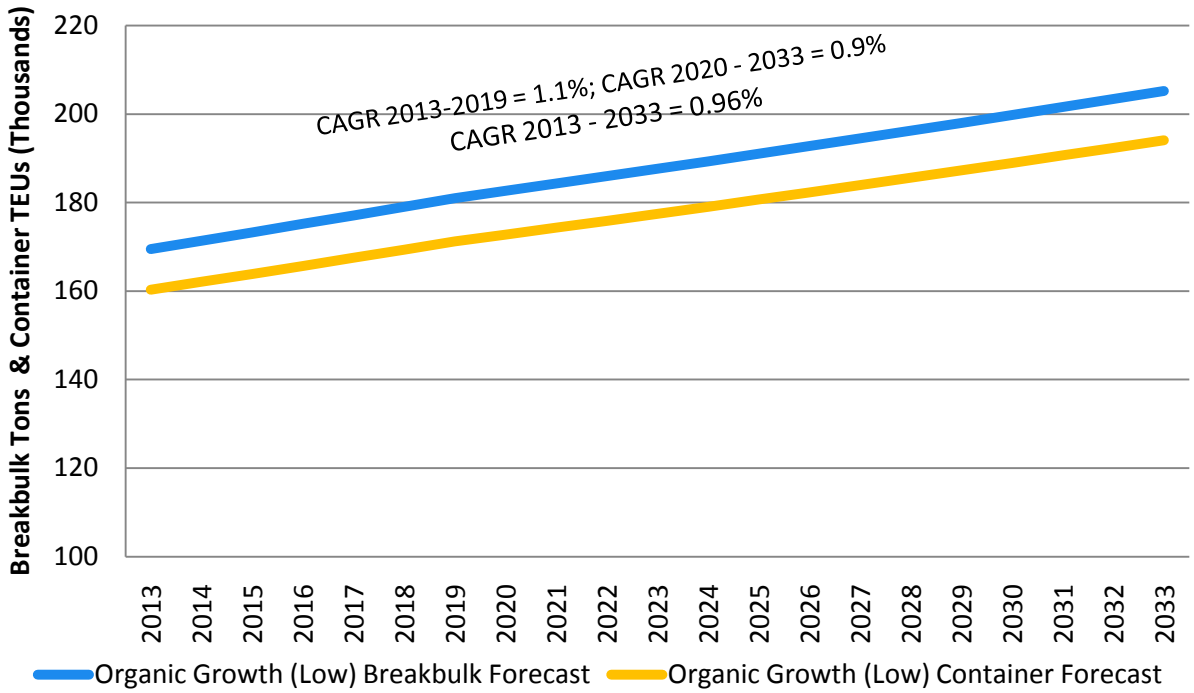
Source: Parsons Brinckerhoff analysis. Data provided by PAG.

3.2.3. Breakbulk Cargo Forecast

The breakbulk cargo volumes are forecasted for the three growth scenarios: Organic, Current Build-up and Full Build-up. The same scenario assumptions used for container volumes were used for breakbulk forecast volumes.

Figure 3-15 shows the Organic Growth (Low) Scenario forecasts for breakbulk cargo and containers between years 2013 and 2033. The breakbulk volumes are forecasted to grow from almost 170,000 tons in 2013 to 205,000 tons in 2033.

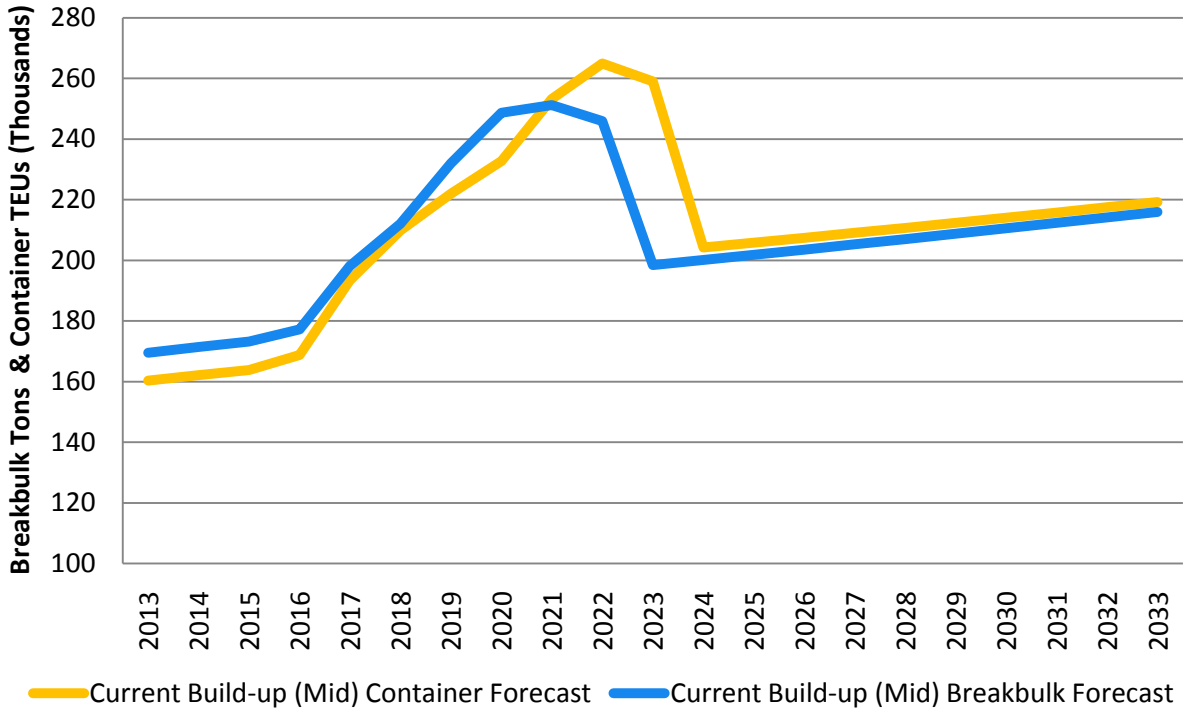
Figure 3-15: Breakbulk and Container Forecast – Organic Growth (Low) Scenario



Source: Parsons Brinckerhoff analysis. Data provided by PAG.

Figure 3-16 shows the Current Build-up (Mid) Scenario forecast for breakbulk cargo and containers. The breakbulk volumes are projected to increase from about 170,000 tons in 2013 to 251,000 tons during the peak build-up in 2021, dropping down to 198,000 tons in 2023 and then increasing at the Organic Growth rate to 216,000 tons in 2033.

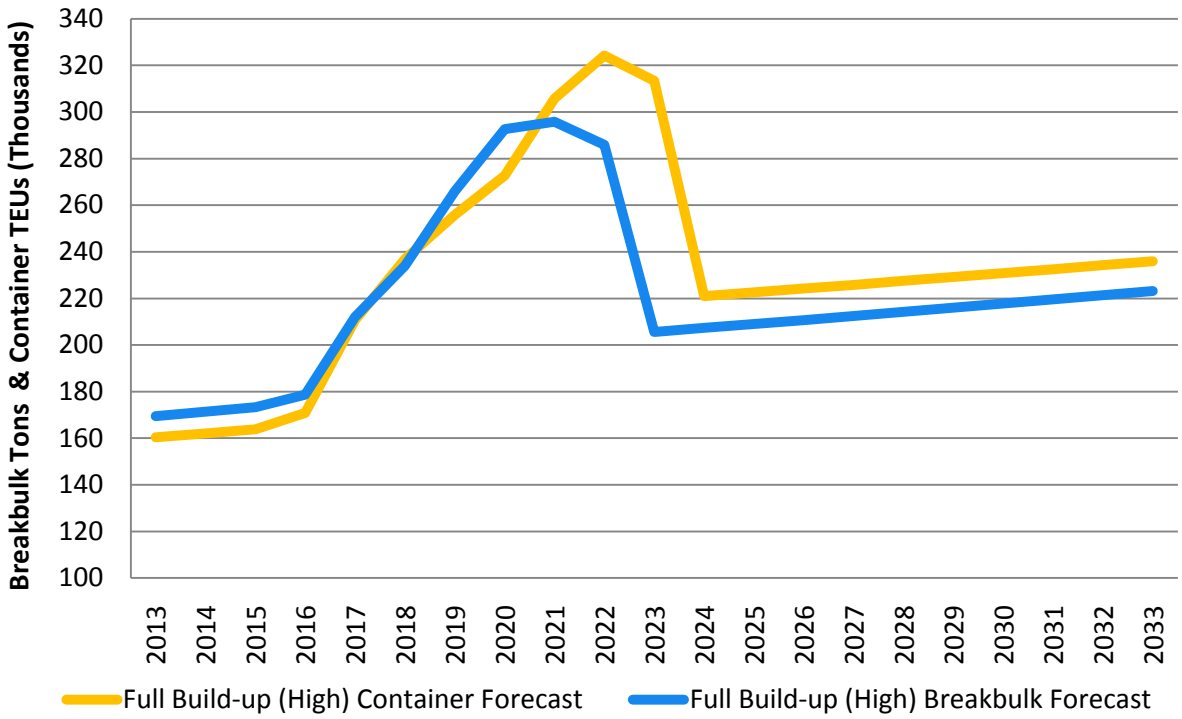
Figure 3-16: Breakbulk and Container Forecast – Current Build-up (Mid) Scenario



Source: Parsons Brinckerhoff analysis. Data provided by PAG.

Figure 3-17 shows the Full Build-up (High) Scenario forecast for breakbulk cargo and containers. The breakbulk volumes are projected to increase from 170,000 tons in 2013 to 296,000 tons during the peak build-up in 2021, dropping down to 207,000 tons in 2023 and then increasing at the Organic Growth rate to 223,000 tons in 2033. Appendix 3-1 provides a yearly breakdown of breakbulk cargo forecasts for the Organic Growth (Low), Current Build-up (Mid) and Full Build-up (High) scenarios.

Figure 3-17: Breakbulk and Container Forecast – Full Build-up (High) Scenario



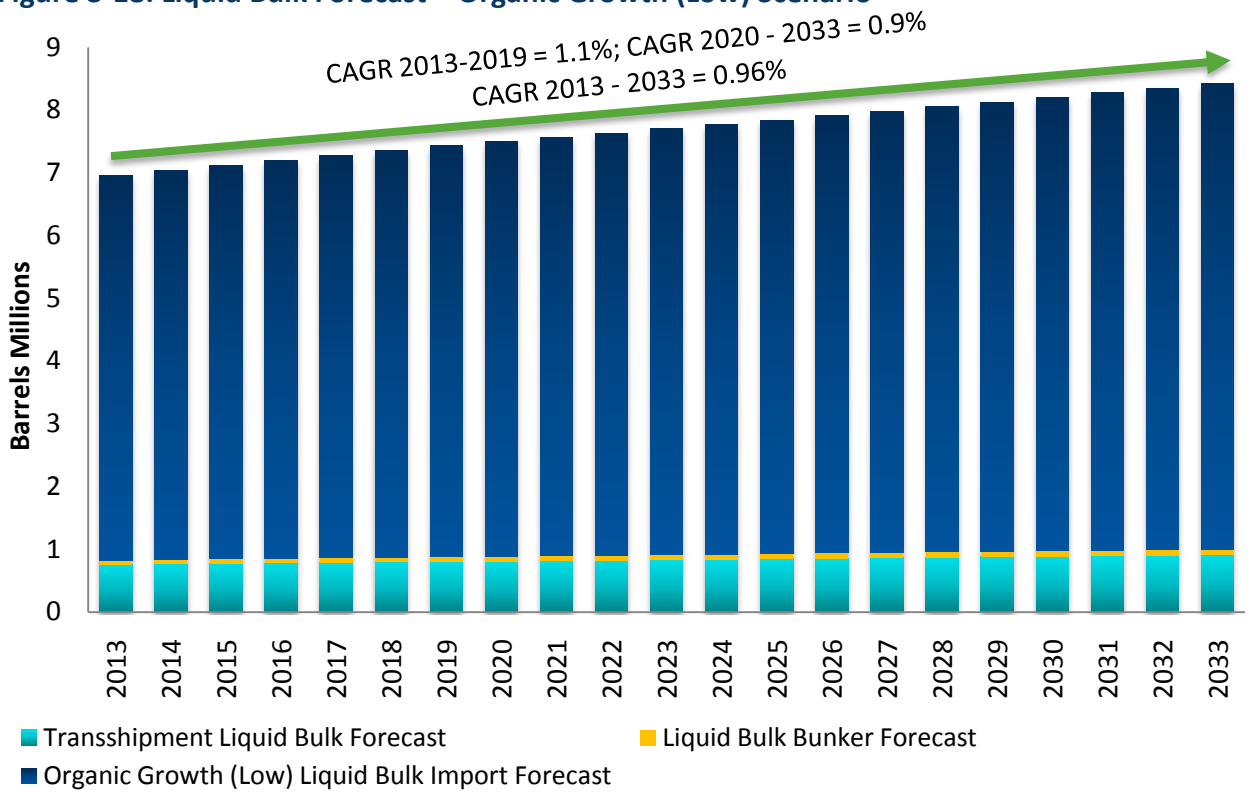
Source: Parsons Brinckerhoff analysis. Data provided by PAG.

3.2.4. Liquid Bulk Cargo Forecast

The liquid bulk cargo volumes were also forecasted for the three growth scenarios: Organic, Mid Build-up and Full Build-up. These petroleum cargos include import and transshipment volumes similar to container and breakbulk but do not include export volumes. Additionally, vessel bunkering volumes are reported because they generate a different type of revenue.

Figure 3-18 shows the Organic Growth Scenario for liquid bulk cargo during years 2013 to 2033. The liquid bulk volumes are forecasted to grow from 6.96 million barrels in 2013 to 8.42 million barrels in 2033.

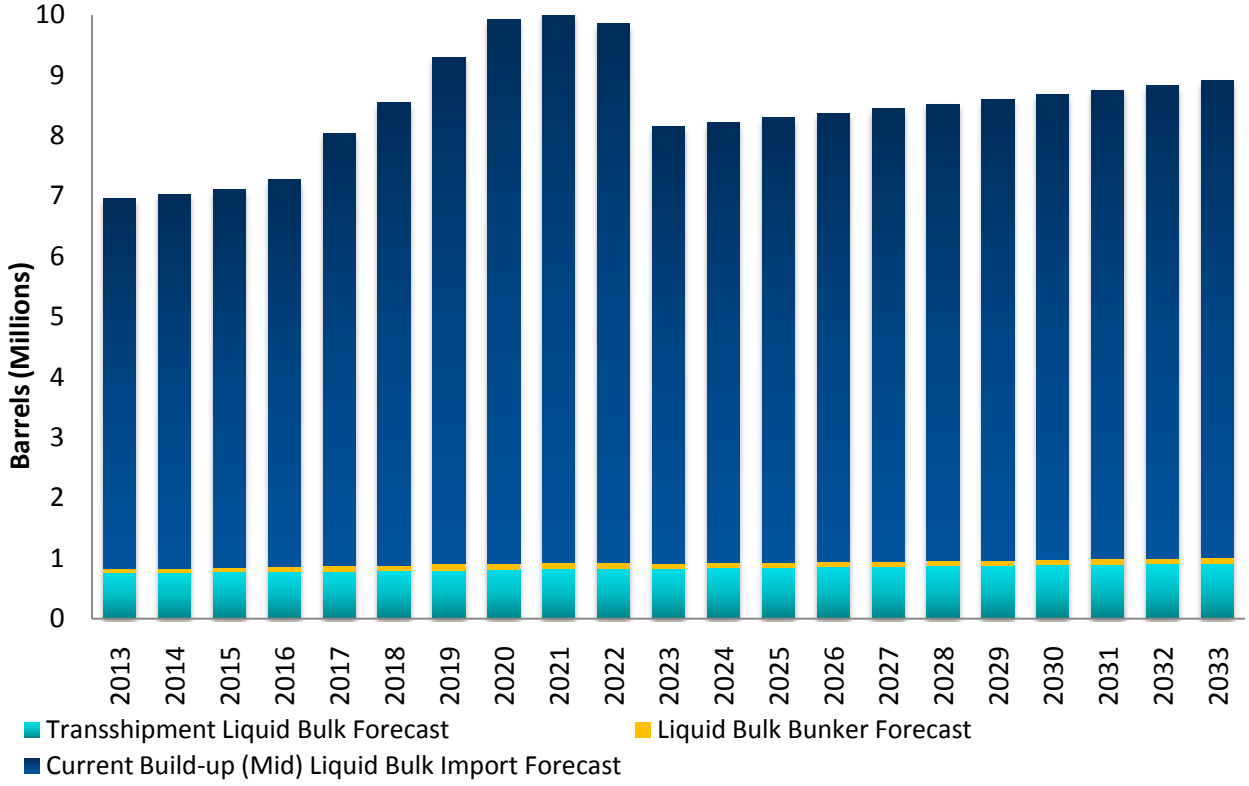
Figure 3-18: Liquid Bulk Forecast – Organic Growth (Low) Scenario



Source: Parsons Brinckerhoff analysis. Data provided by PAG.

Figure 3-19 shows the Current Build-up (Mid) Scenario forecast for liquid bulk cargo between 2013 and 2033. The liquid bulk volumes are projected to increase from 6.96 million barrels in 2013 to 10.03 million barrels during the peak in 2021, dropping down to 8.15 million barrels in 2023 and then increasing at the Organic Growth rate to 8.91 million barrels in 2033.

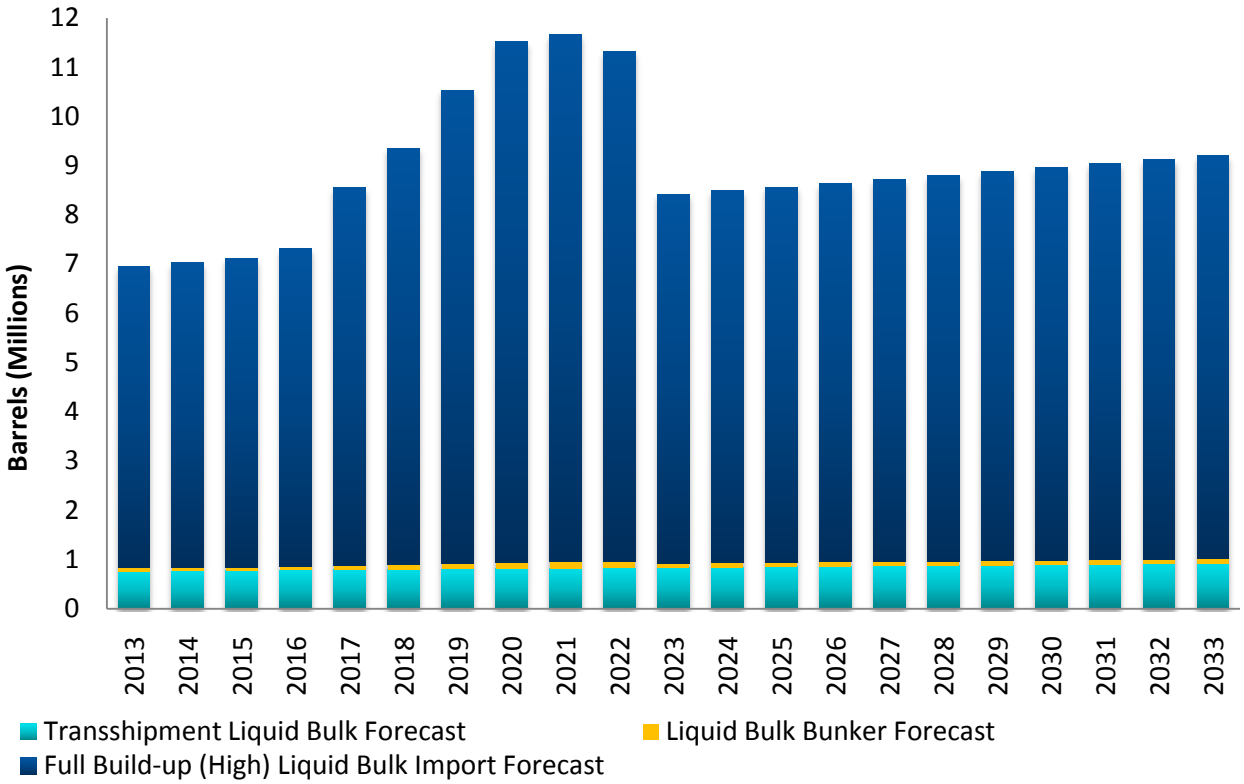
Figure 3-19: Liquid Bulk Forecast – Current Build-up (Mid) Scenario



Source: Parsons Brinckerhoff analysis. Data provided by PAG.

Figure 3-20 shows the Full Build-up (High) Scenario forecast for liquid bulk cargo between 2013 and 2033. The liquid bulk volumes are projected to increase from 6.96 million barrels in 2013 to 11.67 million barrels during the peak in 2021, dropping down to 8.41 million barrels in 2023 and then increasing at the Organic Growth rate to 9.2 million barrels in 2033.

Figure 3-20: Liquid Bulk Forecast – Full Build-up (High) Scenario



Source: Parsons Brinckerhoff analysis. Data provided by PAG.

SECTION 4. CAPACITY & DEMAND ANALYSIS

Using the cargo demand volumes projected in Section 3, a capacity vs. demand analysis was performed for the PAG commercial cargo terminals. In order to make this comparison, a capacity analysis was performed for the following terminal operational components and types of cargo involved:

1. Berth Utilization Analysis: Analysis of the capacity at Berths F-4 to F-6 to determine the potential requirement of additional wharf/berth needs or confirmation of the existing capacity being able to accommodate the future growth.
2. Crane Operation and Capacity: Estimation of the ship to shore crane capacity to verify that crane productivity will not impact the results reported in the berth utilization study.
3. Breakbulk and Container Yard Operation and Capacity: Estimation of the area required to store both breakbulk and container cargo types against the cargo demand forecasts to identify the requirements. These requirements were then compared to the combined breakbulk and container terminal demand forecasts to identify required improvements needed to meet future demand. This analysis is the basis for verifying the modernization program and identifying future needed improvements.
4. Gate Operation and Capacity

Each capacity analysis and key findings are described below and provide an indication of how the Port will accommodate cargo demand once the modernization program is completed. Note: The liquid bulk and cement terminals are leased to private operators and, therefore, not included in this analysis. Requirements for those terminals are included in Section 5.

4.1. BERTH UTILIZATION ANALYSIS

A berth occupancy analysis model was developed to investigate ongoing berthing activities. The model calculates berth utilization as the ratio of berth availability (hours of operations x total berth length) to berth occupancy (vessel time at berth x length of berth occupied).

Berth utilization is a type of “berth occupancy” percentage that is calculated daily and weekly. The following variables were used to calculate the berth utilization percentage:

- Type of vessel
- Vessel length overall (LOA)
- Time and day of arrival
- Time and day of departure
- Amount of cargo transferred

The desired weekly berth utilization range is between 60 percent and 65 percent to sustain efficient operations on a 2-3 berth mixed-use marginal wharf that serves vessels of lengths ranging from 200 feet to 750 feet LOA. Said differently, a berth such as F4, F5 and F6 subjected to a utilization rate over 65 percent will result in some vessel delays.

4.1.1. Assumptions & Methodology

The berth occupancy analysis was based on data supplied by PAG operations reports and shipping lines to formulate assumptions ultimately used as inputs in the model. The following assumptions are fixed for the various phases that were modeled:

- Berth length: 1,950 feet
- TEU to Container Ratio: 1.7
- Berth Operating Times
    - Days per week: 5
    - Weeks per year: 52
    - Non-working days per year: 2 (as per Port's berth holiday schedule)
- Crane productivity: varies for different vessels (average productivity for each vessel was calculated from the data provided by PAG).
- An additional total tie-down length of 75 feet beyond LOA has been assumed for each vessel
- Matson Navigation vessels have priority and their vessels are served first. If one of these vessels is delayed, it will be worked prior to berthing the next vessel unless another berth is available for simultaneous vessel service.

A sample of 2013 vessel call data was provided by PAG for this analysis. The data shows that Matson Navigation, Super Shuttle, MELL, and Kyowa along with MSA Pacific Condor call weekly. Breakbulk and Ro/Ro vessels such as Ambyth Green Point, ISS Transfuture and MSA Brussel call once a month. The remaining vessels call on a random schedule. For this analysis, existing vessel calls for a typical week were considered. That vessel schedule was then converted to a peak week that assumed all the vessels (including random calls) were calling on the same week. Table 4-1 includes a list of the typical vessels that call the port and their individual LOAs.

Table 4-1: PAG Vessel Information

Vessel	LOA (ft)
Matson Navigation	712
Marianas Express Line (MELL)	529
Kyowa Shipping	386
Ambyth (Swirl)	607
Seabridge	200
MSA (Brussel)	568
ISS (Transfuture)	656
Ambyth (Waterman)	590

Source: Parsons Brinckerhoff analysis. Data provided by PAG.

The largest vessels currently calling at the Port are container ships with a capacity of 2,600 TEUs and an average design draft of approximately 34 feet. The vessels arrive light-loaded and are serviced at the Port's Berths F4 to F6, which have a depth of 34 feet. In 2012, the average weekly cargo payload utilized 75 percent of the vessel. To accommodate increased cargo demand, vessel carriers have the option of using excess capacity on current vessels in service, deploying larger vessels and/or increasing the number of vessels in a service. Larger containerships (4,000 TEUs) currently in the global fleet are able to be serviced at the Port's berths with the current depth. For this analysis, it has been assumed that during peak demand, additional cargo volumes would be carried by additional ship deployed by a new major competitive shipping line.

The analysis assumes that Berths F4 to F6 are fully operational and not down due to ongoing construction activity on the wharf. Currently scheduled SLE Projects (cathodic protection, fender repairs, concrete repairs) are expected to be accomplished near-term and the planned wharf replacement is scheduled beyond 2033.

4.1.2. SCENARIOS

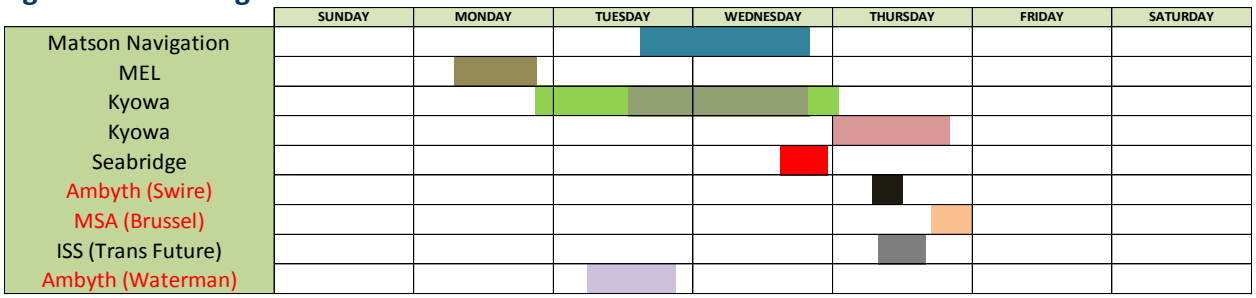
The berth utilization analysis was performed for existing, the Organic Growth (Low) Scenario, the Current Build-up (Mid) Scenario and the Full Build-up (High) Scenario to identify any existing or future potential capacity constraints at the wharf. The following variables are defined in each scenario:

- Cargo Transfer – Amount of cargo transferred from vessel to wharf and vice versa (based on the future forecasted volumes)
- Vessel Berth Duration – Total amount of time each vessel spends at the wharf (based on the berth productivity and future forecasted volumes)

4.1.2.1. Existing Scenario

An existing berth utilization analysis for the peak week was performed and included the typical vessels that call at Berths F-4 to F-6. The peak week assumed that all vessels called on the same week (Figure 4-1). Vessels operated by Matson, MELL, Kyowa and ISS are generally on schedule. The vessels that are not regularly scheduled, which are operated by Ambyth and MSA, are shown in red. As Matson and Kyowa are working in partnership, the Kyowa vessel arriving on Monday stays at the berth until Matson vessel completes its operation on Tuesday in order to pick-up transshipment containers. During this time, berth is available if other vessels arrive.

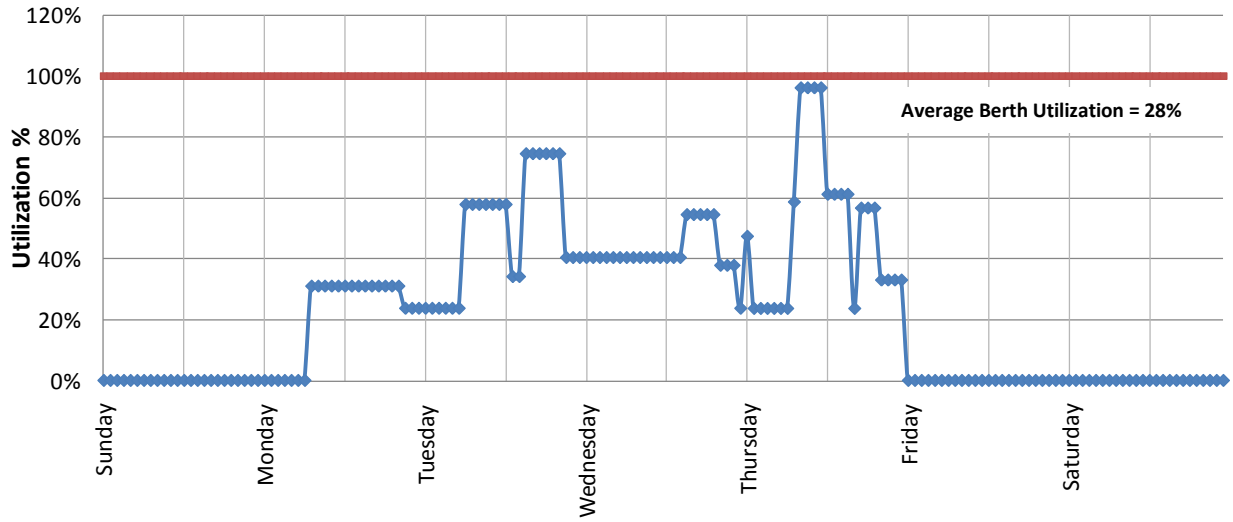
Figure 4-1: Existing Scenario – Peak Week Vessel Schedule



Source: Parsons Brinckerhoff analysis. Data provided by PAG.

Figure 4-2 shows the hourly berth utilization during the peak week for the existing scenario. The average weekly berth utilization for the peak week is 28 percent.

Figure 4-2: Existing Scenario – Peak Week Hourly Berth Utilization



Source: Parsons Brinckerhoff Analysis. Data provided by PAG.

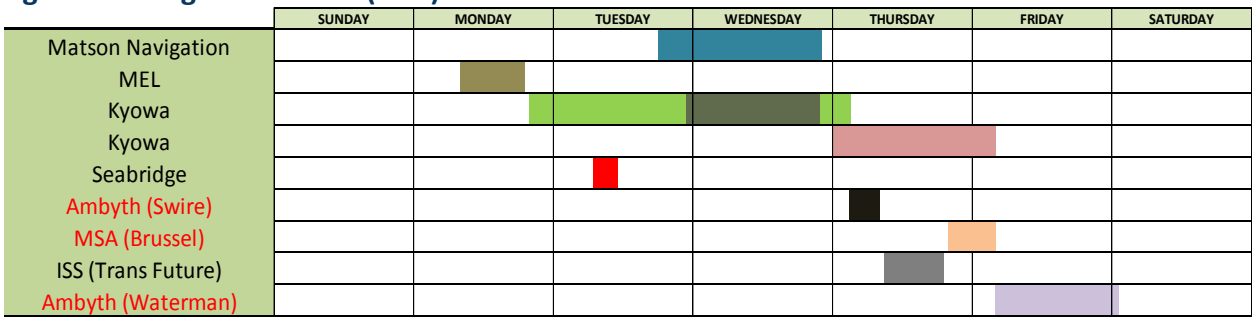
4.1.2.2. Organic Growth (Low) Scenario

The berth utilization analysis for the Organic Growth (Low) Scenario was performed for the peak demand forecast year of 2033. That year was forecasted at 219,000 TEUs of container cargo and 210,000 tons of breakbulk cargo. Forecasted demand for breakbulk and container cargo was used to estimate the cargo per vessel during the peak year. During the peak year (2033), the container cargo arriving on the Matson vessel is estimated to average approximately 2,200 TEUs. This represents 85 percent utilization of the Matson vessel currently calling at the Port.

Hours of operation for each vessel were calculated using the estimated cargo per vessel (container or tons) and crane productivity. The crane productivity was used to calculate the time spent at berth for each vessel. The vessels were scheduled by maintaining arrival times as much as possible and adjusting some call windows in order to accommodate all vessels without exceeding 100 percent berth utilization at any hour.

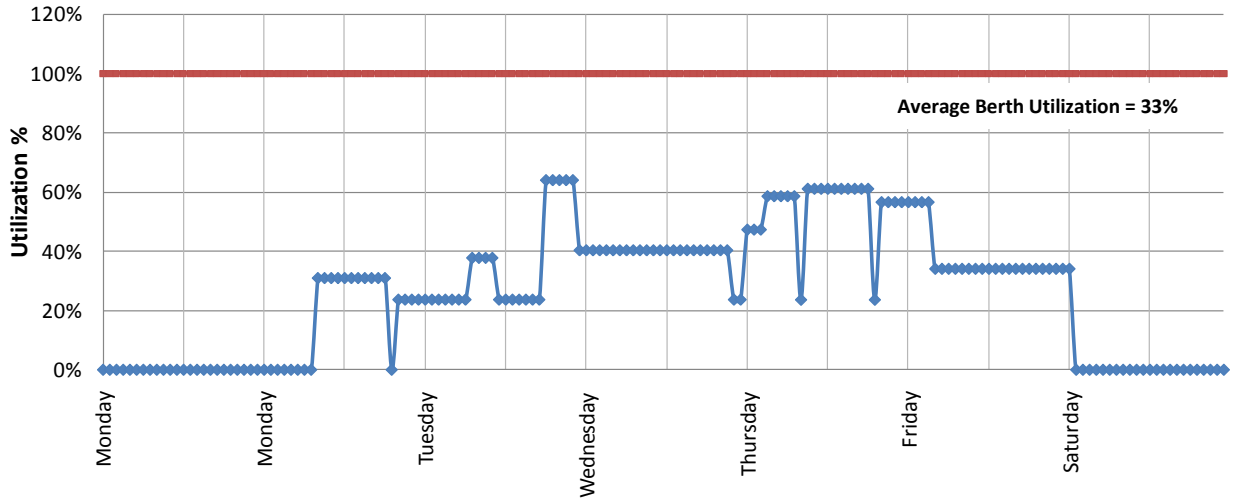
The overall weekly berth utilization of approximately 33 percent was observed for this scenario. Figures 4-3 and 4-4 include the vessel schedule and berth utilization for the Organic Growth (Low) Scenario. In order to accommodate a maximum of two vessels at the berth, the schedule was revised to shift the Super Shuttle to Tuesday and Ambyth Waterman to Friday.

Figure 4-3: Organic Growth (Low) Scenario – Peak Week Vessel Schedule



Source: Parsons Brinckerhoff analysis. Data provided by PAG.

Figure 4-4: Organic Growth (Low) Scenario – Peak Week Hourly Berth Utilization



Source: Parsons Brinckerhoff analysis. Data provided by PAG.

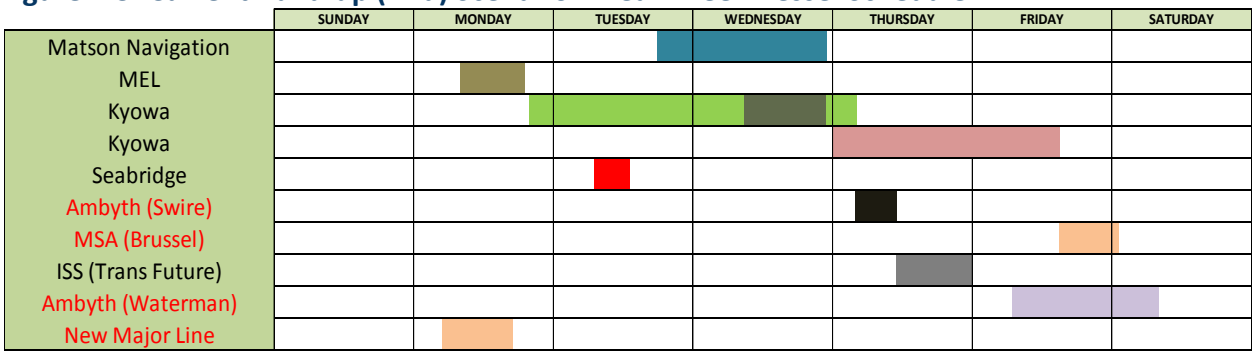
4.1.2.3. Current Build-up (Mid) Scenario

The berth utilization analysis for this scenario was performed for the container and breakbulk combined peak year in 2022. This year includes a demand forecast of 265,000 TEUs of container cargo and 248,000 tons of breakbulk cargo. While these are not the highest individual container or breakbulk forecasted annual volumes, they represent the highest combined cargo type volumes and represent the year that Berths F-4 through F-6 will be the most congested.

Forecasted demand for breakbulk and container cargo was used to project the cargo per vessel during the anticipated future peak year. Hours of operation for each vessel were calculated using an estimation of cargo transfer per vessel (containers or tons) and average crane productivity. The estimated vessel operating hours were used to calculate the time spent on berth for each vessel. The vessels were scheduled in order to accommodate all vessels without

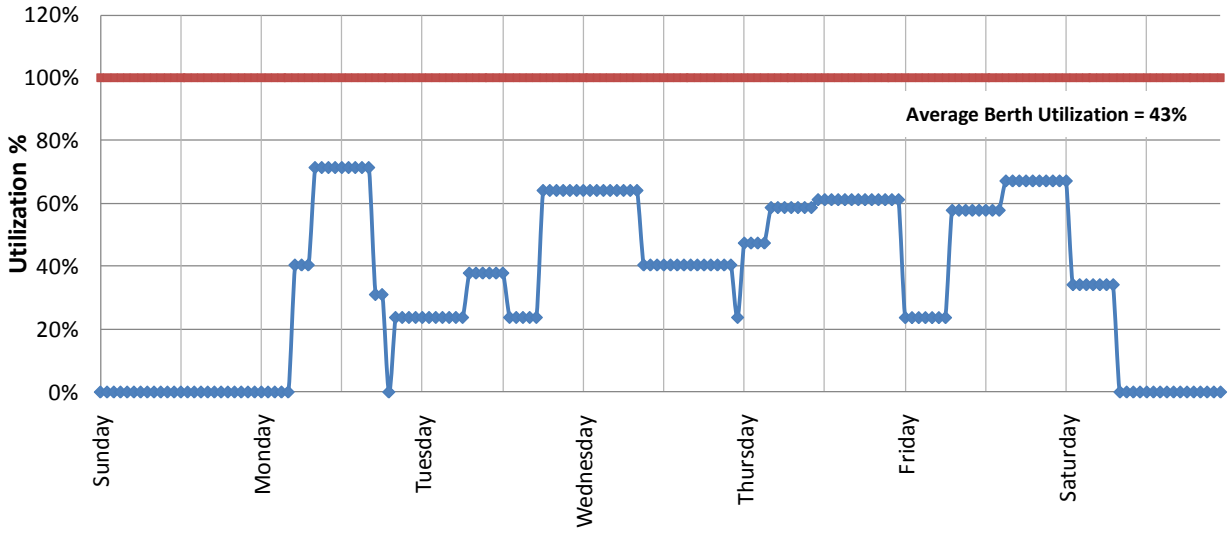
exceeding 100 percent berth utilization at any time. As the demand increases, the vessels will carry more cargo; however it is assumed that a new major line vessel will be added by the shipping lines to accommodate the extra cargo. The overall weekly berth utilization of approximately 43 percent was estimated for this scenario. Figures 4-5 and 4-6 show the vessel schedule and berth utilization for current build-up scenario.

Figure 4-5: Current Build-up (Mid) Scenario – Peak Week Vessel Schedule



Source: Parsons Brinckerhoff analysis. Data provided by PAG.

Figure 4-6: Current Build-up (Mid) Scenario – Peak Week Berth Utilization



Source: Parsons Brinckerhoff analysis. Data provided by PAG.

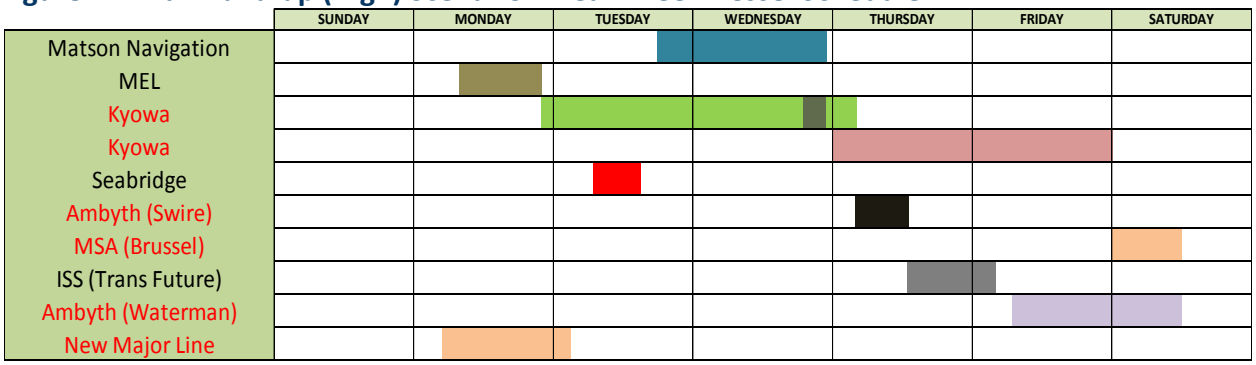
4.1.2.4. Full Build-up (High) Scenario

Similar to the previous scenarios, a berth utilization analysis for the high forecasted volume scenario was performed for the container and breakbulk extreme year 2022. That peak year has a demand forecast of 324,000 TEUs of container cargo and 297,000 tons of breakbulk cargo.

Forecasted demand for breakbulk and container cargo was used to project the cargo per vessel during the peak year. Hours of operation for each vessel were calculated using cargo per vessel (container or tons) and crane productivity. The operating hours were used to calculate the time spent at berth for each vessel. The vessels were scheduled in order to accommodate all vessels

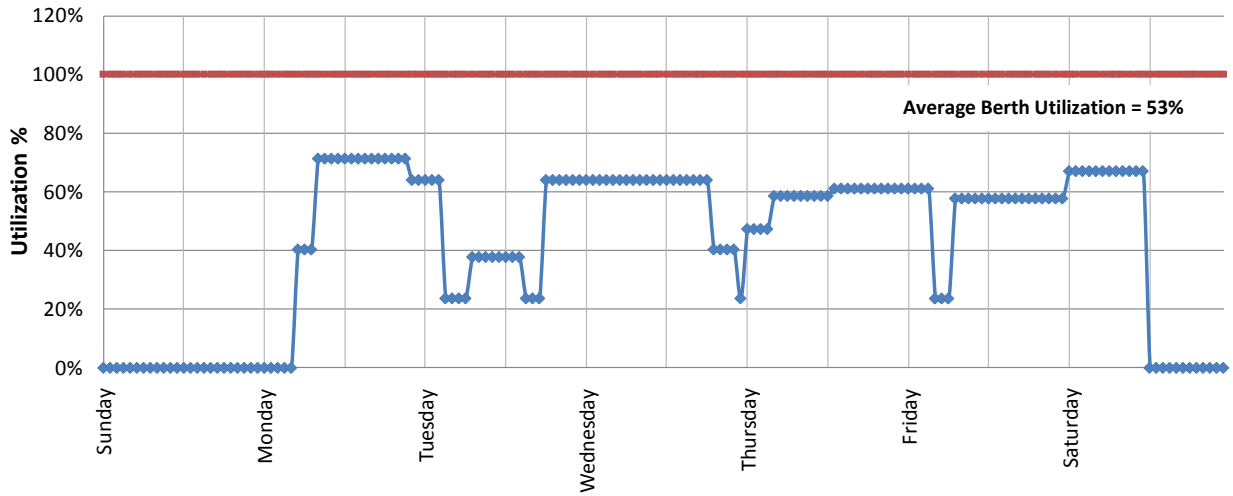
without exceeding 100 percent berth utilization at any time during the peak week. Where possible, vessel arrival times were held constant and the departure times were extended. An average weekly berth utilization of approximately 52 percent was observed for the peak year in 2022. Figures 4-7 and 4-8 show the vessel schedule and berth utilization for the Full Build-up Scenario.

Figure 4-7: Full Build-up (High) Scenario – Peak Week Vessel Schedule



Source: Parsons Brinckerhoff analysis. Data provided by PAG.

Figure 4-8: Full Build-up (High) Scenario – Peak Week Berth Utilization



Source: Parsons Brinckerhoff analysis. Data provided by PAG.

This berth occupancy analysis confirms that it is possible for PAG to provide sufficient berth capacity to handle the peak cargo volumes and vessel schedules for all the peak week scenarios. The peak week average berth utilization will increase to approximately 43 percent during the peak year of the anticipated Current Build-Up (Mid) Scenario and approximately 52 percent during the peak year of the Full Build-Up (High) Scenario. Both well within the 65 percent threshold of the F-4 to F6 berths/wharf.

During the peak periods, the container cargo arriving on the Matson vessel is estimated to average approximately 3,100 TEUs for the mid and 3,800 TEUs for the high scenarios. It is anticipated that a major line will deploy new containerships that will be handling the additional

capacity. Table 4-2 includes the berth occupancy analysis results for all scenarios along with the forecasted cargo demand.

Table 4-2: Summary of Berth Utilization Analysis

Scenario	Year	Forecast		Average Peak Week Berth Utilization
		Container (TEU)	Breakbulk (Tons)	
Existing	2013	160,000	170,000	28%
Organic Growth (Low)	2033	219,000	210,000	33%
Current Build-up (Mid)	2022	265,000	248,000	43%
Full Build-up (High)	2022	324,000	297,000	53%

Source: Parsons Brinckerhoff analysis

4.2. Crane Operation & Capacity

PAG has four ship-to-shore cranes currently in operating condition. In order to analyze the crane capacity, the following additional assumptions were considered:

- TEU to Container Ratio: 1.71
- Berth Operating Times
    - Days per week: 5
    - Weeks per year: 52
    - Non-working days per year: 2 (as per Port's berth holiday schedule)
- Crane downtime: 5 percent
- Average productivity: 22 lifts/hour

Based on the above assumptions, the unconstrained crane capacity for the cargo terminal is 539,000 TEUs per year. The container forecast for Full Build-Up (High) Scenario has a peak demand of 324,000 TEUs, which is about 60 percent of the crane capacity. Therefore, crane productivity will not limit berth capacity as described in the berth utilization analysis in Section 4.1. The excess crane capacity will be used for transferring the portion of breakbulk cargo that is not Ro/Ro and does not require ships gear for handling.

4.3. Breakbulk Yard Operation & Capacity

Breakbulk cargo does not consist of a standardized unit like containers. Commodities such as steel plates, rebar, pipes, scrap metal, cement bags and aggregates are examples of breakbulk cargo. Breakbulk cargo generally requires a large amount of open or covered space for storage. PAG stores its breakbulk cargo on the west side of the terminal behind Berth F-4. This area currently has approximately 7.7 acres of open storage area available for breakbulk storage. Upon completion of the PMP improvements in 2016 that are described in Section 5, nine acres of open storage area will be available for breakbulk storage. Forklifts are used to handle palletized or unitized cargo in the yard, while front loaders handle aggregates and Ro/Ro cargo is driven on and off the vessels by operating staff.

4.3.1. Assumptions & Methodology

A breakbulk storage capacity analysis was performed based on the demand forecast described in Section 3.2.3. PAG currently handles and is forecasted to handle different types of cargo classified as breakbulk cargo including:

- Aggregate
- Asphalt
- Cement Bags
- Pipe
- Bulk Scrap Metal
- Heavy Lift
- Lift On Autos
- Pre-slung
- Roll-on / Roll-off (Ro/Ro)
- Ro/Ro Vehicles
- Unitized

Storage area requirements for these different types of cargo were calculated using a combination of the existing method of storage and the proposed terminal improvements (i.e. expansion of open storage area after the demolition of Warehouse 2). Table 4-3 includes assumptions for storage area requirements as well as cargo type and circulation area assumptions.

Table 4-3: Storage Assumptions for Breakbulk Cargo

Cargo Type	Storage Density	Ft^2 per Ton	Circulation Area (% of Storage Area)	Type
Aggregate	70%	5	100%	Open
Asphalt	70%	16	30%	Either
Cement Bags	70%	13	30%	Covered
Pipe	70%	63	50%	Open
Bulk Scrap Metal	70%	10	100%	Open
Heavy Lift	70%	137	60%	Open
Lift On Autos	70%	129	30%	Open
Pre-slung	70%	6	50%	Open
Ro/Ro	70%	147	25%	Open
Ro/Ro Vehicles	70%	129	30%	Open
Unitized	80%	56	50%	Either

Source: Parsons Brinckerhoff analysis and Industry Standards

A peak two-week period of breakbulk cargo volumes was modeled to determine the average daily area requirements anticipated during peak volume years. The following existing operating data for vessel schedules and cargo tonnage were used to prorate the volume of cargo handled on each weekly vessel call during each peak week scenario:

- Ships are serviced 7 days a week
- Gate is open 5 days per week
- A peak week cargo volume factor of 1.5 was used
- Some cargo arriving late in the week departs the following week

4.3.2. SCENARIOS

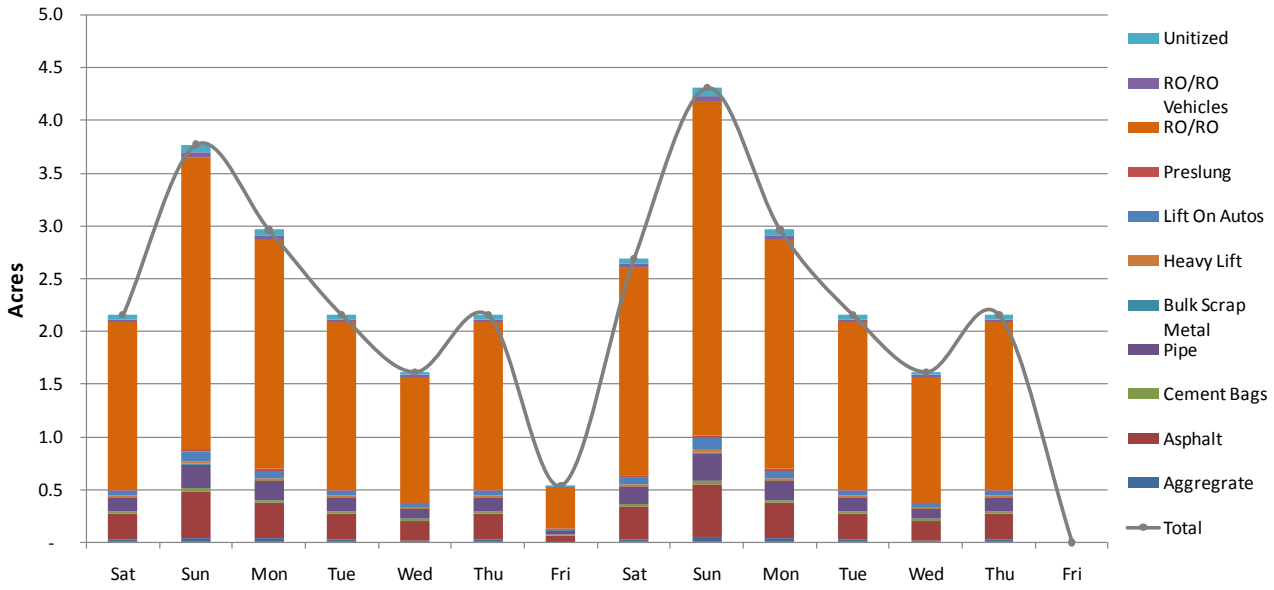
Similar to the cargo forecast scenarios and the berth occupancy analysis, this breakbulk storage area capacity analysis section also investigated three scenarios: Organic Growth (Low), Current Build-up (Mid) and Full Build-up (High). The Current (Mid) and Full (High) Build-up scenarios are further divided into stages to illustrate different operating conditions experienced during the military build-up.

- Stage 1: Start of military build-up in 2016
- Stage 2: Breakbulk peak year 2021
- Stage 3: Highest container and breakbulk volume (combined peak) 2022
- Stage 4: Planning horizon 2033 volume

4.3.2.1. Existing and Organic Growth (Low) Scenario

PAG handled about 168,000 tons of breakbulk cargo in 2012. About three acres of storage area is required to handle this amount of cargo. The peak year of organic growth occurs in 2033 with a forecasted cargo of approximately 205,000 tons. Approximately 4.3 acres of storage area will be needed during the year 2033 in which the breakbulk cargo will be highest for the Organic Growth (Low) Scenario. The current breakbulk storage area is sufficient to handle the existing and projected peak cargo demand under the Organic Growth (Low) Scenario. Figure 4-9 shows the area requirement for low case for two week peak period that year.

Figure 4-9: Breakbulk Peak Year (2033) Storage Requirement – Organic Growth Scenario

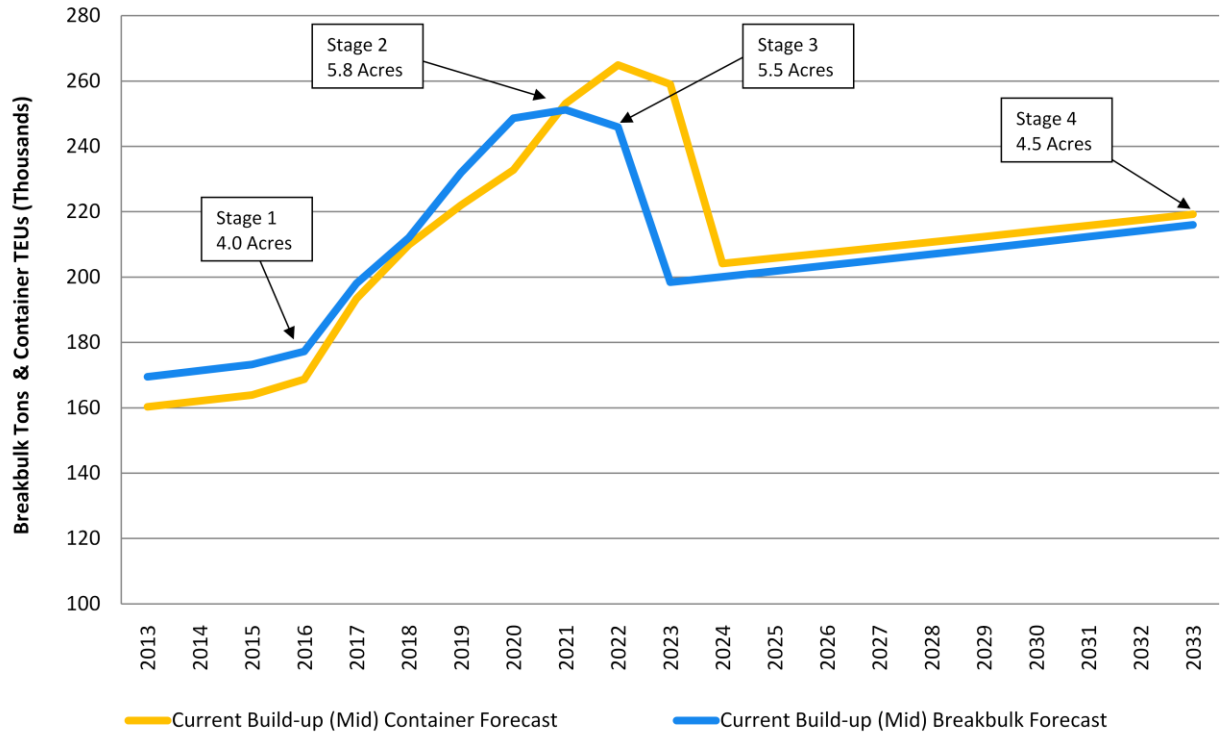


Source: Parsons Brinckerhoff analysis

4.3.2.2. Current Build-up (Mid) Scenario

Figure 4-10 depicts the PAG forecast for breakbulk and container cargo for the Current Build-up (Mid) scenario and the points at which each breakbulk stage occurs. These four stages have been established to look at different volumes/years that need to be accommodated in the terminal.

Figure 4-10: Breakbulk and Container Cargo Forecast – Current Build-up (Mid) Stages



Source: Parsons Brinckerhoff analysis

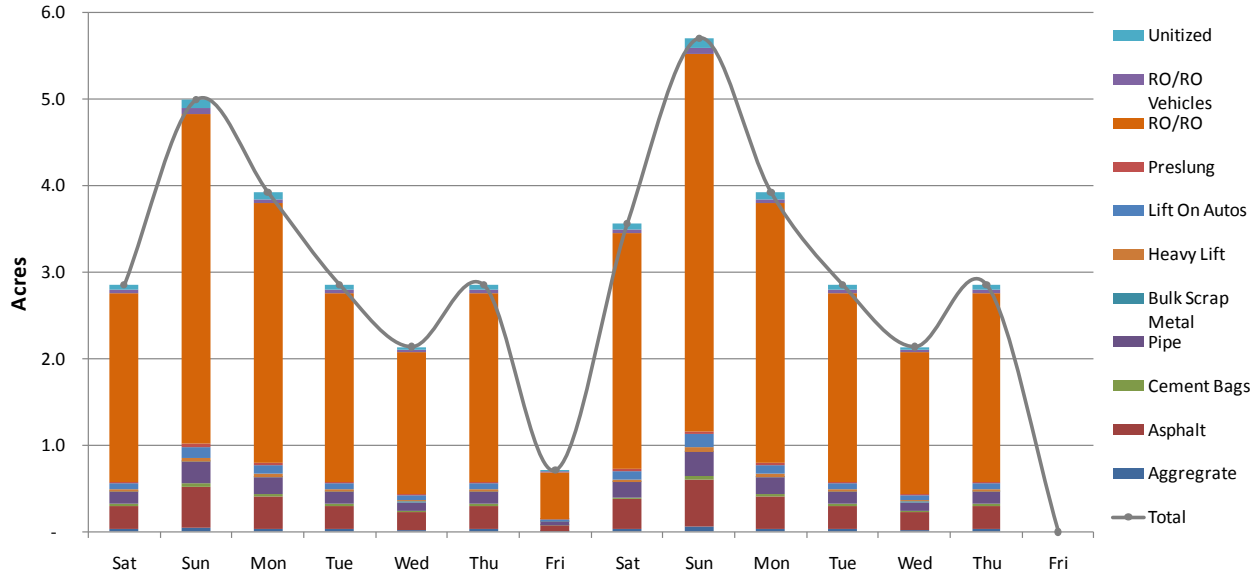
Start of Military Build-up in 2016 (Stage 1)

The military build-up is anticipated to begin in year 2016 and the breakbulk forecast includes approximately 178,000 tons. Approximately four acres of storage area will be required during peak breakbulk operations for this year.

Breakbulk Peak Year 2021 (Stage 2)

This stage considers the highest volume of breakbulk cargo in 2021 with at least 251,000 tons. Figure 4-11 shows a summary of storage area needed by commodity type for the peak two-week peak period that year. The analysis was run for a two week period and shows that the required storage area does not exceed six acres to handle the peak day breakbulk cargo storage needs. This storage area could increase to eight acres if the shipping orders are condensed and contractors are late to pick up cargo. The nine acres of open storage area available in 2016 for breakbulk storage at the west end of the terminal behind Berth F-4 will be sufficient to handle the forecasted cargo for the peak year.

Figure 4-11: Breakbulk Peak Year (2021) Storage Requirement – Stage 2



Source: Parsons Brinckerhoff analysis

Extreme Container and Breakbulk Volume 2022 (Stage 3)

This stage considers the forecasted breakbulk cargo of 246,000 tons in year 2022, which corresponds to the time when breakbulk volume is starting to decrease and container volume is at its peak, resulting in the highest volumes of all cargos at the port. Approximately 5.5 acres of storage area will be needed for this stage.

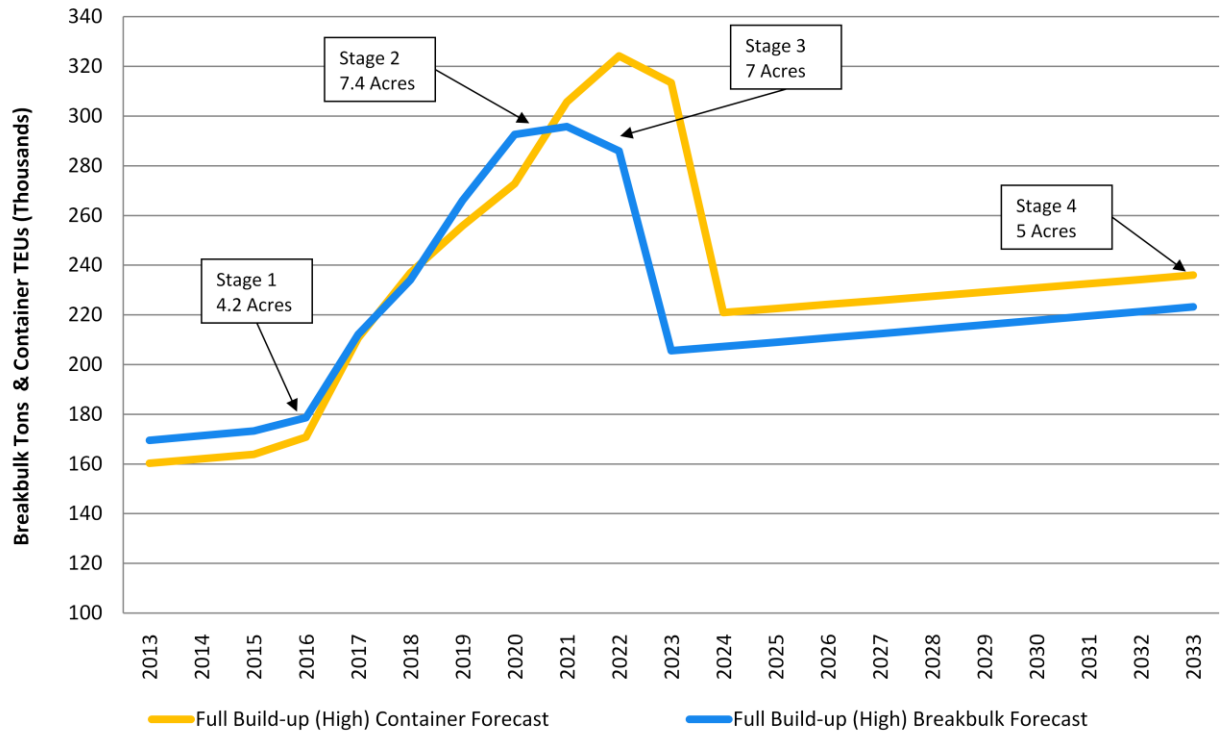
Planning Horizon 2033 Volume (Stage 4)

This stage considers the forecasted breakbulk cargo of 216,000 tons in year 2033, the last year of the planning horizon. After the build-up peak is over, the cargo volumes drop down and start increasing to the Organic Growth rate. Hence, there will be reduced cargo volumes as compared to the peaks in Stages 2 and 3. Approximately 4.5 acres of storage area will be needed for this stage.

4.3.2.3. Full Build-up (High) Scenario

Similar to the Current Build-up (Mid) Scenario, the Full Build-up (High) Scenario was also considered in the same four stages. Figure 4-12 includes the PAG forecast for breakbulk and container cargo for Full Build-up (High) Scenario and identifies when the four stages occur.

Figure 4-12: Breakbulk and Container Cargo Forecast –Full Build-up (High)



Source: Parsons Brinckerhoff analysis

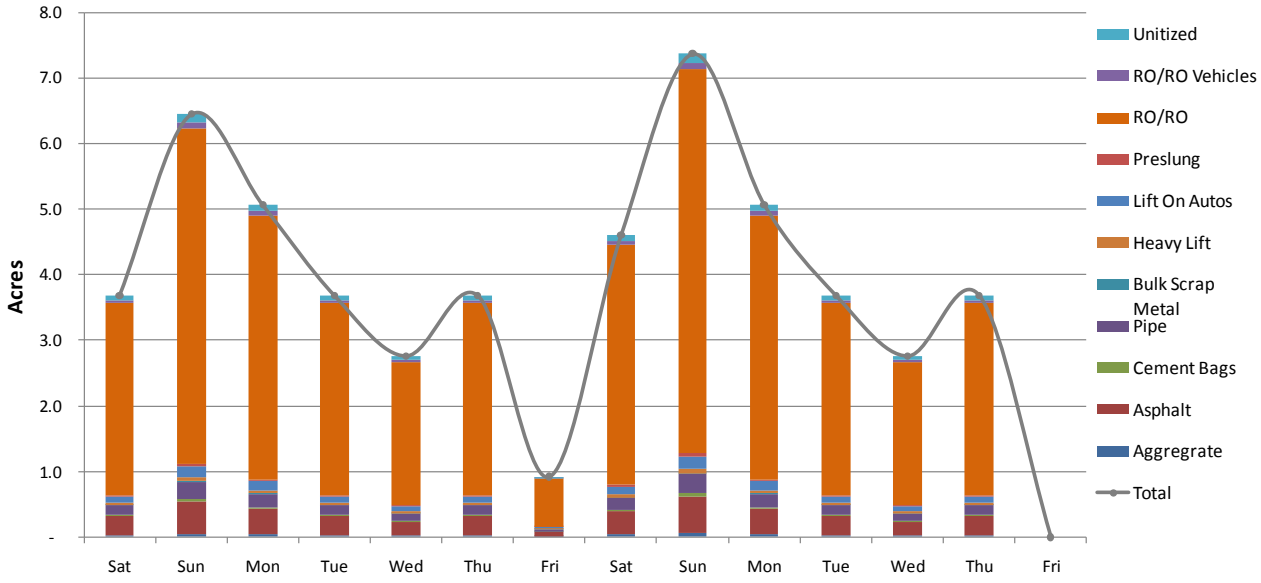
Start of Military Build-up in 2016 (Stage 1)

The military build-up will start in year 2016 and the breakbulk forecast considers the cargo yielding approximately 179,000 tons. Approximately 4.2 acres of storage area will be needed for this year.

Breakbulk Peak Year 2021 (Stage 2)

This stage considers the peak breakbulk cargo volume in 2021 forecasted at 296,000 tons. Figure 4-13 shows a summary of daily storage area needed by different commodity types for the two-week peak period that year. The breakbulk analysis identified that approximately 7.4 acres of storage area will be needed to handle the peak cargo volume. This storage area could increase to nine acres if the shipping orders are condensed and customers are late to pickup cargo at the Port. The storage area required for Stage 1 can be addressed with the breakbulk storage area of nine acres to be available in 2016.

Figure 4-13: Breakbulk Peak Year (2021) Storage Requirement – Stage 2



Source: Parsons Brinckerhoff analysis

Extreme Container and Breakbulk Volume 2022 (Stage 3)

This stage considers the forecasted breakbulk cargo of 286,000 tons in year 2022 which corresponds to the time when breakbulk volume is starting to decrease and container volume is at its peak, resulting in the highest volumes of all cargos at the Port. Approximately seven acres of breakbulk storage area will be needed for this stage.

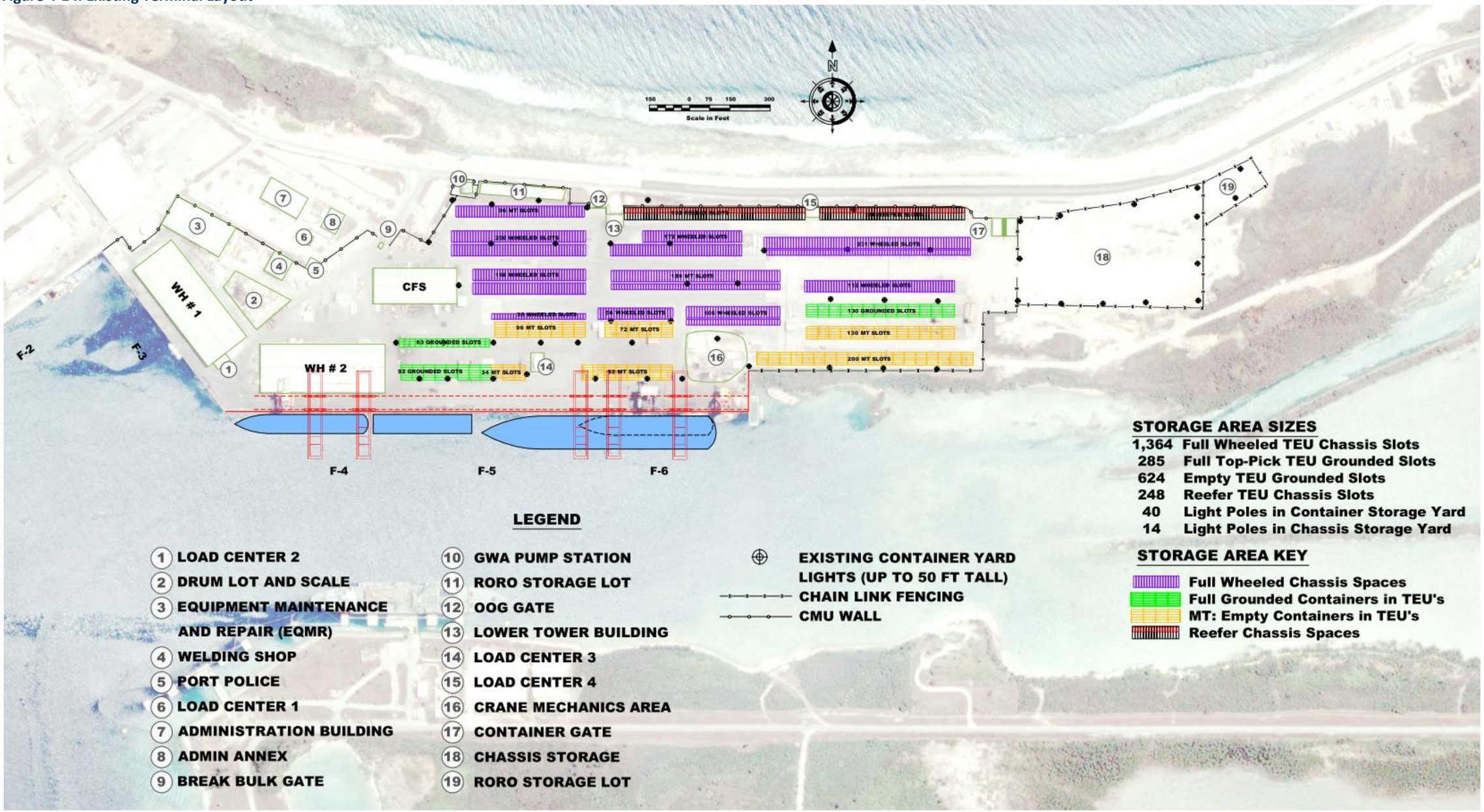
Planning Horizon 2033 Volume (Stage 4)

This stage considers the forecasted breakbulk cargo of 223,000 tons in year 2033 which is the last year of the planning horizon. After the build-up peak is over, the cargo volumes drop down and start growing at the Organic Growth rate. Hence, there will be reduced cargo volumes as compared to the peak. Approximately five acres of storage area will be needed for this stage.

4.4. CONTAINER YARD OPERATIONS & CAPACITY

Container yard operations require specialized equipment used to lift containers to/from the ship and in the storage yard. PAG currently has four ship-to-shore cranes that are used to lift the containers to/from the ship. The containers, once lifted from the ship, are then placed on chassis, which are moved by off-road terminal vehicles called yard dogs. Once on the chassis, these containers can either be stored on the chassis in a designated area or they can be removed and then stacked on the ground using a top pick. Currently, empty and transshipment containers at the cargo terminal are stacked on the ground (grounded). Refrigerated containers are placed on chassis and are stored near reefer plugs. All other loaded containers are either placed on chassis or are grounded. Figure 4-14 shows the current layout of container storage (chassis and stacking) at the cargo terminal.

Figure 4-14: Existing Terminal Layout



Source: Parsons Brinckerhoff analysis

4.4.1. ASSUMPTIONS & METHODOLOGY

When considering a container terminal's capacity, a variety of values can be used. Before capacity can be estimated and used for planning purposes, it must be defined. The primary capacity values to consider include:

Maximum Practical Capacity (MPC): The practical upper limit of a terminal's ability to handle cargo demand is referred to as MPC. This capacity level is constrained by infrastructure, equipment and/or operating capabilities. For planning purposes, MPC represents the highest level of throughput that a terminal can handle for a short period of time. MPC is difficult to maintain over long periods of time and can result in inefficient/costly operations requiring re-handling and other work-around techniques. Operating a terminal at MPC can substantially increase equipment maintenance, labor and energy/fuel costs to a level that can exceed profitability. For planning purposes, MPC is the upper threshold for triggering marine terminal improvements.

Sustainable Practical Capacity (SPC): The SPC is the capacity at which improvements should be considered and generally ranges between 70 percent and 90 percent of MPC. When comparing capacity to projected throughput demand, a more aggressive demand curve (i.e., +/- 15 percent growth rate) requires the use of 70 percent to 80 percent MPC for the SPC value while a lower projected demand curve (i.e., one to five percent growth rate) would use 80 percent to 90 percent of MPC. When a terminal has reached the SPC, otherwise known as the "trigger point", this signals the time when terminals should begin the planning, design, equipment procurement or operation modification/technology acquisition process for improvements. For planning purposes in this analysis SPC has been estimated at 90 percent of MPC.

The military construction program is planned to occur over a 6-7 year period at the beginning of the project life, and is responsible for the significant projected increase in container demand. The container storage yard's existing MPC cannot meet the projected demand for the mid and high forecast, and therefore will undergo operational modifications to increase MPC. Peak container cargo demand occurs in year 2022.

Key container capacity model inputs were collected through interviews, questionnaires and historic operating data collected by PAG along with industry expertise. The following input variables are fixed for analyzing each scenario:

- TEU to Container Ratio: 1.71
- Storage Yard Operating Times
  - Days per week: 5
  - Weeks per year: 52
  - Non-working days per year: 11 (as per Port's yard and gate holiday schedule)
- Peak to Average Throughput Ratio: 1.2
- Monthly Peaking Occurrence: 15 percent

- Container Dwell Times:
  - Full container dwell time average: 6.0 days
  - Empty container dwell time average: 4.5 days
  - Reefer container dwell time average: 1.7 days
  - Transship container dwell time average: 2.2 days

The Port has the option of charging demurrage on containers stored in the yard after a certain time period in order to reduce container dwell times, particularly during peak demand periods. However since the Port does not have plans to alter its demurrage rules, it has been assumed that dwell times will remain constant for this analysis. The following assumptions are variable and are identified in the analysis of each scenario:

- Throughput – percentage of annual forecasted container volumes allocated to each storage mode
- Ground Slots – Number of ground slots (measured in TEU) for each storage mode: grounded, chassis, loads and empties
- Container Stacking Heights – Maximum height of container storage
  - Chassis/loads: 1 high
  - Reefer: 1 high (on chassis)
  - Top pick/loads: 3 high
  - Empty: 3 high
- Container Storage Utilization – Percentage of storage space that is used at any given time

4.4.2. SCENARIOS

Similar to the container cargo forecast analysis, this capacity analysis is divided into three scenarios: Organic Growth (Low) Scenario, Current Build-up (Mid) Scenario and Full Build-up (High) Scenario.

4.4.2.1. Existing Throughput Capacity

The existing capacity reflects PAG's current conditions as of 2013. The Port's current throughput capacity was analyzed based on the data received from PAG and using the above stated assumptions. Table 4-4 shows the breakdown of the existing cargo terminal total ground slots (TGS). The container yard has an existing MPC of 204,000 TEUs per year and a SPC of 184,000 TEUs per year.

Table 4-4: PAG Existing Terminal Ground Slots

Storage Type	TEU TGS
Full Wheeled Chassis Slots	1,364
Full Top-Pick Grounded Slots	285
Empty Grounded Slots	624
Reefer Chassis Slots	238

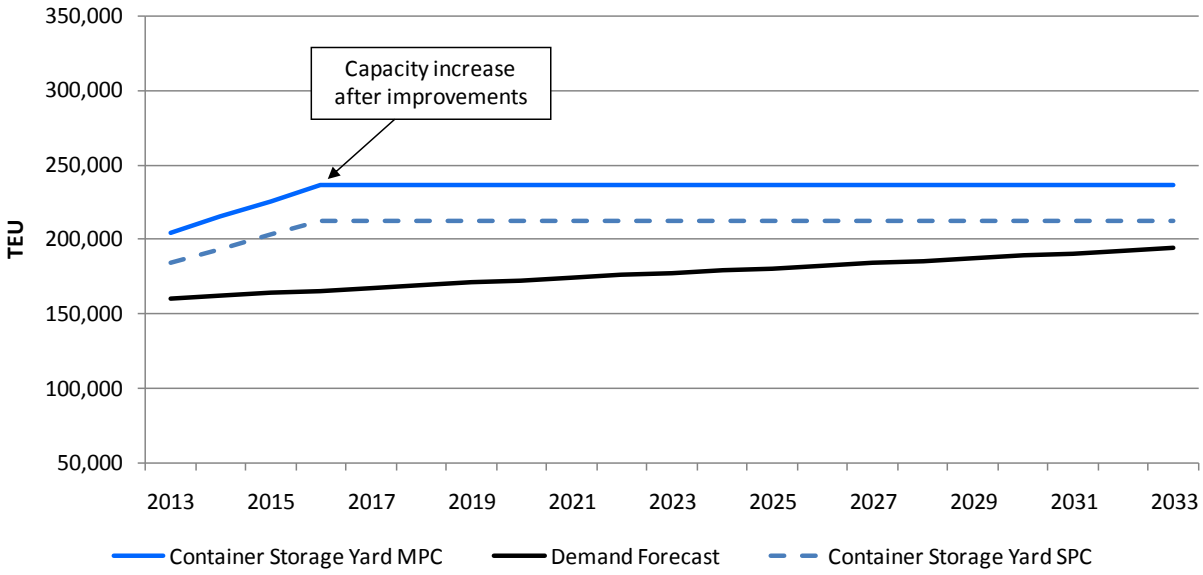
Source: Parsons Brinckerhoff analysis

4.4.2.2. Organic Growth (Low) Scenario

The Organic Growth (Low) Scenario analyzes the capacity requirement of the container terminal to accommodate the organic growth container forecast. Terminal improvements are planned throughout the terminal and an expanded storage area is planned in the eastern section of the terminal, which will be completed in 2016. These improvements will add 292 TGS for wheeled storage and 152 TGS for empty storage over a three-year span (2014-2016). The peak for Organic Growth (Low) Scenario will require a throughput capacity of 194,000 TEUs in 2033.

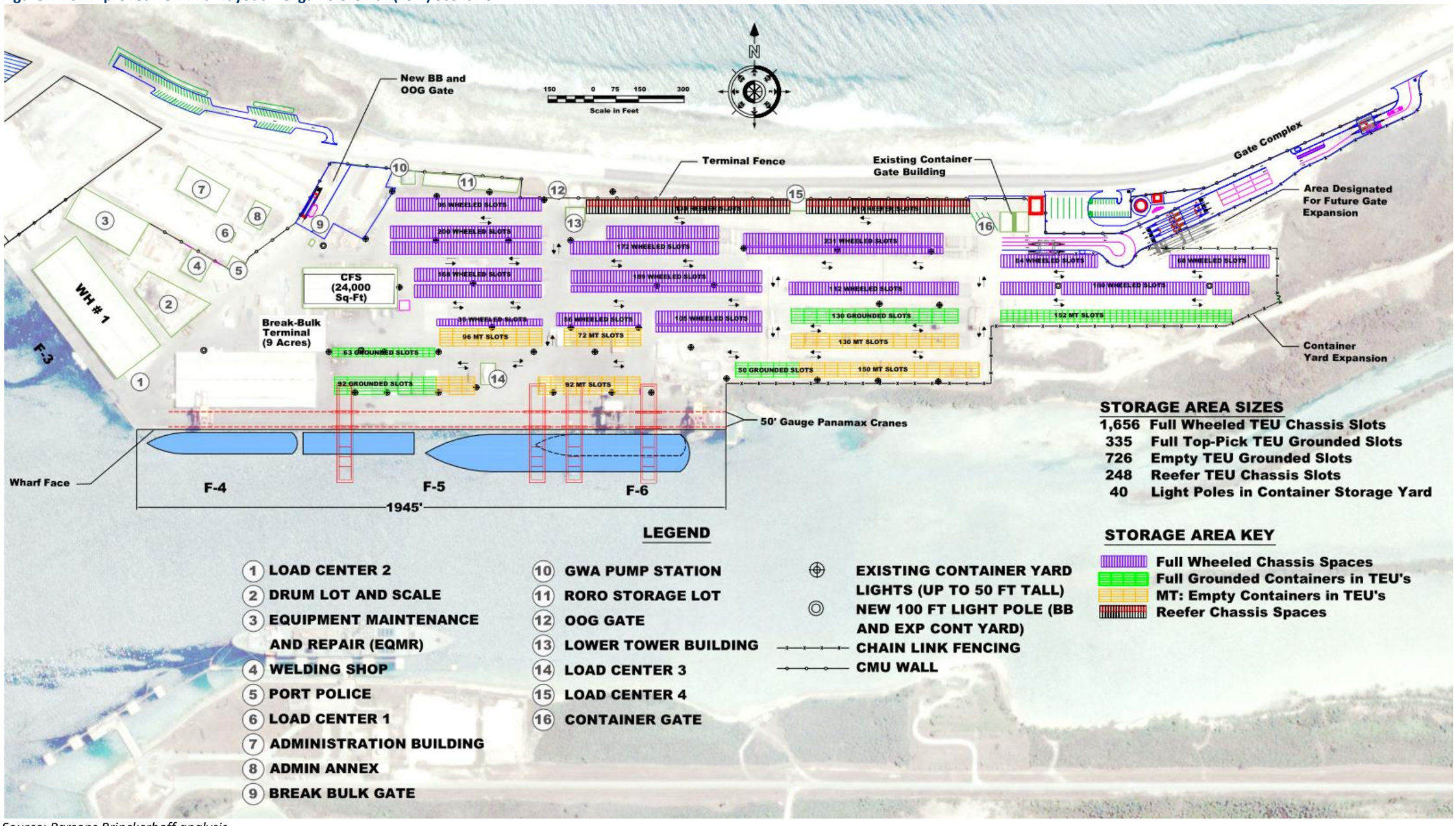
Once the PMP improvements are completed, the terminal will have a MPC of 236,000 and a SPC of 212,000. Figure 4-15 shows the capacity vs. demand chart for the Organic Growth (Low) Scenario and includes the capacity increases that will occur due to the planned modernization program between now and 2016. Figure 4-16 shows the terminal layout after the improvements are completed.

Figure 4-15: Capacity vs. Demand – Organic Growth (Low) Scenario



Source: Parsons Brinckerhoff analysis

Figure 4-16: Improved Terminal Layout – Organic Growth (Low) Scenario



Source: Parsons Brinckerhoff analysis

4.4.2.3. Current Build-up (Mid) Scenario

This scenario analyzes the capacity requirement of the container terminal to accommodate the container forecasts under the Current Build-up (Mid) Scenario. The peak container demand is anticipated to occur in 2022, which will require a throughput capacity of 265,000 TEUs per year. Existing yard capacity is not sufficient to handle the forecasted volumes. Hence, conversion from wheeled slots to grounded slots will be required to increase the yard capacity to accommodate forecasted volumes. These changes will be done as required and are divided into the following stages.

Stage 1: Terminal Improvements

Terminal improvements associated with the modernization plan will be completed as described in Section 5. These improvements will add 292 TGS for wheeled storage and 152 TGS for empty storage over a three year period (2014-2016).

Stage 2: Wheeled to Grounded Conversion

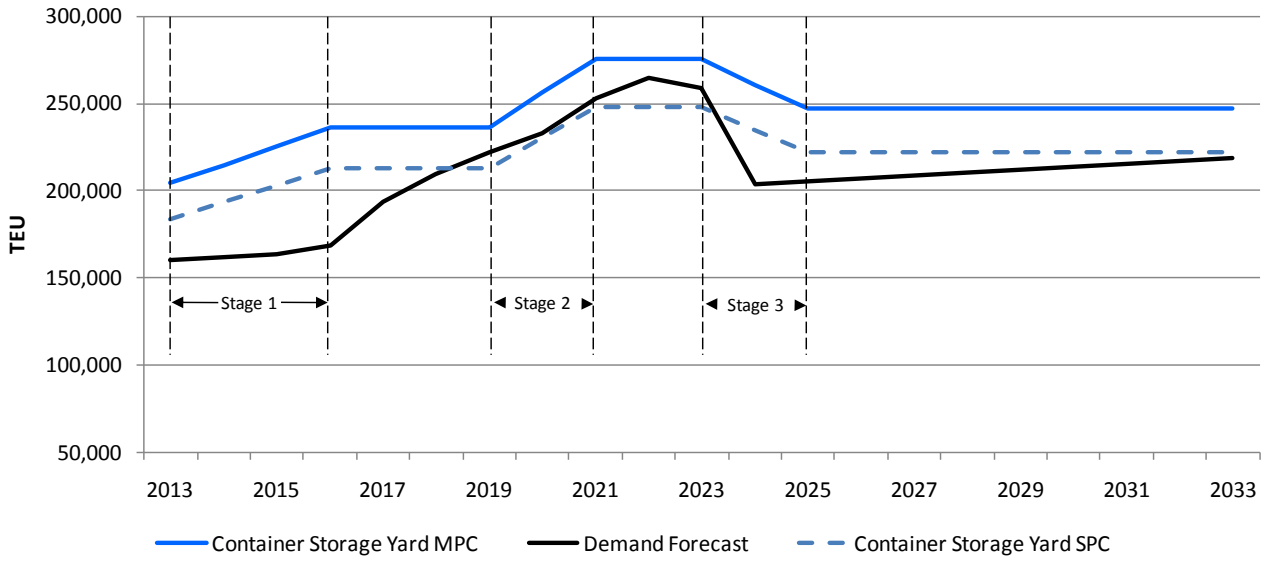
Once the improvements are completed, the storage yard will have sufficient capacity to accommodate the mid forecasted volumes up to 2019. In order to handle the demand beyond 2019, some wheeled slots in the storage yard will need to be converted to grounded slots. These changes will be completed over a span of two years that will convert 580 wheeled TGS into 540 grounded TGS. Due to higher stacking height for grounded containers, this conversion will increase the yard MPC to 275,000 TEUs, which is sufficient to handle the peak demand. The yard equipment requirements and run times will increase as more containers are grounded.

Stage 3: Grounded to Wheeled Conversion

After the container peak is over, the demand will decrease from the military build-up levels and thereafter will follow the organic growth rate. In order to minimize the operating expense of yard equipment, it is recommended to convert grounded slots back to wheeled storage. Approximately 540 grounded TGS will be converted back to 580 wheeled TGS. As the empty capacity is very high, approximately 35 empty TGS near LC-4 will be converted to loads in order to accommodate transshipment capacity. These changes will be completed over a two year period (2024-2025). After all the changes are completed, the yard will have a MPC of 247,000 TEUs per year and SPC of 222,000 TEUs per year, which is sufficient to handle the planning horizon demand of 219,000 TEUs in 2033.

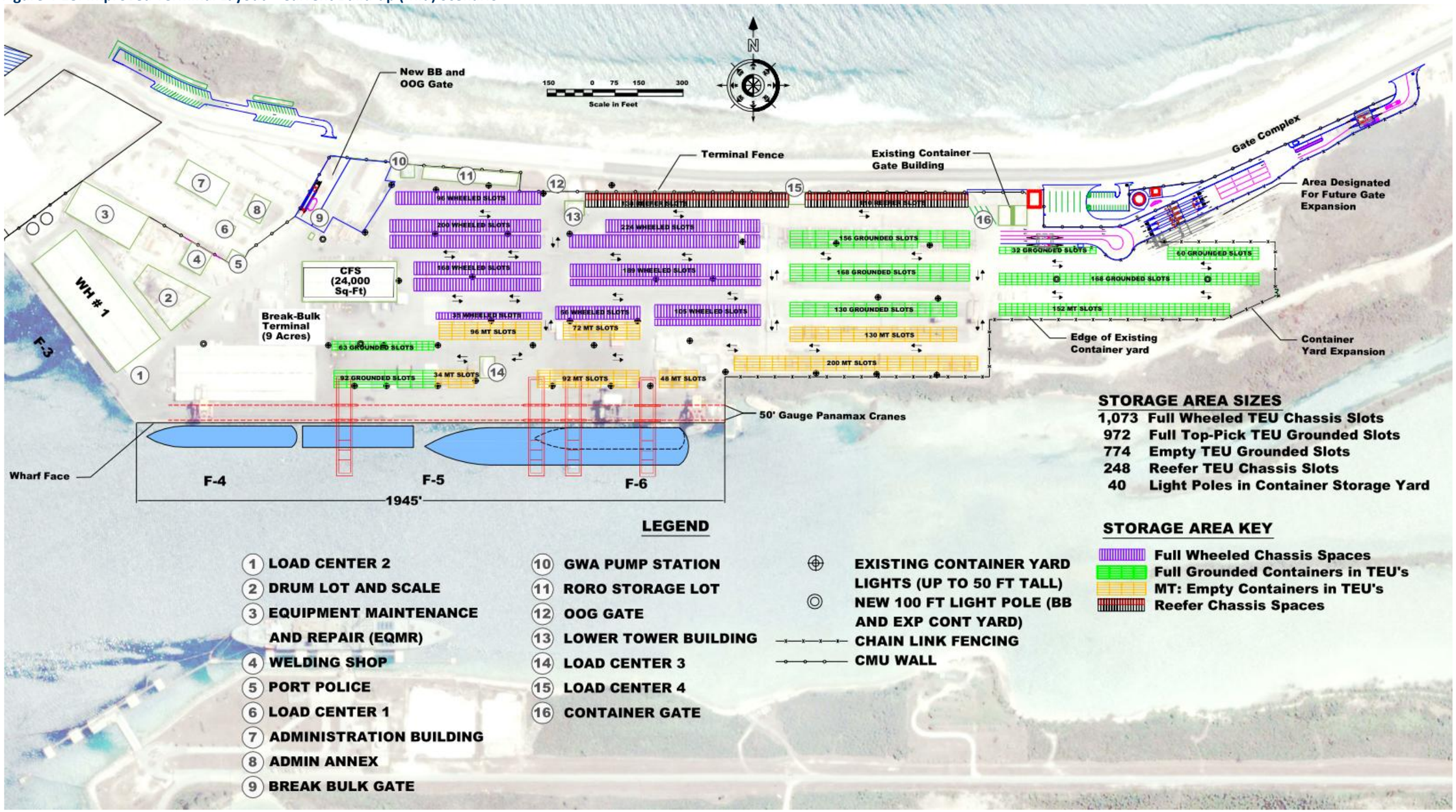
Figure 4-17 shows the capacity vs. demand chart for the Current Build-up (Mid) Scenario. Figure 4-18 shows the terminal layout after the improvements are completed. Notice that during the peak year and in 2019, the demand is between MPC and SPC. This is accommodated for a short period because improvements follow these periods or cargo volumes decrease shortly after.

Figure 4-17: Capacity vs. Demand – Current Build-up (Mid) Scenario



Source: Parsons Brinckerhoff analysis

Figure 4-18: Improved Terminal Layout – Current Build-up (Mid) Scenario



Source: Parsons Brinckerhoff analysis

4.4.2.4. Full Build-up (High) Scenario

A similar approach was used to analyze the capacity requirement of the container terminal to accommodate the container forecasts under the Full Build-up (High) Scenario. The peak container demand is estimated to occur in 2022 which will require a throughput capacity of 324,000 TEUs. Storage yard capacity after the modernization program is not sufficient to handle the forecasted volumes. Hence, conversion from wheeled slots to grounded slots will be required to increase the yard capacity to accommodate forecasted volumes if the Full Build-up Scenario is experienced. Such storage yard configuration changes will occur as required and are presented in the same stages used for the Current Build-up (Mid) Scenario.

Stage 1: Terminal Improvements

Modernization program terminal improvements will be performed as mentioned in Section 5. These improvements will add 292 TGS for wheeled storage and 152 TGS for empty storage over a three year span (2014-2016).

Stage 2: Wheeled to Grounded Conversion

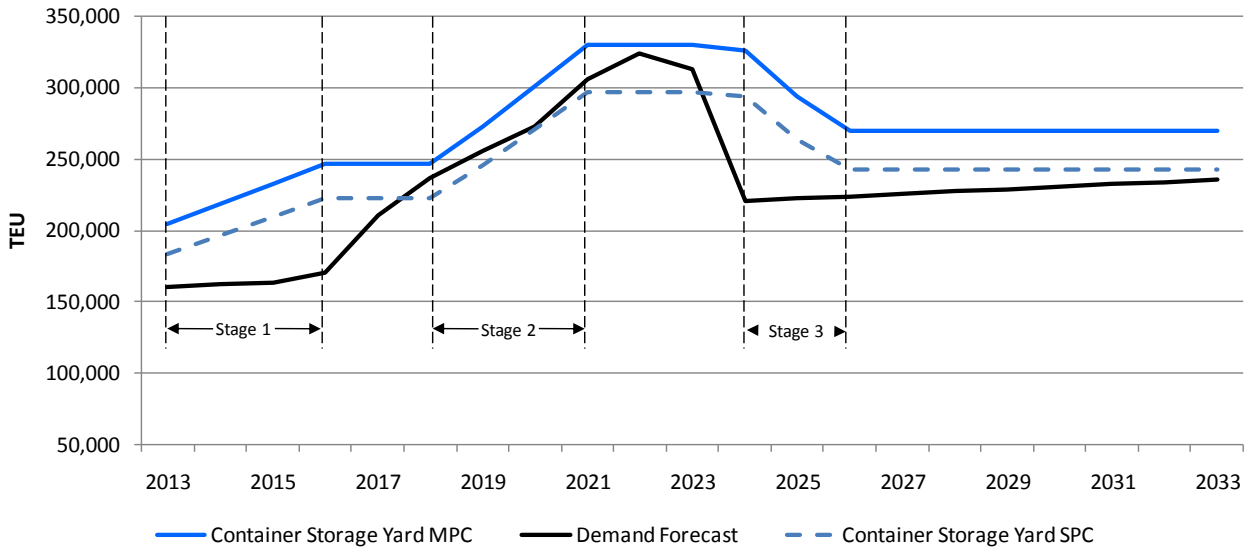
Once the improvements are completed, the container storage yard will have sufficient capacity to accommodate the high forecasted volumes up to 2019. In order to handle the demand beyond 2019, almost all the entire wheeled slots will need to be converted to grounded slots. These changes will be completed over a span of three years which will convert 1,580 wheeled TGS into 1,320 grounded TGS. Due to higher stacking height for grounded containers, this conversion will increase the yard MPC to about 330,000 TEUs per year, which is sufficient to handle the peak demand. As more and more containers are grounded, the top pick and yard dog equipment will have a higher run time than the previous year.

Stage 3: Grounded to Wheeled Conversion

After the container peak ends, the demand will decrease by the amount of build-up volumes and thereafter will follow the organic growth rate. In order to minimize the operating expense of yard equipment, it is recommended that after the build-up peak, the container storage area be to convert back to more wheeled storage. Approximately 1,200 grounded TGS will be converted back to approximately 1,500 wheeled TGS. Some of the empty and transshipment slots will not be converted back to satisfy 2033 demand. These changes will be completed over a three year span (2024-2026). After all the terminal configuration changes are completed, the yard will have a MPC of approximately 269,000 TEUs per year and a SPC of 242,000 TEUs per year, which is sufficient to handle the planning horizon demand of 236,000 TEUs in 2033.

Figure 4-19 includes the capacity vs. demand chart for the Full Build-up (High) Scenario. Figure 4-20 includes a drawing of the terminal layout after the improvements are completed.

Figure 4-19: Capacity vs. Demand – Full Build-up (High) Scenario



Source: Parsons Brinckerhoff analysis

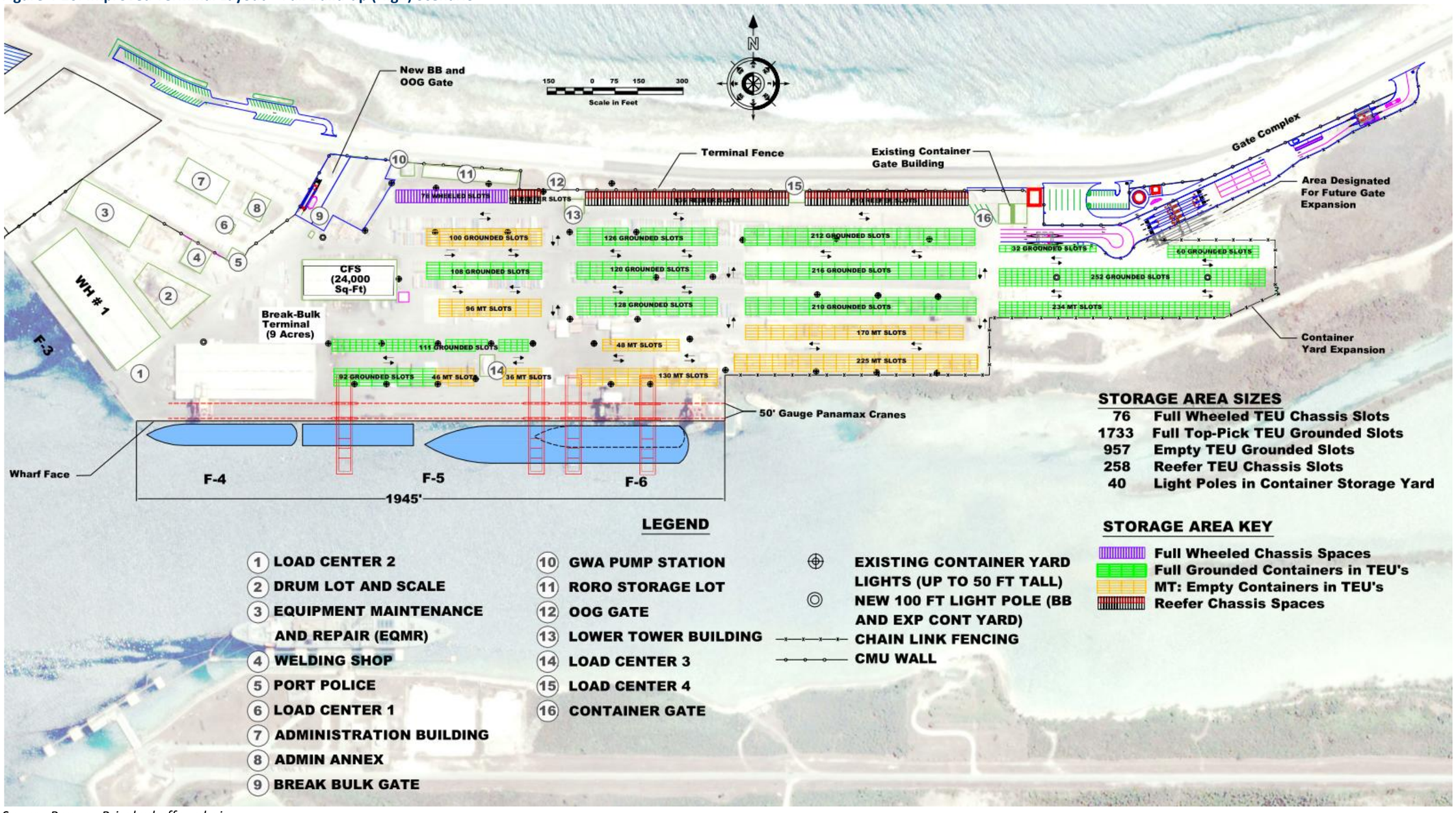
In order to layout the container yard slots, the container yard capacity analysis was carried out for all types of containers (loads, empties, reefer and transshipment). This division of container types helped to analyze the slots needed for each type of container. Table 4-5 shows the MPC by various container types.

Table 4-5: Container Yard Capacity by Type (in TEUs)

Scenario	Stage	Loads	Reefer	Empty	Transshipment	Total
Organic (Low)	-	82,440	19,699	61,951	72,168	236,258
Current (Mid)	Stage 1	82,440	19,699	61,951	72,168	236,258
	Stage 2	102,145	19,699	66,234	87,285	275,363
	Stage 3	86,373	19,699	57,868	82,887	246,827
Full (High)	Stage 1	82,440	19,699	68,724	76,016	246,879
	Stage 2	123,738	19,699	82,569	104,022	330,028
	Stage 3	88,890	19,699	75,398	85,331	269,318

Source: Parsons Brinckerhoff analysis

Figure 4-20: Improved Terminal Layout – Full Build-up (High) Scenario



Source: Parsons Brinckerhoff analysis

4.5. GATE OPERATION & CAPACITY

PAG's current container truck gate operation utilizes a manual procedure for managing and operating the gate. The current gate complex has a total of 4 lanes; which is operated as 2 in-lanes and 2 out-lanes, or 3 in-lanes and 1 out-lane depending on import and export container volumes. The truck gates at the container terminal, constructed in the 1990-1991 timeframe, are physically newer than the remainder of the terminal. However, the design and operation needs improvement. Some of the constraints include the following:

- Trucks are stopped and manually processed first at the Guardhouse or Entrance Gate on Route 11. Incoming empty containers are opened and checked at the Guardhouse.
- The truck gates are oriented in a fashion that makes it awkward for queuing. Trucks must make a left turn from Route 11 directly into the gate lanes with insufficient length for scanning functions or queuing.

The modernization plan includes relocation and improvements to the gate complex at the container terminal. The gate will be relocated to an undeveloped location in the northeast section of the terminal (See Figure 4-21). This location segregates the gate functions from the container yard to provide a more streamlined and efficient gate operating process and increase the storage space within the container yard. The improvement is planned to be completed by the end of 2015 so that the new gate will start operation in 2016. Also, a GOS is scheduled to be installed and operational by the end of 2018 to reduce the truck processing time at the pedestals. The new gate complex will have the following key functions:

1. Automated Trailer Interchange Receipt (TIR) Gate

   The Automated Gate is located adjacent to the container storage yard in the northeast section of the cargo terminal. It serves as main checkpoint for traffic entering and exiting the terminal.

2. Future Inbound and Outbound Optical Character Recognition (OCR) Portals

   These portals are located within the gate complex ahead of the automated gate lanes and pedestals. They assist in automated data collection for trucks, chassis and container boxes and improve gate processing time during the terminal entry and exiting processes.

3. Potential Guam Customs (Customs) Secondary Radiation Portal Monitor (RPM)/Gamma Ray Area

   Many mainland terminals require these systems that provide enhanced customs screening capability. This is not currently required in Guam. However, provision can be made for co-locating these facilities with the OCR Portals should they be required in the future.

4. Gate Office Building

   The Gate Office Building houses gate administration staff/clerks, and provides supplemental space for transient use by customs and Port police personnel. The facility is used for addressing shipping services, trouble-trucks, special inspections, and access/egress control.

5. Agency/Holding Area

   This secured area is located inside the container terminal along the fence line. It would serve Customs and USDA as an inspection station for import containers. This is also referred to as Outbound Trouble Parking.

6. Gate Ingress/Egress Area

   The Gate Ingress/Egress Area is located parallel to Route 11 and serves as the primary exit point for container terminal traffic.

7. Access Control Gate

   The Access Control Gate is located at the east entrance to the container terminal to properly secure PAG operations during emergency conditions.

4.5.1. ASSUMPTIONS

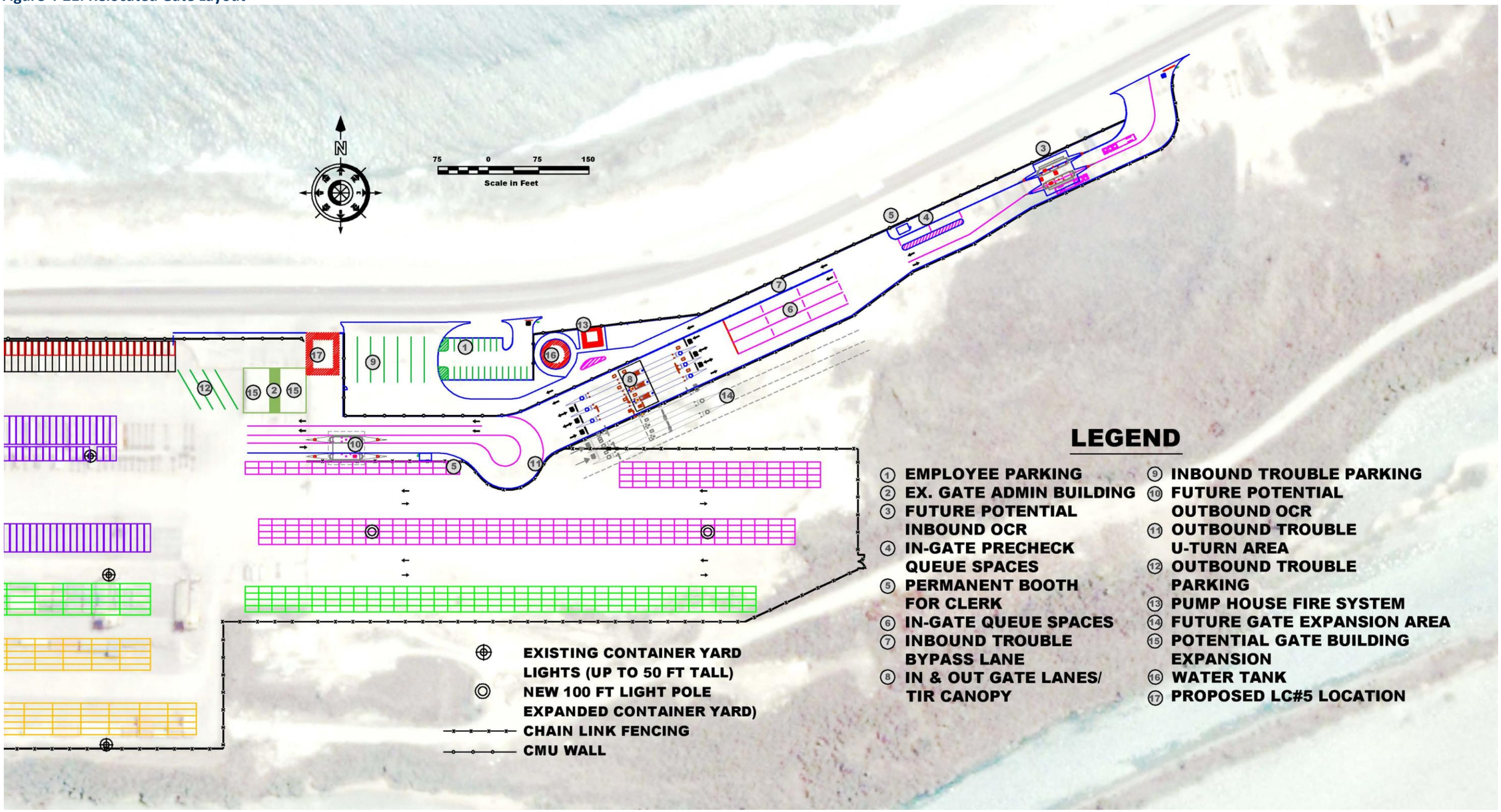
The gate process is a chain of various steps. Each step takes time and processing times in each step vary. To guarantee smooth, bottleneck-free handling of trucks, it is important to balance the gate configuration. It is assumed that all container traffic, except the OOG containers, pass through the main gate complex, including empty chassis and trucks.

- Container Gate Operating Times
  - Operating hours per day: 8
  - Days per week: 5
  - Weeks per year: 52
  - Non-working days per year: 11 (as per Port's holiday schedule)
- Modal split : 69% Truck traffic, 31% transshipment
- TEU per container factor of 1.7
- Daily truck traffic peak factor: 2.0
- Truck processing time at gate: 3 minutes (manual); 0.5 minutes (w/ OCR)
- Gate down time: 5%
- New relocated gate to come online in 2016 (4 lanes)
- GOS to come online in 2018

4.5.2. SCENARIOS

The gate capacity analysis is divided into the three scenarios: Organic Growth (Low) Scenario, Current Build-up (Mid) Scenario, and Full Build-up (High) Scenario.

Figure 4-21: Relocated Gate Layout



Source: Parsons Brinckerhoff analysis

4.5.2.1. Organic Growth (Low) Scenario

The container forecast for the Organic Growth (Low) Scenario shows that the peak demand will occur in 2033 which will have an annual demand of 194,000 TEUs. Of this volume, about 134,000 TEUs will pass through the gate. The current number of gate lanes and operating practices are sufficient to handle the peak year cargo demand during manual operations and the period before a new GOS is implemented. These improvements are also required to improve off-road queuing and terminal/circulation operations. When the GOS is implemented in 2018, the throughput capacity requirement can be addressed with two fully automated lanes. With another lane available, this will provide flexibility for addressing individual lane maintenance and systems casualties.

4.5.2.2. Current Build-up (Mid) Scenario

With the military build-up, a higher amount of cargo is anticipated to pass through the gate. The peak container demand anticipated to occur in 2022 is forecasted to include 265,000 TEUs passing through the terminal. Of this volume, about 183,000 TEUs will pass through the gate. During the peak, the gate complex will experience approximately 110 trucks per hour. To handle this amount of traffic, a minimum of two lanes will be required with automated processing and full operational status (i.e., not undergoing maintenance).

4.5.2.3. Full Build-up (High) Scenario

In this scenario, the peak container demand is forecasted to occur in 2022 at approximately 324,000 TEUs. A capacity of 224,000 TEUs per year is estimated to be required for the gate. During the peak, the gate complex will experience truck traffic of 130 trucks per hour. To handle this amount of traffic, a minimum of 4 lanes will be required with manual processing. In the event of implementing a GOS, the fully operational and automated lane requirement will go down to two lanes.

Table 4-6 shows the number of lanes required with manual processing and with a fully operational and automated GOS for different scenarios.

Table 4-6: Gate Complex Lane Requirement

Scenario	2013	2016 (Start of Build-up)	2017-2018 (Prior to GOS)	2022 (Peak)	2033 (Planning Horizon)
Operating System	**Manual**			**GOS (After 2018)**	
Organic Growth (Low)	4	3	3	2	2
Current Build-up (Mid)	4	3	3	2	2
Full Build-up (High)	4	3	4	2	2

Source: Parsons Brinckerhoff analysis

4.6. STORAGE YARD USE SCHEDULE

As the Port proceeds towards port modernization, it will have to accommodate the increase in the cargo demand when port modernization projects are under way and during the peak build-up. This will involve scheduling the storage yard use and port modernization projects in a way that the terminal is able to handle the forecasted demand.

With the confirmation that peak year volumes will be accommodated by the modernized Port facility, understanding the annual storage area requirements allows for modernization program sequencing and verification that major projects don't impact cargo operations negatively. Capacity analysis results were used to determine the storage area requirements for breakbulk and container cargos from the current terminal configuration through the modernization program and military build-up.

Table 4-7 shows the storage yard use schedule for breakbulk and container cargo under the Current Build-up (Mid) Scenario. The table is divided into container and breakbulk cargo characteristics. The container cargo columns show the forecasted volume (in TEUs), storage area available and percent of grounded container storage required. The breakbulk columns show the forecasted volume (in tons), storage area available and percent of storage area used. Notes are provided to describe major projects that impact the storage yard sizes or how they are used.

Table 4-7: Storage Yard Use Schedule – Current Build-Up (Mid) Demand Forecast

Year	Container			Breakbulk			Notes
	Volume (TEUs)	Area (acres)	% Ground	Volume (tons)	Area (acres)	% Used	
2013	160,000	29.5	36%	170,000	7.7	39%	Current conditions
2014	162,000	30.7	33%	172,000	5.2	58%	Total of 5.2 acres of additional container storage will be added at the east end of the terminal as a part of PMP over a span of 3 years (2014-2016) providing 292 wheeled TGS and 152 empty TGS (grounded). Demolition of WH2 decreases breakbulk storage area by 2.5 acres. About 50 TEU TGS (0.5 acres) are removed to provide space for construction/demolition equipment for modernization program.

Table 4-7 (Cont.): Storage Yard Use Schedule – Current Build-Up (Mid) Demand Forecast

Year	Container			Breakbulk			Notes
	Volume (TEUs)	Area (acres)	% Ground	Volume (tons)	Area (acres)	% Used	
2015	164,000	33.0	35%	174,000	7.7	40%	WH2 demolition adds 2.5 acres of breakbulk storage area. About 50 TEU TGS (0.5 acres) added back after completion of WH2 demolition.
2016	169,000	34.7	36%	178,000	9	44%	Breakbulk expansion adds 1.3 acres in breakbulk storage
2017	193,000	34.7	36%	199,000	9	46%	
2018	210,000	34.7	36%	213,000	9	53%	
2019	222,000	34.7	36%	233,000	9	59%	
2020	233,000	34.7	46%	249,000	9	62%	292 wheeled TGS are converted to 260 grounded TGS in the improvement area at the east end of the terminal over a span of two years (2020-2021). 350 wheeled TGS are converted to 325 grounded TGS at the South-West part of the terminal over the span of two years. About 50 empty TGS (grounded) are added behind Berth F-6 as the demolition of crane mechanics area has provided more storage space.
2021	253,000	34.7	56%	252,000	9	64%	
2022	265,000	34.7	56%	246,000	9	61%	
2023	259,000	34.7	56%	199,000	9	47%	

Table 4-7 (Cont.): Storage Yard Use Schedule – Current Build-Up (Mid) Demand Forecast

Year	Container			Breakbulk			Notes
	Volume (TEUs)	Area (acres)	% Ground	Volume (tons)	Area (acres)	% Used	
2024	204,000	34.7	46%	201,000	9	47%	All wheeled TGS converted to grounded TGS between 2020 and 2021 are converted back to wheeled ground slots after the peak demand is over. This conversion is completed over a span of two years.
2025	206,000	34.7	37%	202,000	9	48%	
2026	207,000	34.7	37%	204,000	9	48%	
2027	209,000	34.7	37%	206,000	9	49%	
2028	211,000	34.7	37%	208,000	9	49%	
2029	212,000	34.7	37%	209,000	9	49%	
2030	214,000	34.7	37%	211,000	9	50%	
2031	216,000	34.7	37%	213,000	9	50%	
2032	217,000	34.7	37%	215,000	9	51%	
2033	219,000	34.7	37%	217,000	9	51%	

Source: Parsons Brinckerhoff analysis

SECTION 5. PORT IMPROVEMENT PROGRAM

The combination of five decades of active use with limited reinvestment in aging facilities and infrastructure, and the increased cargo-handling demands associated with future island growth and the near-term proposed military build-up has prompted the need for an improved and sustained asset management program.

This section identifies ongoing effort and new opportunities that should be a factor in rounding out such a program. It includes a review of ongoing commercial terminal development efforts supported by MARAD and their PMT utilizing Port Improvement Enterprise Funds. It also reviews the actions that can be controlled by PAG once budgets are right-sized and structure is added to its Maintenance and Repair Programs and CIP investment strategy.

The PAG-controlled portion of this is significant. In order to sustain ongoing operations that are efficient and effective, the Port will need to shore up its financial structure and institute regimented maintenance and repair programs and phased and sustained CIP. This is to assure that facilities and equipment are aligned with service needs and achieve expected or extended service life. It also plans for facility replacement, assuming it is still needed, following service life expiration.

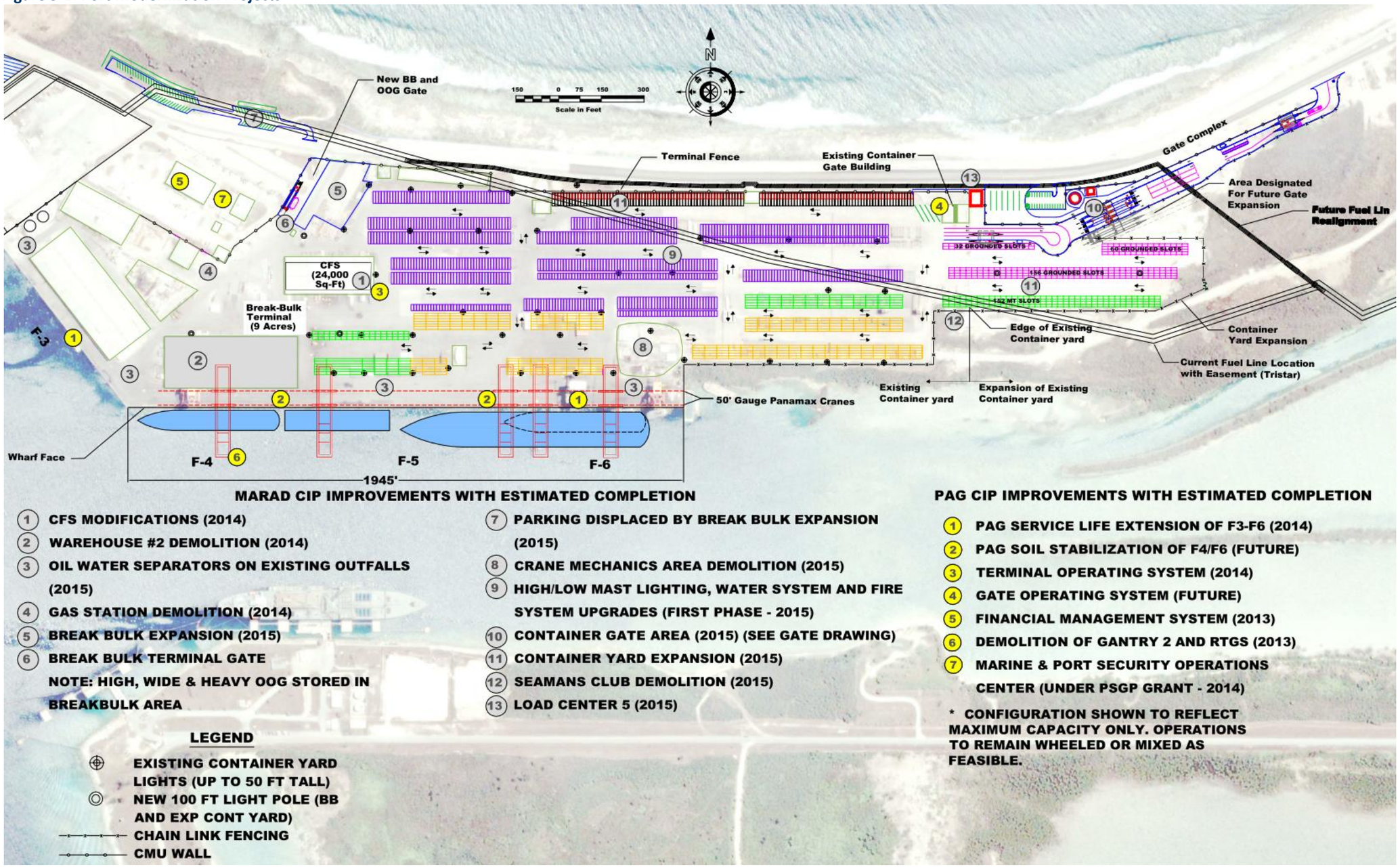
In general, the facilities and equipment needed to sustain operations include appropriately sized and conditioned:

- Wharfs and piers
- Buildings
- Terminal equipment (cranes and yard equipment)
- Utility systems (power/lighting [primary and backup], storm, potable water, firemain, sanitary sewer, fuel)
- Pavements and structures (access and traffic, ground storage, chassis storage, tank storage, containment and washdown areas)
- Security fencing and gates

For the purposes of making recommendations for development and modernization of PAG facilities and strengthening its operating capacity within the 20-year planning horizon, it is important to differentiate between recommendations driven by sustained Port operations and modernization plans that may be subject to events and conditions that occur in the future.

Consequently, the Port improvement projects are divided into two categories, PMP projects and Sustainability projects. Figure 5-1 includes a layout of the major PMP and sustainability projects. The grey-numbered projects are those that are scheduled to be funded by the MARAD CIP program grant. The yellow-numbered projects are those that will be financed by PAG. Brief descriptions of these and additional improvement projects are provided in Sections 5.1 and 5.2.

Figure 5-1: Port Modernization Projects



Source: Parsons Brinckerhoff analysis

5.1. PORT MODERNIZATION PROGRAM PROJECTS

Projects that are to be completed under port modernization program are categorized as PMP improvement projects. These projects are funded by the MARAD CIP Program Grant, PAG CIP or other grants/funding sources such as the PSGP.

5.1.1. MARAD FUNDED PMP PROJECTS

- CFS Modification: Modification of the CFS to accommodate breakbulk covered storage operations and relocated administrative office space and shop space. Scheduled to be completed in first quarter of 2014.
- WH2 and Gas Station Demolition: Demolition of WH2, the abandoned gas station and other miscellaneous structures in its proximity. Scheduled to be completed by May 2014.
- Oil Water Separators: Installation of oil water separators in several storm drain lines leading to outfalls. Scheduled to be completed in July 2015.
- Breakbulk Expansion: Expansion of the breakbulk area to the north and east of the existing breakbulk gate. The expansion will add approximately 1.3 acres of additional storage area and is scheduled to be completed by July 2015.
- Parking displaced by Breakbulk Expansion: The existing parking area will be displaced to accommodate the breakbulk expansion and will be located across Route 11. Scheduled to be completed by July 2015.
- Crane Mechanics Area Demolition: Demolition of the crane mechanics area located behind Berth F-6 by the end of 2015.
- Lighting, Water System and Fire System Upgrade: Includes new hi-mast lighting in the expanded container yard, low mast lighting in the new gate complex, and upgrades to the existing water system and fire system by July 2015.
- Container Gate Area: Development of a new 3.7 acre container gate complex at the northeast end of the terminal. Scheduled to be completed by the end of July 2015.
- Container Yard Expansion: Expanding the container storage area to the east end of the existing terminal. This will provide an additional 4.6 acres of storage space for container stacking. Scheduled to be completed by July 2015.
- Seaman's Club Demolition: Removal of the existing Seaman's Club located in the terminal by July 2015.
- LC5: Construction of a new LC5 located north of the existing gate building. The project is scheduled to be completed by the end of July 2015.
- Breakbulk Terminal Gate: Construction of a new breakbulk gate located next to the breakbulk expansion area. Scheduled to be completed by July 2015.
- Equipment Wash Rack: Construction of new equipment wash rack is scheduled to be completed by the end of 2014.

5.1.2. PAG Funded PMP Improvement Projects

- Financial Management System: Upgrade the existing FMS system to a newer version of JD Edwards World. This upgrade is scheduled to be completed by the end of 2013. A follow-on upgrade to the system is anticipated and scheduled for 2019-2020. This second phase upgrade will involve a transition to JD Edwards Enterprise 1 operating on an Oracle or SQL Database.
- Demolition of Gantry 2 and RTGs: Disassembly and removal of Gantry 2 and the two existing RTGs. The equipment was transferred to the GSA for removal contemplated in 2013. However, GSA has apparently negated the purchase of Gantry 2 due to non-payment by the previously successful bidder. PAG will likely re-initiate efforts to sell Gantry 2, pending the outcome of Bill 157-32 (An Act to allow autonomous agencies to recoup proceeds from disposal of surplus equipment). Should all sale efforts fall through, the potential exists for the property to return to the Port where it would have to consider demolition in place. In that instance, G2 demolition would likely take place in 2014. RTG removal could occur later but should be scheduled for no later than the end of 2015.
- PAG Service Life Extension (SLE) of F3 – F6: Upgrading the wharf structure in order to provide service life extension for the assets. This is essentially a sustainability project that is replacing a previously identified improvement project to replace wharfs F4 and F6 and extend the pierhead line for F5. This substitute project is scheduled to be completed by October 2014. At this juncture, the SLE work involves installing cathodic protection and performing miscellaneous fender and concrete repairs. The project originally contained a soil stabilization component that has been deferred following an assessment of risk performed by the MARAD and concurred with by the Port. If it is to occur in the future, it would be included in the Sustainability projects and scheduled for some time after 2018.
- Terminal Operating System: Installation of a TOS for improving terminal operations and integrating with the FMS. It is estimated that the initial TOS installation will be completed in early 2014. This work will occur using a 5-Year IDIQ contract that could include adding TOS enhancements, integrating it with a new GOS, and providing system support during contract duration. It is conceivable that final adjustments to TOS would therefore be completed no later than the end of 2018.
- Gate Operating System: After the new gate complex is developed and the TOS is operational, a GOS will be installed. It is proposed that the GOS will come online no later than the end of 2018.
- Purchase of Gantry Cranes: The Port acquired four used gantry cranes in 2012. These cranes have a remaining service life projected to range from 15-20 years. This project involves purchase of new ship-to-shore replacement cranes. A total of four cranes will be purchased (two at a time) between years 2026-2029.

5.1.3. PSGP GRANT PROJECTS

- Marine and Port Security Operations Center (MPSOC): The PSEP is federally funded by the U.S. Department of Homeland Security (DHS) through the Federal Emergency Management Agency. The PSEP is a multiple component project that includes the construction of the Maritime & Port Security Operations Center and the Command & Control Integration System which includes the installation, programming, and integration of multiple systems such as the CCTV, access control and security, radio communications, cable television, voice, and data systems.
- Hi-Mast Light Replacements: The Port replaced the 50-foot and 80-foot existing container yard poles and lights in 2012 as part of a security grant funded project administered by MARAD and their PMT. These lights were replaced in their original locations and are suitable for continued use unless or until PAG decides to replace yard pavements and possibly raise container stacking heights in selected locations. Such a move would be interconnected with yard utilities and pavement replacement sustainability projects needing further definition.

5.2. SUSTAINABILITY PROJECTS

Sustainability in the form of 'operational practice and projects' applies to both existing aged facilities/equipment and brand new facilities/equipment. For aged facilities/equipment, the range of actions includes catch-up maintenance and repair, retrofit/renovation, and eventual replacement. For the newer facilities sustainability normally focuses on having a structured (scheduled and managed) program of inspection and preventive and corrective maintenance and repair, with a right-sized budget. To be effective and efficient, sustainability is facilitated with appropriate skilled staff and systems support; one example would be fully utilizing systems capabilities and instituting a work order system managed by trained staff and tied into an upgraded FMS. The minimal PMP makes provisions for these systems upgrades (qualifying as both improvements and sustainability measures).

At the Port of Guam much of the permanent facilities (buildings, utilities, pavements, wharves) date back to the last 1960's and well exceed normal design service life. In reaction to a conservative and austere budget climate, this Master Plan Update assumes that this condition will take many years to overcome. Consistent with that mindset, it is assumed that the service life for stout concrete warehouse buildings can be further extended with careful attention to repairing weather damage affecting structural reinforcing steel that has been exposed due to concrete spalling. The same can be said for the wharf structures at F1-F6 through careful attention to providing cathodic protection for sheetpile bulkheads and repairing exposed reinforcing steel for the concrete structural members at Berth F5. For this reason, while these facilities are quite old, they are not being recommended for replacement during the first 15 years of the 20-year planning horizon. That said, a growing backlog of neglected maintenance and repair projects will only serve to undermine how long these facilities can continue to be serviceable. Hence, the recommendation to institute a structured maintenance and repair program to improve service life extension possibilities.

Sustainability projects are mostly separate from the PMP improvements. However, once improvements are made, they are subjected to sustainability investments to keep them continuing through the planning horizon. In some cases sustainability projects are well-defined and scheduled, usually because they are long-standing and have finally risen to a level of priority where there is consensus in funding them among other competing interests. In other cases, projects are "To Be Scheduled" meaning that scheduling, packaging and pricing depend on the pace of deterioration, the need to develop a plan for phased implementation to preserve continuity of operations, prioritization among competing demands, and the need to be aligned with funds availability which is about to improve. These issues typically need to be evaluated for all projects, but in the instance of To Be Scheduled projects the issues have not yet been addressed because other pressing priorities in a scarce economic environment have kept these needs on the back shelf to the point where they can no longer be ignored. With the tariff increases being recommended, self-sufficiency combined with careful planning should lead to timely execution.

As is the case with highly visible improvements and "new construction", these projects need to be funded by tariff generated revenues or other grants/funding sources such as the PSGP. Project(s) financing can be through pay as you go cash flow, loans, or bonds; with bonds usually being the vehicle for accelerating the work.

5.2.1. PAG Funded Sustainability Projects

- Repairs and Improvements at Golf Fuel Pier: This is a combination of improvements and sustainability measures. Fuel lines are being replaced utilizing FHWA funding support. A motorized valve is being added to allow the installation of a cement pipe line in parallel with the replaced fuel lines and joint use of the facility by Mobil and Cementon. These projects should be complete in 2014.
- Compressors for Administrative Building A/C System: Purchase and installation of compressors for the air conditioning system in Port Administration Building. This project is ongoing and has a staggered schedule for installation due to shortage of manpower.
- Various Air Conditioning Units and Parts/Supplies: This considers purchase of air conditioning units along with the required parts. The project is currently ongoing and pending vendor to schedule installation.
- WH1, CMU and Column Repairs: Repair of WH1 including column repairs and construction of CMU wall. Scheduled to be completed by the end of 2013.
- Architectural/Engineering Services – IDQ: Architecture/engineering support services will be required and assumes an estimated budget of $500,000 annually through the 20-year Master Plan Update implementation period or planning horizon.
- Agat Marina Dock "A" Repairs: Repair of Dock "A" at Agat Marina. It is scheduled to be completed by February 2014.
- Electrical Work - Reefer Outlets/Reefer Lights: Installation of additional 56 reefer plugs and reefer light installation at the terminal. Scheduled to be completed by April 2014.

- Agat Marina Structural Repair: The project involves structural repairs of the loading dock at Agat Marina by February 2014.
- Port Police Security Building Upgrade: This involves interior renovation and space utilization improvements. The scheduled completion of the upgrade is yet to be determined (TBD).
- Repair/Upgrade Perimeter Fence: Repair and upgrade the existing perimeter fence at the port. It is scheduled to be completed by March 2014. It is expected that repairs to fencing, CMU walls, and gates will be a continuing requirement throughout the planning horizon. Some replacement of chain link fence should be with CMU security bulkheads to deal with the very short life expectancy of chain link fencing in the harsh (salt in the air) environment.
- Demolish Gantry Cranes: Removal of the four gantry cranes that are currently operated by the port will be required when new cranes will be purchased. This project will follow the schedule of purchase of the new gantry cranes.
- Purchase Replacement and Additional Yard Equipment: This is a combined improvement and sustainability project. It involves the progressive replacement of existing yard cargo handling equipment and the supplemental acquisition of additional equipment based on cargo handling demands as cargo volumes grows.
- Inbound/Outbound OCR Portals and Canopies: Installation of new OCR portals and canopies at the new gate complex. The completion date is to be determined but would likely follow the completion of construction by MARAD and rollout of the new GOS. This is anticipated to be in the next four to six years.

5.2.2. Potential TIGER Grant Projects

- Container Yard Storm Drain Channel Repairs: Channel repairs in the existing container yard storm drain system. The port has applied for a TIGER grant to fund this project and is waiting for the approval. This grant process will influence the schedule of the project.
- Replace Hotel Wharf and Access Road: Improvements of the Hotel Wharf bulkhead and repair of the existing access road connecting Route 11 and Hotel Wharf. The completion date for the project could be dictated by grant terms. It will likely be scheduled concurrent with or immediately following near-term PMP improvements in the main terminals. A placeholder budget figure is also included in the CIP schedule assuming no grant is received. In that instance scheduling is likely to occur after all near-term PMP improvements are complete.

5.2.3. To Be Scheduled Projects

- Replacement of Administration Building: Development of a new Administration Building is recommended. Depending on Port plans to house tenants and permit/require tenant financed interior layout and finishes, this building could either be downsized from the existing or replaced at its current size; i.e. it needs further defining. What is clear is that it is currently in need of extensive interior and exterior work. Construction permits for such renovation type work would likely require structural and systems upgrades to meet code compliance once 50 percent of the asset value is reached in terms of construction cost. This

work can be scheduled to occur after more pressing near-term PMP improvements are made. This puts this replacement at least five years into the future.

- Upgrade of IT Office Power System: Improvements to the power supply for the IT office. The completion date for this is not yet determined.
- Marinas Sewage Pump Station Upgrade: Upgrade to the sewage pump stations at all the PAG marinas. The completion date for the project is to be determined.
- Automatic Transfer Switch for LC2 and LC3: Installation of automatic transfer switches for LC2 and LC3. The completion date is not yet determined.
- Renovation of High Tower, Low Tower, and Existing Gate Building: Some renovation of these buildings will be required to accommodate personnel movement and TOS, GOS and IT improvements. The extent and timing of this additional work is to be determined as systems upgrade planning progresses.
- WH1 Renovation: This project involves minor interior renovation work and creation of a new exterior entrance to accommodate improved space utilization and efficiency of the equipment maintenance operation. The completion date is to be determined.
- Progressive Pavement Replacement: Replacement of pavement throughout the container and breakbulk terminal areas for service life extension. This project will occur throughout the Master Plan Update horizon.
- Progressive Utilities Replacement: Replacement of utilities throughout the terminal as components continues to exceed their service life and cause increasing system casualties. This project will occur throughout the Master Plan Update horizon.
- PAG Soil Stabilization of F4/F6: This is a project to install stone columns to strengthen the soil profile behind the sheetpile bulkheads at Berths F4 and F6. This is a risk mitigation measure that has been deemed recommended but optional. Based on a risk assessment performed by the MARAD and in consideration of other more pressing investments to take place near-term, the Port decided to defer this optional work. As time goes on, and the wharf reaches the end of its service life (somewhere in years 15-20), this requirement could shift from risk mitigation for the existing facility to a recommended component of facility replacement. In the instance where revenues are generated by organic growth cargo volumes and the moderate tariff adjustments being recommended, this work will likely remain low priority given other more pressing needs. In the instance where the military buildup actually occurs, the recommended tariff rates will yield larger revenues; an outcome that would permit the Port to finance this work early among competing interests or later in the planning horizon because wharf sustainability issues on the rise can begin to compete with uplands sustainability requirements that have been progressively mitigated.
- Progressive Fence Replacement: Replacement of fencing consisting of chain link fencing and CMU walls surrounding the secure perimeter and internal to the terminal. This project will occur throughout the Master Plan Update horizon on an as needed basis.

5.2.4. Other Sustainability Projects Supported by Security Grants

- Cargo and Vehicle Detection/Screening Machine: Purchase and installation of cargo screening equipment under the PSGP. Schedule depends on whether this requirement is imposed by the DHS and whether there is supporting grant funding.
- Emergency Back-Up Generators: The Port is currently looking to purchase and install back-up generators under the PSGP. The schedule depends on successful acquisition of grant funding.

5.3. CIP Schedule

Table 5-1 includes a 20-year CIP schedule for the above listed projects through the Master Plan Update planning horizon. The start and end year of each project is graphically represented and each project is categorized as a PMP Improvement or Sustainability project. Appendix 5-1 includes a summary of projects and costs (where known). It also contains a projected schedule for project execution. Several sustainability projects need added definition, depend on the rate of experienced deterioration, need to have a plan for phased implementation, and can only be executed when revenue generated by the tariff structure allows this to occur. It is currently estimated that $3-5 million should be spent annually to get through progressive and discrete sustainability projects. This level of investment would result in the replacement of 50 percent of the existing facilities, many of which were constructed in the late 1960's.

Appendix 5-1 represents the CIP cost schedule in the financial analysis described in Section 6.

Table 5-1: CIP Schedule

Sr. No.	Project	Funding Authority	Project Schedule
			2013 2014 2015 2016 2017 2018 2019 2020 2021 2022 2023 2024 2025 2026 2027 2028 2029 2030 2031 2032 2033
1	CFS Modification	MARAD/ DoD Grant	
2	Warehouse # 2, Gas Station and other misc structure demolition	MARAD/ DoD Grant	
3	Oil Water Separators on Existing Outfalls	MARAD/ DoD Grant	
4	Breakbulk Expansion	MARAD/ DoD Grant	
5	Parking Displaced by Breakbulk Expansion	MARAD/ DoD Grant	
6	Crane Mechanics Area Demolition	MARAD/ DoD Grant	
7	High/Low Mast Lighting, Water System and Fire System Upgrade (First Phase)	MARAD/ DoD Grant	
8	Container Gate Area	MARAD/ DoD Grant	
9	Container Yard Expansion	MARAD/ DoD Grant	
10	Seaman's Club Demolition	MARAD/ DoD Grant	
11	Load Center 5	MARAD/ DoD Grant	
12	Breakbulk Terminal Gate	MARAD/ DoD Grant	
13	Equipment Wash Rack	MARAD/ DoD Grant	
14	Financial Management System	PAG	
15	Demolition of Gantry 2 and RTGs	PAG	
16	PAG Service Life Extension of F3 - F6	PAG	
17	Terminal Operating System	PAG	
18	Gate Operating System	PAG	
19	Marine and Port Security Operations Center (MPSOC) Building	PSGP/DHS	
20	Installation of MOV at Golf Pier Fuel Pipelines	PAG	
21	Cargo and Vehicle Detection/Screening Machine	PSGP/DHS	
22	SLE: Acquisition of Cargo Handling Equipment	PAG	
23	Container Yard Storm Drain Channel Repairs	PAG	
24	Inbound/Outbound OCR Portals and Canopies	PAG	
25	Compressors for Admin Building A/C System	PAG	
26	Various Air Conditiong Units and Parts/Supplies	PAG	
27	Harbor Crane Part/Supply - Bearing Unit	PAG	
28	Warehouse # 1, CMU and Column Repairs	PAG	
29	Architectural/Engineering Services - IDQ	PAG	
30	Emergency Back-Up Generators	PSGP/DHS	
31	Agat Marina Dock "A" Repairs	PAG	
32	Electrical Work for Additional 56 Reefer Outlets/Reefer Lights Installation	PAG	
33	Agat Marina Loading Dock Structural Repair	PAG	
34	Port Police Security Upgrade	PAG	
35	Renovations to Harbor Refuge	PAG	
36	Repair/Upgrade Perimeter Fence	PAG	
37	Purchase 2 Gantry Cranes	PAG	
38	Purchase 2 Gantry Cranes	PAG	
39	Demolish 2 Gantry Cranes	PAG	
40	Demolish 2 Gantry Cranes	PAG	
41	Purchase Replacement and Additional Yard Equipment	PAG	
42	Replacement of Administration Building	PAG	
43	Replace Hotel Wharf and Access Road	PAG	
44	Upgrade of Power System for IT Office	PAG	
45	Marinas Sewage Pump Station Upgrade	PAG	
46	Automatic Transfer Switch for LC2 and LC3	PAG	
47	Renovation of High Tower, Low Tower, and Existing Gate Bldg	PAG	
48	Warehouse 1 Renovation	PAG	
49	Progressive Pavement Replacement all terminal yards	PAG	
50	Progressive Utilities Replacement in existing terminal	PAG	
51	PAG Soil Stabilization of F4/F6	PAG	
52	Progressive Fence Replacement	PAG	

Notes:

= Port Modernization Program Projects

= Sustainability Projects

= To Be Scheduled Projects

Source: Parsons Brinckerhoff analysis

5.4. MAINTENANCE FACILITY REORGANIZATION

The Port's maintenance facilities are in need of reorganization in order to promote quick and efficient work output. This is particularly important for the Preventative Maintenance (PM) and Yard Shops, where work is now being accomplished out in the open, often not under cover, and often without the proper documentation and tools. Facility upgrades and new structures associated with the following recommendations would not be included under the CIP, as it is expected that the improvements could be made using existing supplies, materials and labor.

It is recommended that the Port's maintenance shops include the characteristics of a modern work space as follows:

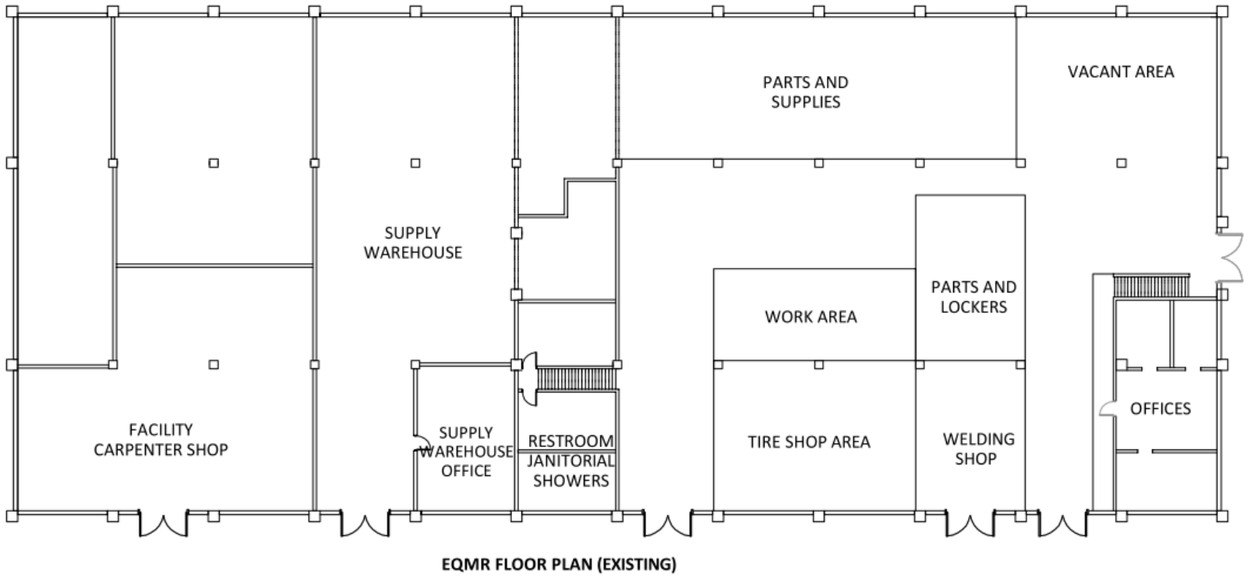
- Office space for foreman or lead man to plan upcoming work, complete work order paperwork, and keep personnel notes.
- Shop parts room with parts to perform near term planned maintenance, kit parts for the next day's work, secure special tools, accept assemblies for repair, and store UC task parts received for assignment.
- Trades break room with technical library kept up to date, table work space for research, kiosk computer to look up maintenance history and enter completed work documentation, material safety data sheets.
- Personal locker space.
- Personal tools space for rolling tools cabinets, near the project or work areas, and in the maintenance bays for the Yard Equipment Shop.
- Beginning of shift meeting space, which could be the break area if deemed appropriate, for daily shift meetings to assign hardcopy work orders, and to review breakdown, accident, and troubleshooting trends.
- Compressed air piping throughout the work areas and the entrance areas.
- Pressurized fluids delivery, as needed. Oil, grease, antifreeze, hydraulic oil, water.
- Sealed and painted concrete floors, painted in appropriate colors to designate work areas, traffic areas, hazardous areas, transit areas.
- Appropriate shop lighting, to 5 or 10 lux, and appropriate work lighting at up to 200 lux. Also security lighting for when all lights are turned out.

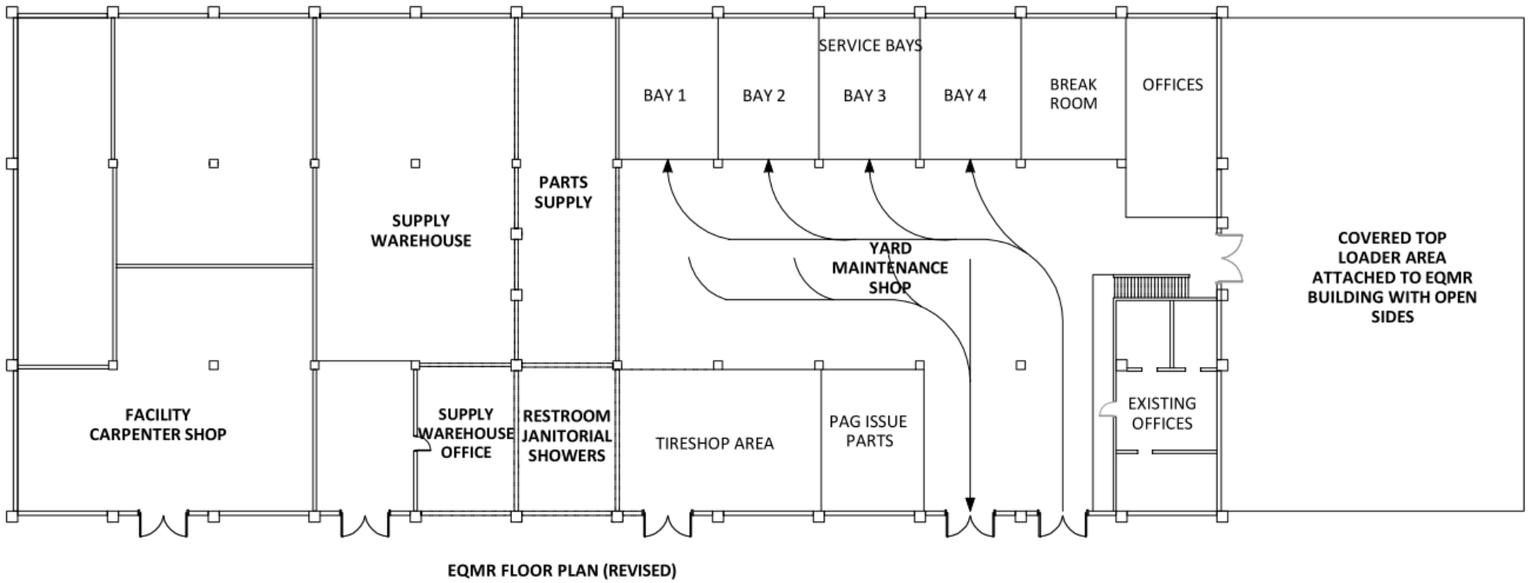
5.4.1. EQMR BUILDING

The EQMR Building presently hosts the Parts Room administered by Financial Services, the PM Shop (corrosion control/painters), the Yard Maintenance Shop, Facilities Maintenance Shop, Maintenance Management and Administration offices, and the work planners.

Based on observation and sketches, the EQMR Building, excluding the parts room and facilities maintenance areas at the west end of the building, is an appropriate size for the Yard Maintenance Shop, including a dedicated parts area and break area.

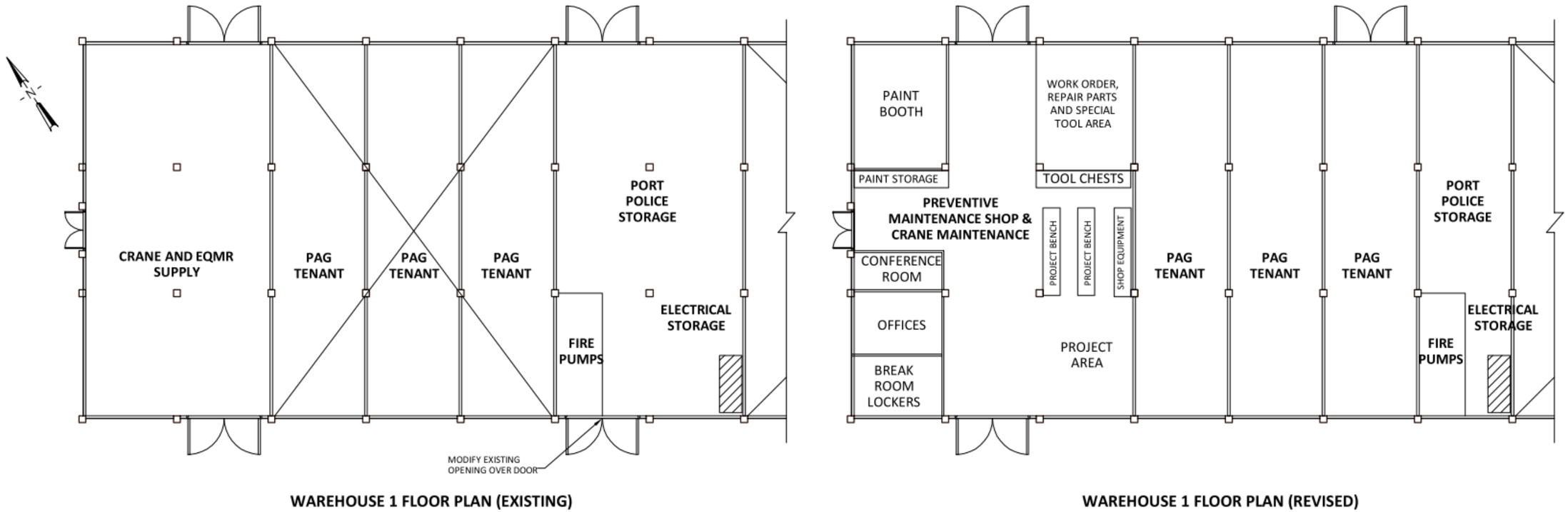
Figure 5-2: EQMR Building Existing and Proposed Layout





Source: Sarandipity and Parsons Brinckerhoff analysis

Figure 5-3: Warehouse 1 Existing and Proposed Layout



Source: Sarandipity and Parsons Brinckerhoff analysis

The recommended improvements of the EQMR Building are shown in Figure 5-2 and include:

1. Move the PM Shop out of the EQMR Building over to Warehouse 1.
2. Build new office space for management and clerks on a new mezzanine on the east end of the EQMR Building and move the planners to the old office space. Remove the termite damaged planner offices at the west end of the shop over the laundry space.
3. Create a Yard Parts Room adjacent to the existing Parts Room on the west end of the EQMR Building, taking advantage of the large doorway already existing at that end. During the first shift this space will be manned by Financial Services Parts personnel. During other shifts and weekends the connecting doorway will be locked, and the Yard Parts area will be accessible by key by a lead mechanic or foreman.
4. Keep the laundry room and locker room as is.
5. Create a mechanic break room under the new mezzanine at the east end of the building, close to management offices.
6. Keep the tire area, but reduce its size by one cell on its east end by removing several machines in the tire shop that are inoperable and only storing tires that are to be used soon.
7. In the small cell given up by the tire area, at the east end of the present space, place pre-issued items for the mechanics: nuts and bolts, connectors, aerosols, towels, fuses, etc.
8. Establish four working bays on the north side of the building, in the middle of the area, with proper work lighting, pressure fed fluids, air lines, and space for personal tool cabinets, space for personal technical manuals and service bulletins, and the like. Lifts and perhaps a column mounted davit crane could eventually be placed in these areas.
9. Create traffic routing through the large doors on the south end of the building, one IN and one OUT. Paint indicators of this routing on the sealed and painted shop floor.
10. Outfit the tire area to make tire changes and pressure checks work easily and quickly, including keeping only tires in the racks that are intended to be used soon. All others should be stored elsewhere to create working space. Develop and test procedures in the tire area for handling common tasks, in order to make this area efficient.

5.4.2. WAREHOUSE 1

5.4.2.1. Preventative Maintenance

The recommendation to move the PM Shop out of the EQMR Building would allow space for the Yard mechanics and corrosion control (CC) operations. This move would need to occur prior to other relocations in order to free up the Yard Shop space for improvement, and would need to be well planned with the painters. It is recommended that the PM Shop be moved directly across the street to Warehouse 1 to occupy two cells:

- Cell 1 – paint booth with exhaust, ventilation, and positive pressure system accessible from the north end door; blasting area immediately behind the paint booth accessible from the south end door with blast shot recovery.
- Cell 2 – break room, parts room, welding machine, project and disassembly area.

As shown in Figure 5-3, the PM Shop in Warehouse 1 should include the common maintenance characteristics previously listed, as well as the following:

- A sheltered, well lit area to blast and recover blast shot, with positive pressure, shot recovery, and ventilation.
- A sheltered, positive pressure area to apply paint and cure paint with heat, including ventilation and exhaust.
- Welding equipment, accessible in the disassembly/assembly area.
- Routing in and out to the blast and paint areas.
- Project areas to store disassembly sections of equipment as big as a Yard Dog or 10 ton Fork Truck. Since CC is trying to process one Yard Dog a month, that will be a permanent requirement. The second piece project area is preferred, but perhaps not required.
- Working areas accessed from the north, across from the EQMR building, in order to avoid the waterfront, with its congestion, wind, and wind spray.
- Cell lighting, work project area lighting, and compressed air with their own compressor and accumulator and collectors.

These improvements will allow CC to accomplish their work without stopping the work of the Yard Shop, which is what currently occurs during blasting or painting.

5.4.2.2. Crane Maintenance

The Crane Maintenance (CM) Shop is scheduled to be moved from near crane 14 and will be placed in Warehouse 1. CM needs two cells of the warehouse to house its functions:

- Cell 1 – West end of the warehouse, adjacent to the outside wall to allow widening of the existing door to a large access door. This will house the Spreader reconditioning area, hydraulic and mechanic projects area and tables, offices and break room on the south end near the water, and quick entrance for trucks on the north end at the door. Incase the widening of the door is not possible then the spreader bar can be brought in the building by using two forklifts.
- Cell 2 – adjacent to cell 1, housing the quick truck entrance on the north end at the door, the parts room, electrical project area, and perhaps offices on the south end adjacent to the cell 1 offices.

The Crane Shop should include the common maintenance characteristics, as well as the following:

- A spreader maintenance area. In order to accommodate a spreader, which extends to 40 feet from 20 feet, and weighs 15 tons, cranes should occupy the west end of Warehouse 1, and a door should be cut into the west end wall large enough to allow a 20 foot spreader into the shop, brought in by a 20 ton Fork Truck.

- The spreader should be connected to a 3 phase 240VAC power source and control switches to exercise the spreader functions. The spreader should have some project tables nearby to accept flipper actuators and other large hydraulic items in a clean and sheltered environment, with proper lighting and access to compressed air for tools.
- Hydraulic hoses should be built in this same area, and other hydraulic projects dealt with in this area.
- The Crane area should have access from its north end by the Pier Watch truck for quick in and out visits to get parts. Therefore the Crane Parts Area should be accessible from the north side of the shop. The offices and break room and meeting room should therefore be at the other end of the shop, the south end, near the water.
- The electricians should have a project/work area for disassembly and testing of components, with perhaps a drives and PLC trainer (ABB ACS800 for the POLA cranes).

SECTION 6. FINANCIAL ANALYSIS

This section provides the following required quantitative analyses for approval of the Master Plan Update:

- An Implementation Plan,
- A Financial Feasibility Analysis, and
- An Economic Impact Statement pursuant to 5 GCA Chapter 9 §9301

6.1. METHODOLOGY AND APPROACH

The revenue projections in this analysis are based on two of the three growth scenarios (Full build-up now considered extremely unlikely) described in Section 3:

- **Organic Growth (Low) Scenario**: Shows cargo volumes increase corresponding with projected population growth without the effects of any military build-up
- **Current Build-up (Mid) Scenario:** Shows a reduced military build-up (also delayed six years) and at approximately 60 percent of the cargo and personnel level used in the military's original projections

Based on these scenarios and a commitment to move forward on a sound financial basis, tariff increases are identified to address increased expenditures associated with the following changes:

- PMP investments
- Operations and maintenance costs associated with those investments
- Catch-up on deferred maintenance and repairs on existing port facilities
- Updated overtime policy requirements
- Salary and wage increases required by PL 30-43

Several documents provide the platform upon which this analysis is built and from which many of the modeling assumptions are drawn—the Port Master Plan Update 2007 Report (submitted April 2008), the Cargo Forecast (2010), and the Financial Feasibility Study Update (2011), the Information Technology Summary (2012), the 5-Year Tariff Projection and 20-Year Financial Plan (2012), and the other sections of this 2013 Update to the Port Master Plan.

Implementation Plan Approach

The Implementation Plan was developed by evaluating improvement and sustainability requirements and determining a balanced approach for meeting them. It took into consideration PMP progress to date, the pace of required improvement change, the need to sustain existing and expanded operations, and the investment/financing risks associated with cargo and revenue forecasts. In evaluating these factors, the following were specifically considered:

- Cargo/revenue scenario analysis
- Five-year near-term emphasis on improvements to both improve Port efficiency and create additional cargo handling capacity in anticipation of the military build-up

- Twenty-year long-term focus on additional improvements targeted towards achieving operational and financial sustainability
- Self-sufficiency through tariff adjustments to reduce or eliminate dependence on outside funding assistance

This analysis determines a tariff rate structure that supports PAG's one-time and ongoing funding needs under the two scenarios. Since the cost of modernization beyond that which is underway will largely fall upon PAG, the Implementation Plan is intended to be appropriately conservative while delivering capacity and operational improvements in a fiscally prudent manner.

Financial Feasibility Analysis Approach

A comprehensive financial model was developed to simulate and test assumptions about future revenues, expenses, tariff revisions, and debt service issuance.

The steps involved in performing this analysis included the following:

- Modeling via Excel Spreadsheet customized around Port-specific PMP objectives, revenue and cost drivers, and constraints
  - Establishing a financial baseline
  - Establishing parameters for each improvement/sustainability/growth scenario
  - Identifying the net financial effect of the improvement program on the Port
- Scenario analysis to test the financial sensitivity to variable cargo volumes and revenues

The financial feasibility analysis and modeling is intended to support an objective, defensible, and fiscally sound basis for moving forward with the improvement program.

Economic Impact Assessment Approach

The impacts to Guam's economy as a result of the improvement program was analyzed to satisfy the requirements of 5 GCA Chapter 9 §9301 and to give a complete picture of the economic effects of each scenario.

The steps involved in performing this analysis included the following:

- Describing existing economic conditions on the Island
  - Consumer prices
  - Employment
  - Business activity
  - Overall economic activity
- Analyze the impacts that the proposed IP and the required tariff increases will have on those economic conditions
- Evaluate any other relevant economic impacts

The economic assessment seeks to ensure that the recommended improvement program will not adversely affect the island's economy.

6.2. Implementation Plan

This Plan is focused on making meaningful improvement but with limited upfront investment until cargo revenues permit a greater level of investment. It assumes the military build-up will happen but will be delayed and very likely downsized. It also assumes that previously envisioned major waterfront work, in terms of facility replacement, dredging, and facility expansion, will be pushed out 20 years.

6.2.1. Minimum Port Modernization Plan

The Plan considers that PAG has dropped the USDA $25 million guaranteed loan that formed a portion of the Port's intended $54.5 million borrowing plan. With this backdrop, PAG has established a PMP that blends minimum necessary improvements with sustainability measures and concurrent security enhancements. Some of these components are currently underway utilizing the PAG partnership with the MARAD and DHS Grants. The improvements and security enhancements include:

MARAD Managed Work

- Small container yard expansion
- New gate complex
- Expanded breakbulk yard
- Improved access to Berth F-4 and breakbulk facility through the demolition of WH2
- Stormwater improvements
- A new LC5 to support expansion areas
- Fire protection water tank, pumps and piping reconfiguration
- Fencing reconfiguration and repair replacement

PAG Managed Work

- Gantry crane acquisition (completed)
- Service life extension of wharf
- Systems upgrades for FMS and TOS
- Installation of GOS
- DHS grant supported work: replacement of existing hi-mast lights (completed)
- Establishment of communications network and EOC

6.2.2. Sustainability Balance

Sustainability from a financial perspective means right-sizing budgets, stream-lining services, and establishing a supporting revenue base. This should be accomplished primarily by establishing a regimented and defensible tariff structure; partly with the assistance of the PUC. Overreliance on federal grants and a local resistance to increasing tariffs have contributed to the degraded condition of the Port. Instituting regular, but only what are necessary, tariff adjustments is a key element to financial sustainability going forward.

Thus, in addition to the minimum PMP improvement and security projects, the Plan establishes budget to support ongoing and future sustainability projects that include:

- Hotel Wharf and Access Road Replacement
- Admin Building Replacement
- Port Security Building Upgrade
- Gantry Crane Replacements
- Yard Equipment Replacements
- Progressive Replacement of Pavements
- Progressive Replacement of Utilities Infrastructure
- Progressive Replacement of Fencing and Gates
- Ongoing Concrete Repairs to Warehouse Buildings
- Emergency Backup Generators
- Golf Pier Improvements (fuel lines, control valves)
- Agat Marina Repairs
- Expanded Reefer Infrastructure
- Harbor of Refuge Renovations
- Container Yard Storm Drain Repairs

In addition to the sustainability projects, the Plan establishes a right-sized budget that makes provision for:

- Contracting with a PMC to manage a structured maintenance program for gantry cranes
- Instituting a structured maintenance program for yard equipment
- Adjusting space utilization to improve maintenance and repair operations in the EQMR building and WH1
- Routine PM and M&R for all non-equipment facilities (buildings, utilities, fencing, structures)

6.2.3. Salary and Wage Increases

Pursuant to Public Law 30-43, the Port has adopted personnel rules and procedures that establish organizational structure and a compensation plan built around a salary scale indexed to the national market. In establishing initial grade levels and salaries, all employees were placed at the 10th market percentile, meaning that salary levels were commensurate with what the lower 10 percent of the industry was receiving in comparable grade/positions based on national statistics. In adopting the Rules and Procedures and associated Compensation Plan, the Port Board of Directors adopted a resolution in 2009 to establish a 10-year plan to raise salaries levels to the 50th market percentile.

The Port salary structure is based on grade levels, 20 steps within each grade level, and four sub-steps within each of the 20 steps. The Port Compensation Plan allows for performance-based movement (and salary increases) within the salary structure on an annual basis. Annual salary adjustments are referred to as “increments”. These annual adjustments can range from

zero to six increments corresponding to zero to six sub-steps with each sub-step equivalent to a 1 percent pay raise. The Port is currently budgeting for an average of four increments across the organization.

To date, increments have been measured against a pay scale that has been static since 2009. This means that a staff member receiving four increments (4 percent pay raise) is exceeding the consumer price index (CPI), averaging about 3.531 percent annually, but making very little effective lateral movement through the pay scale. In fact, once the scale is adjusted (no longer static), it would show that all employees, despite moving into higher steps and sub-steps within their pay grade, are now paid less than the 10th market percentile and thus falling behind when compared to national averages.

If the Board of Directors resolution is to be followed, adjustments would be made to the pay scale, and staff placement on that scale, on a biennial basis. This means that every two years, the scale would be updated based on market conditions (cost of living being a factor) and salaries would increase by one-fifth of the difference between the 10th market percentile and the 50th market percentile adjusting for cost of living increases. When that occurs, there would be no concurrent increments for that structural adjustment year. So the salary adjustment sequence is increments in year one, structural adjustment in year two, increments in year three, structural adjustment in year four, and so on until the 10-year market percentile closure plan is achieved. It is expected that thereafter, adjustments would involve 'annual increments only' with periodic (biennial) wage scale adjustments for cost of living.

The combination of annual increments, structural adjustments to the pay scale, and market percentile adjustments to salaries results in pay raises averaging approximately 6.6 percent per year for the next ten years. The combined PL 30-43 salary increases and cost of living increases for the first ten years are contained in Table 6-1.

Table 6-1: Average Salary Increases Associated with P.L. 30-43 and PAG Board Resolution

Year	Percent Increase
2014	4.000%
2015	9.213%
2016	4.000%
2017	9.213%
2018	4.000%
2019	9.213%
2020	4.000%
2021	9.213%
2022	4.000%
2023	9.213%

Source: Parsons Brinckerhoff analysis

6.2.4. Financing and Funding Options

In financing the infrastructure upgrades and equipment purchases outlined in Section 5, the PAG faces a number of choices regarding financing. In addition to the more standard paths of commercial loans and revenue bonds, the PAG has access to federal grants and direct or guaranteed government loans.

6.2.4.1. Revenue Bonds

The PAG may issue tax-exempt revenue bonds with the assistance of the GEDA secured by revenues generated by the infrastructure that the bonds are intended to fund. This differentiates them from general obligation bonds, which are typically repaid through tax revenues and lay claim to any legally available resources held by the issuer. The standard term for such bonds is 30 years, and their tax exempt nature allows lower financing costs for government entities, such as PAG.

However, issuance of bonds is not without organizational cost. There are extensive regulations governing the bond market, and PAG would need to strengthen its compliance and bond issuance capabilities. Additionally, the financial performance of PAG would come under greater scrutiny from bondholders and brokers. Finally, government entities in Guam have a history of not ranking in the highest investment grades, and that would likely increase lending costs associated with the transaction for PAG.

6.2.4.2. USDA Community Facility Guaranteed Loan Program

The USDA Office of Rural Development administers a loan portfolio of over $86 billion dollars, as of 2010, with an additional $16 billion in loan guarantees and grants. The USDA's Community Facilities Direct and Guaranteed Loan Program is a funding source for government entities, such as municipalities, counties, or autonomous agencies like PAG.

Financing supplied or guaranteed by this program is used to construct or improve facilities that provide a public service, with approved uses including land acquisition, professional service and consulting fees, and equipment purchase. To obtain either a direct loan or a guarantee for a commercial bank loan, successful applicants will have demonstrated authority to borrow and pledge security for the loans, as well as the authority to build, maintain, and operate the facility being funded. Projects that are intended to substantially alter the financial operations of a government entity are expected to prove credit-worthiness through independent feasibility studies. Additionally, financial stability and the ability to manage and control the facility are prerequisite conditions to securing a direct or guaranteed loan under this USDA program.

Funds secured through a loan granted or guaranteed by the USDA can be typically used for land or equipment purchase, real estate improvements, furnishings, professional service or consulting fees, lender and guarantee fees, two year's interest on the loan, and occasionally, the first year of operating expenses for the funded facility. The loan period is defined by the life of the facility, with the funds used for repayment derived from user fees, and in the case of the Port, tariffs and other commercial service or leasing revenues.

PAG has executed several direct and guaranteed loans to date. These are loans that have covered yard equipment purchases ($3.5 million) and gantry cranes ($12 million). Pursuant to initial PMP investment plans, the Port received a commitment for USDA Direct ($25 million) and guaranteed ($25 million) loans that were never consummated. To date, the Port has dropped its request for the USDA Guaranteed Loan of $25 million. Given the slowdown in military build-up plans, the re-set of the Port PMP to minimize near-term improvements, the decision to pursue or drop the USDA Direct Loan has yet to be made formally. Informal discussion with USDA shows them leaning toward a recommendation that the Port drop the $25 million direct loan commitment and pursue a separate loan application in the future.

6.2.4.3. Direct Loans

The direct loan features three means-tested tiers of interest rate: poverty, intermediate, and market rate. While the lowest interest rate is set at 4.5 percent, the market rate is equal to the eleventh bond buyers' rate recognized by the U.S. Treasury Department. The intermediate rate is then established halfway between the lowest rate and the market rate offerings. Eligibility considerations for means-tested, subsidized interest rates are established by analysis of the median household income of the surrounding jurisdiction. Direct loans have ranged in amount from $5,000 to $47 million, with the average being $1,140,319. As mentioned previously, PAG may still be in a position to pursue a Direct Loan, but likely based on a new pro forma once its development plans and associated tariff adjustments are stabilized.

6.2.4.4. Guaranteed Loans

Credit enhancement is available through the USDA Office of Rural Development to encourage the creation of community facilities in eligible, low-to-moderate income areas. While the borrower is compelled to retain a portion of the loaned funds, the guarantees are sold on the secondary market, where the USDA guaranty increases project feasibility and financial return. The USDA guaranty repays in cash 90 percent of funds at stake in the event of a loss. The lender is charged a guaranty fee of 1 percent of the borrowed amount, and this charge is typically assessed to the borrower.

For loans guaranteed by the USDA, the interest rate is set by the lending institution based on its own investment goals or experience with previous, similar projects. The local lender may set the interest rate as fixed or variable over the life of the loan. Defining the relationship of the borrower, the lender, and the USDA, it is the lender that formally applies to the USDA with supporting documentation (feasibility studies, construction documents, estimates, etc.), with the lender having decided upon its own criteria that the investment in the facility is sound. The relationship between the lender and the borrower is that of a typical loan, with the lender in charge of collecting payments, supervising liens on collateral, and verifying financial performance. Guaranteed loans have ranged in amount from $26,000 to $26 million, averaging $2,454,491 in the course of the program.

As previously mentioned, PAG was an intended borrower of a $25 million USDA Guaranteed Loan with ANZ Guam as the lender. PAG has since dropped its plans to execute that loan. ANZ Guam is also lending an additional term loan guaranteed by the USDA program earmarked for

the acquisition of cargo handling equipment. As of the latest audited financial review, PAG has maintained the requisite interest coverage ratio (net profit before depreciation, interest, taxes and amortization divided by total interest expense) of 1.5 to 1, while also maintaining a debt service coverage ratio of 1.3 to 1.

6.2.4.5. Port of Guam Improvement Enterprise Fund

Since June 2008, PAG has partnered with the MARAD, signing a MOA concerning the PAG Improvement Enterprise Program. This MOA designates MARAD as the leading federal entity to assist PAG in managing modernization funding, navigating the NEPA environmental permitting process, and leading the final design and construction effort associated with modernization program projects. Through related federal legislation, the Port of Guam Improvement Enterprise Fund was established as a separate account in the U.S. Treasury to be administered by the MARAD.

6.2.4.6. Department of Defense Appropriation Re-Programming

Upon learning that the Port was unsuccessful in obtaining an ARRA Grant requested in late 2009, the DOD reprogrammed $50 million of its 2010 budget and transferred it to the Port of Guam Improvement Enterprise Fund. This transfer took place at the end of FY 2010. The MARAD has been managing these funds and executing PMP projects as identified in Section 6.2.1. At this point there is no expectation that additional DOD funding will be forthcoming given the pending changes to the DPRI, i.e. realignment of Japan-based military forces to Guam, Hawaii, and Australia.

6.2.4.7. Other Federal Grant and Loan Programs

Since 1999, PAG has received $23.2 million in federal non-loan contributions of various categories. It is likely that the federal government will continue to recognize the strategic importance of Guam and its Port in weighing future appropriations decisions but this money should not be considered a reliable annual revenue source.

6.2.5. Self-Sufficiency to Control Implementation

The Financial Feasibility Study Report (2008) laid out a number of principles concerning recapitalization investment at the Port, upon which modeling assumptions have been built in this and previous reports. These management objectives remain relevant both as goals and as explanations of the model structure.

6.2.5.1. Maintain the Port and Its New Equipment

It is incumbent upon project planners to ensure that the program of asset management is undergirded by a stable and solvent financial framework. To do otherwise would subject the Port to progressive deterioration, system obsolescence, and operational risk. Careful attention to asset management with right-sized budgets will not only lengthen the useable life of existing assets, but it will also contribute to efficiency gains by bringing on system upgrades that will improve port and equipment operations.

6.2.5.2. Achieve Cost Recovery via Operating Revenues

As established in its authorizing legislation, it is the responsibility of the Board of Directors of PAG to establish and maintain, with the approval of the PUC, a schedule of dockage, rentals, tolls, pilotage, wharfage, and user charges for PAG facilities and services that will recover the cost of operating the Port. These costs include salaries of management and labor; equipment acquisition and maintenance; dredging and maintenance for Apra harbor, the entry channel, and the breakwater; depreciation of capital assets; utilities; insurance; interest and other borrower fees on loans; and other general expenses (in addition to a reasonable return on public investment). Future uncertainties about PAG's responsibility for retirement expenses and its contributions to the Government of Guam's Autonomous Agency Infrastructure Collection Fund further provide compelling reasons for a renewed focus on cost recovery through revenue enhancement at the Port. Finally, by achieving more complete cost recovery through consistent revenues, PAG may lower the cost of future borrowing and achieve a better bond rating, should revenue bonds be selected as a financing option at a future date.

6.2.5.3. Leverage Productivity Improvements to Reduce Costs

While retail consumers in Guam may not realize or fully experience the cost of service provision at PAG through inflation of total landed costs, PAG has in recent years deferred critical investments in capital improvement projects due to revenue shortfalls. In turn, productivity of Port assets has lagged behind what it could be, further increasing the cost of service provision within PAG. The recent acquisition of cranes combined with future system integration between the TOS, GOS, and FMS interfaces will allow productivity improvements and greater throughput per dollar expended within the Port.

6.2.5.4. Maintain Awareness of Inflation

Cost controls and productivity improvements will produce a better return on public investment within the Port. However, in some years, inflation and rising costs outside of PAG's control will compel the Port's administration to seek a revision to the tariff in order to more accurately reflect the cost of delivering the Port's services to the residents of Guam. While several of the modeled scenarios in this analysis assume a fixed 3.95 percent increase to the tariff per year, several other scenarios derive the necessary tariff increase required to support different levels of borrowing and associated facility improvement within the Port.

6.2.5.5. Reduce Dependence on Outside Funding Assistance

The Port needs to institute regular tariff adjustments working through the PUC. If no adjustments are made, the Port will lose ground to inflation which in and of itself will erode current buying power to support operations. With a long history of having insufficient past tariff adjustments, the Port facilities have fallen into a state of disrepair. Entire systems (pavements, water, firemain, stormwater) need progressive replacement. Aged buildings need renovation, serious attention to deterioration, or outright replacement. These requirements are additive to tariff adjustments addressing just the inflation component.

Ignoring regular tariff adjustments and depending on outside funding assistance in the form of grants has resulted in less than desired attention to the sustainability aspects of Port

operations. This has put the Port in a position of having to do some catch-up in previously neglected maintenance and repair.

To safeguard its future and actually enhance opportunity to receive continued (but complementary or partnering) federal assistance, the Port needs to demonstrate a commitment to right-sizing its revenue and operating budgets, institutionalizing structured sustainability efforts, and doing what it can on its own. Having such a program in place will provide assurance to outside lenders and grant authorities that their participation in funding ongoing improvement and sustainability measures will be a good investment for them.

6.2.6. 5-Year Tariff Petition Schedules

6.2.6.1. Tariff Rate Increases

Using the cargo forecasts determined in Section 3 of this Master Plan Update, the financial model calculated the size of the debt capacity at the two different cargo growth levels. The primary objective of this analysis was to establish tariff rates that would allow for an additional $150 million worth of To Be Scheduled sustainability improvements above and beyond the minimum PMP in the organic growth scenario. If a military buildup occurs, the prescribed tariff increases will not be needed. Rather, the influx in revenues from the effect of the military buildup will likely require tariff reductions in those years. The amount that tariffs need to be reduced should be evaluated at that time and are not specified in this analysis. The assumptions associated with each scenario and the resulting facilities funding capacity results are presented in Table 6-2.

Table 6-2: Bonding Capacity Results of Tariff Increases by Scenario

Scenario	Low	Mid
Container Volume Yrs. 1-20	2,084,878	2,483,158
Breakbulk Tons Yrs. 1-20	3,820,000	4,238,800
Tariff Increase Yrs. 1-5	4.36%	4.36%
Tariff Increase Yrs. 6-20	3.95%	3.95%
Bonding Capacity (5.5% avg. coupon)	$71M	N/A
Pay-as-you-go Facilities	$79M	N/A
Gross Improvements Funding Capacity	$150M	N/A

Source: Parsons Brinckerhoff analysis

6.3. Financial Feasibility Analysis

The financial model used the annualized 2013 revenues and expenditures as well as port activity forecasts to develop projected/required revenue from tariffs. The revenues and expenditures were then updated annually based on various revenue and cost drivers. Each line item is tied to the growth of an element that is most closely related to the revenue or expenditure, including but not limited to the following considerations:

- The cargo projections (container, transshipment, breakbulk, revenue-tons) identified in either the organic growth or current military build-up forecasts,

- Cargo handling labor projections (including projected overtime pay and all planned wage and salary increases) identified in either of the two scenarios,
- Inflation projections based on previous measurements provided by Guam's economic analysis bureau,
- Compensation plan requirements,
- Right-sized maintenance and repair budgets,
- Identified CIP Requirements (scheduled individual projects), and
- Progressive Sustainability Projects (based on funding availability, phase definition, and coordination with ongoing operations).

The revenues were then evaluated against the annual expenses and projected forward each year through to the 2033 timeframe. The result of the initial forecasts and tariff increases then identified the levels of debt service payments required/available and estimated the Port's bonding capacity.

6.3.1. Incorporation of Self-Sufficiency Measures

Building off the stated principles, this analysis assumes that PAG and the PUC will allow the necessary changes in operations and financial management to pursue more intensive maintenance, allow tariffs to stay current with cost inflation, and achieve full cost recovery for Port assets and associated services. Beyond these broader assumptions are more detailed inferences that have been used to structure the analysis and the accompanying revenue model.

6.3.1.1. Ongoing Revenue and Cost Assumptions

- The repair and maintenance necessary to keep the cranes in good working order was estimated by Sarandipity, LLC. The estimate for crane repair, maintenance and fuel is $13.8 million in 2013 dollars over the 20 year project horizon or between $597,855 and $711,858 annually assuming organic growth scenario.

- Facility maintenance is estimated to be 1.5 percent of total asset value per year. For PAG facilities, this amounts to approximately $2.25 million in the first year based on the estimated asset value of the Port of approximately $150 million.

- Yard equipment repair and maintenance includes the necessary upkeep of masts, cables, fleet vehicles, yard dogs, top picks, fork trucks, and other major equipment in the yard. Sarandipity again provided an estimate for yard equipment at approximately $17.6 million in 2013 dollars over the next 20 years or between $758,729 and $914,275 annually.

- Revenues are projected based on future tariff rates applied to forecast volumes of container, breakbulk, transshipment containers revenue-tons associated with civilian and military population growth and congruent increases in consumption of retail goods and construction imports. Expenses are forecasted to grow at the rate of 3.531 percent, which is based on the island's historical CPI increases.

- The model includes the previously identified but pending 5.65 percent interim tariff increase as well as a front-loaded five-year escalation of 4.36 percent followed by 15 years of a smaller annual increase of 3.95 percent.

- Baseline cargo assumptions for organic growth before the addition of cargos attributed to the forthcoming military build-up are the median projections found in the previous Cargo Forecast submitted to PAG. It is assumed that the contextual factors—economic, political, and environmental—that shaped those predictions are still valid and in place.

- Incremental volumes in container count, breakbulk, transshipment and cement tonnage are sourced from the Cargo Forecast contained in Section 4 of this Master Plan Update. This same document frames its predictions on the most recent phasing schedule for the introduction of troops to Guam, as well as the most recent estimation of the construction schedule required for completing housing and work space.

- Cargo, non-cargo, commercial, and other revenues are sourced from budgets and actual figures provided by PAG for the most recent fiscal year.

- Cost escalation of 3.531 percent per year corresponds to the average historic inflation rate observed on Guam since 1998. Organic growth rates for cargo (1 percent) are linked to reasonable estimates for organic population growth in a no build-up scenario. Facility maintenance for Port assets is assumed to be 1.5 percent of the total Port asset valuation per year with that asset value increasing with increased Port investments (e.g. Uplands Investments).

- The $10 million in improvements associated with the SLE program (such as cathodic protection, repairs to Berth F-5, FMS upgrade, and the purchase of a top pick) are assumed to commence following approval by the PUC and the Attorney General (AG). This package is funded by a $ 10 million Bank of Guam loan facilitated by GEDA. A purchase/construction period from 2014 to 2015 is assumed.

- FMS, TOS, and GOS implementation at a total cost of $6.5 million are expected to begin in 2013 with the FMS and TOS. The TOS and GOS systems will likely be implemented over a 5-year period between 2013 and 2018. The FMS upgrade will occur in two-phases with the first phase likely paid for by PAG general revenues or the SLE Loan depending on timing and funds available. The FMS second phase will likely be funded by a separate loan. The TOS/GOS will initially be funded by PAG General Revenues with the possibility that a portion will be funded by a separate loan, possibly including the second phase of the FMS.

- The uplands investment program managed by MARAD ($46 million now estimated as available) will likely continue into 2015/2016. This is funded from reprogrammed DOD funds deposited in the Port of Guam Improvement Enterprise Fund and thus does not require modeling as a Port funded expense. As such it does not impact the debt obligations or cash reserves of the Port.

- Some financing costs, such as fees typically associated with bond issuance and loan origination, including reserve amounts and debt service coverage requirements, are included. A debt service coverage ratio of 1.3 was estimated and issuance costs (including underwriter's discount, bond counsel and financial advisor fees) of approximately four percent of the loan amount were used. Other items, such as the management of the Port Improvement Enterprise Fund or other investment requirements not identified previously in this report, are not included in the analysis.

- The model assumes that PAG management staff will be able to make the necessary operational changes to achieve increased operating efficiency, after purchase of the new equipment, in order to realize the projected revenues at the forecast level of expense. Additional operating and maintenance expenses have been added to reflect the increased asset valuation of the Port for Upland investments beginning in 2016.

- The financial model evaluates the newly implemented crane surcharge of $125 per container. A breakbulk charge of $5 per ton is also included. This surcharge is assumed not to sunset, meaning it is assumed available to service crane replacement loans during the later stages of the 20-year planning cycle. If the PMC contract is implemented expediently, the Crane Surcharge account is expected to remain solvent through the 20-year forecast period. Crane surcharge revenues should be monitored over time to assure that the Crane Surcharge Account remains solvent in the face of inflation, maintenance program adjustments, crane investments, etc.

- This analysis also includes a change to labor staffing norms toward two additional labor gangs in 2017, totaling 38 full-time equivalent (FTE) employees. It is assumed that 85% of overtime labor costs will be charged to the carriers. This increased expenditure, beginning in 2017, is escalated at 3.531 percent annually.

- No isolated surcharge for cargos attributed solely to DOD is included in this revenue model, due primarily to the difficulty in implementing such a policy with regard to identification and segregation of these cargos. Accordingly, tariff growth is applied uniformly and does not discriminate against any particular constituencies.

- Retirement and other costs associated with employee benefits are escalated in proportion to projected labor costs. Substantial deviations from this assumption may affect the actual cash flow available to debt service in future years.

- The model does not include an annual contribution of $875,000 to the Government of Guam's Autonomous Agency Infrastructure Collection Fund, as it is assumed that the modernization improvements and sustainability projects will absorb any and all PAG revenues over the next 20 years.

6.3.1.2. Debt Service Assumptions

The debt service used to calculate the tariff rate increases is based on recent debt issuance at the Port and at other agencies on Guam. The debt issuance assumptions utilized in the financial analysis are as follows:

- Revenues equal to at least 130 percent of gross debt service
- Average annual coupon rate of 5.5 percent
- Debt issuance costs equal to 4 percent of the gross bond amount

6.3.2. Revenue Implications from Transshipment Analysis

The Consultant performed an analysis of the variable revenues and costs associated with transshipment of containers, breakbulk cargo and liquid bulk. By comparing the aggregate variable costs and variables expenses of transshipment activities within the Port, PAG staff and stakeholders can determine whether the present tariff structure supports full cost recovery for transshipment of containers, breakbulk and liquid bulk.

The assumptions for the transshipment analysis included:

- Tariff rates specific to container, breakbulk and liquid bulk cargo were derived from PAG's 2013 tariff schedule.
- Other variable revenues and costs associated with the movement of cargo were derived from PAG's annual income statements, container and breakbulk counts and allocated to transshipped cargo on a per revenue-ton basis.
- To determine which costs and revenues vary with the amount of transshipped cargo, the current scenarios were compared with a hypothetical scenario with no transshipment activity.

The key cost drivers of transshipment in the Port are gantry crane depreciation (40 percent of the cost of container transshipment, by volume) and operations labor (28 percent). Comparatively, maintenance and fuel for gantry cranes, top loaders, and yard dogs composed a relatively minor portion of container transshipment costs (12 percent).

Based on these assumptions, it was determined that a sizeable surplus will be generated in 2013 by the transshipment tariffs. As such, there is no demonstrated need to increase the rate of crane surcharge applied to container or bulk transshipment, as all costs are recovered. Given the large volume of transshipments in the Port annually and the resulting revenues, the Consultant does not recommend adjusting the crane surcharge or other transshipment tariffs relative to Guam-bound cargo tariffs. However, transshipment tariffs should be adjusted for future years according to the tariff increase schedule recommended in Section 6.2.6 to assist with implementation of the PMP and to keep pace with inflation.

The Transshipment Study will be submitted to PAG under separate cover.

6.3.3. Model Outputs

The following section describes the results derived from the financial model based on the assumptions described above.

6.3.3.1. Tariff Structures

Scenarios 1 and 2 are primarily interested in answering two questions relative to variable cargo volume growth, resulting revenues, and affordable/necessary investments:

First: What are the projected annual increases to the Port's tariffs based on organic cargo volume growth and the revenue necessary to pay for all of the Port's required annual funding obligations, consistent with minimal program needs and capped by the established debt ceiling?

Generally the, following tariff increases will accommodate the minimum investment requirements:

- Interim tariff increase of 5.65 percent in FY 2014
- 4.36 percent annual increase for the following five years
- 3.95 percent annual increase thereafter in perpetuity

Assuming that PAG takes measures necessary to satisfy the capital market's demands and achieves a 5.5 percent average coupon rate on new debt, the Port will have the ability to issue debt up to its existing debt limit. Currently, the Guam Power Authority and Guam International Airport achieve borrowing rates of less than 5 percent, so an estimated average coupon of 5.5 percent is considered conservative.

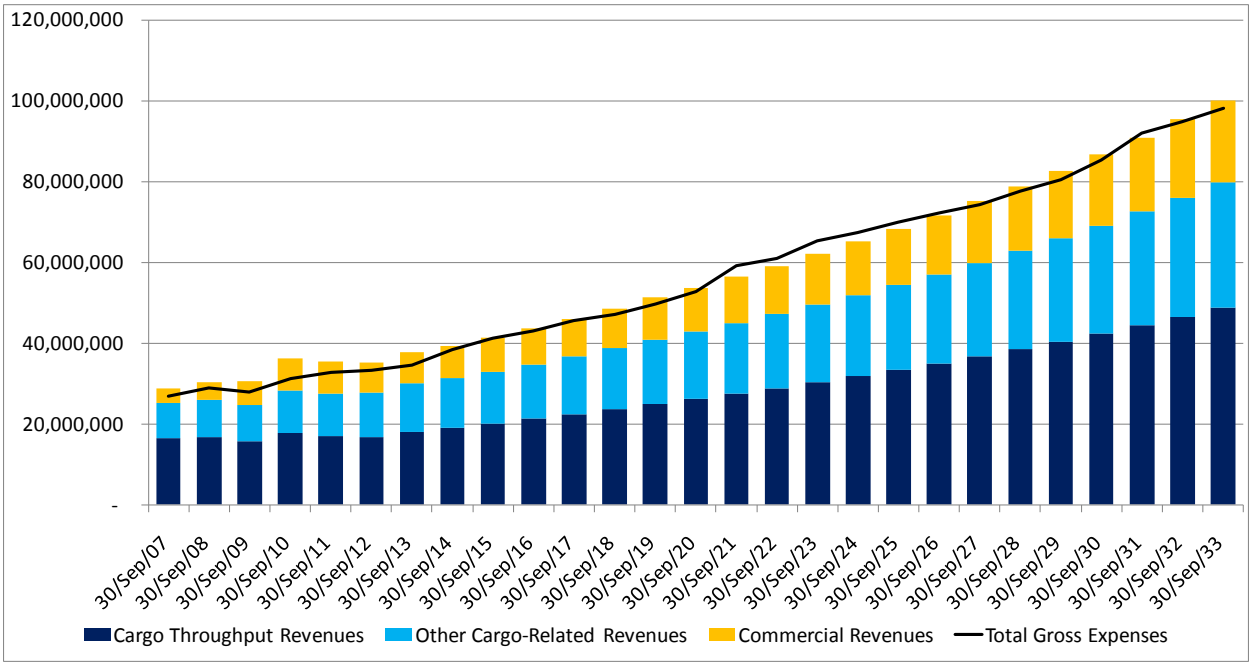
Second: If the likely mid-range military build-up occurs, what changes would be made to the organic-growth-based tariff projections and PMP execution scheduling?

If the likely Mid Build-up Scenario occurs, PAG will have additional revenues available above and beyond what is required to satisfy the minimum PMP. These revenues could be used to fund additional needed improvements and facilities on a pay-as-you-go basis or through a legislative increase in the Port's maximum debt ceiling.

6.3.3.2. Results of Financial Analysis

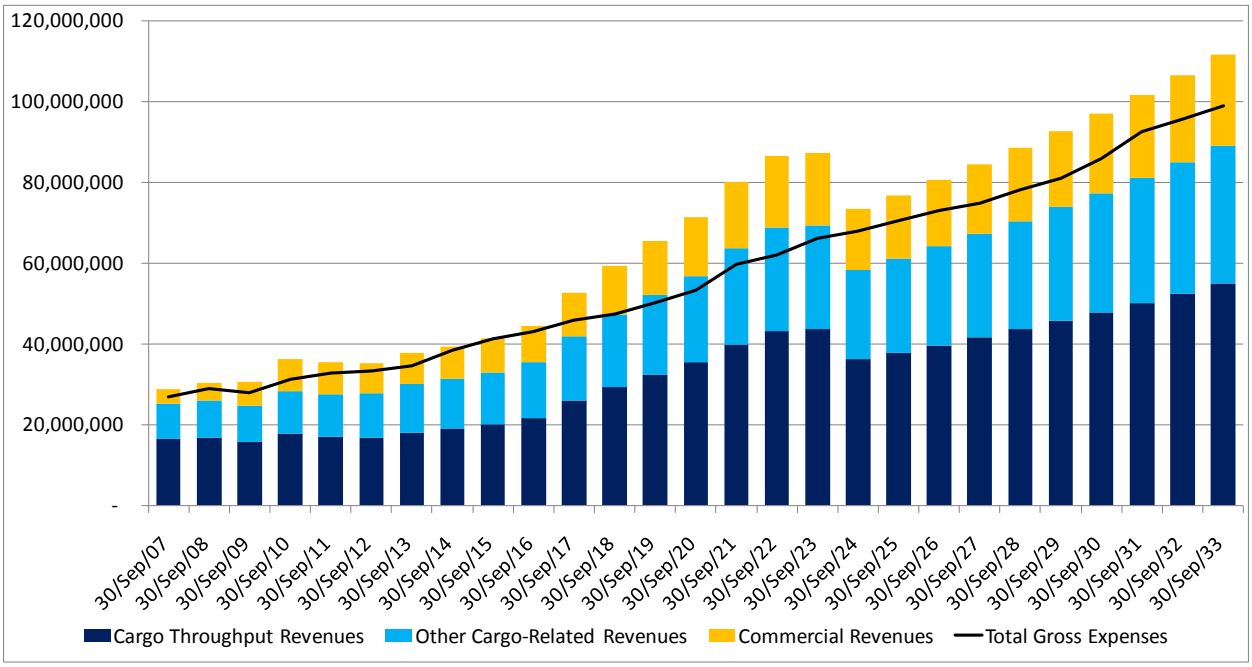
The annual and cumulative revenues and expenditures associated with each scenario are presented in Tables 6-3 and 6-4 and Figures 6-1 and 6-2.

Figure 6-1: Variable Tariff Revision—Organic Growth (Low) Scenario



Source: Parsons Brinckerhoff analysis

Figure 6-2: Variable Tariff Revision—Mid Build-up Scenario



Source: Parsons Brinckerhoff analysis

Table 6-3: Variable Tariff Revision - Organic Growth (Low) Scenario

5-Year Tariff Escalation Assumed to Begin October 1, 2014 **Case: Low -- 4.36% followed by 3.95%**

1	2	3	4	5	6	7	8	9	10	11	12
	Revenues					Expenses					
Fiscal Year	Cargo Revenues[1]	Non-Cargo Revenues[2]	Commercial Revenue[3]	Other Income[4]	Total Annual Revenues[5]	General and Administrative Expenses[6]	Facilities Maintenance and Repairs[7]	Equipment Maintenance and Repairs[8]	Depreciation & Amortization[9]	Total Annual Expenses[10]	Net Surplus/ (Deficit)[11]
2007	$16,571,356	$8,660,680	$3,682,468	$278,747	**$29,193,251**	$24,511,186			$2,459,083	**$26,970,269**	**$2,222,982**
2008	$16,846,476	$9,080,272	$4,393,372	$450,559	**$30,770,679**	$26,436,603			$2,640,307	**$29,076,910**	**$1,693,769**
2009	$15,834,549	$8,912,237	$5,755,915	$1,191,584	**$31,694,285**	$25,169,006			$2,742,614	**$27,911,620**	**$3,782,665**
2010	$17,691,921	$10,720,121	$7,870,846	$3	**$36,282,891**	$28,375,783			$2,838,464	**$31,214,247**	**$5,068,644**
2011	$16,899,590	$10,644,247	$7,915,971	$738,354	**$36,198,162**	$29,230,689			$3,223,788	**$32,454,477**	**$3,743,686**
2012	$16,680,043	$11,182,864	$7,356,319	$111,409	**$35,330,635**	$29,055,114			$3,916,254	**$32,971,368**	**$2,359,267**
2013	$17,971,051	$12,085,869	$7,809,642		**$37,866,562**	$28,710,173		$758,729	$4,758,040	**$34,226,942**	**$3,639,620**
2014	$19,156,231	$12,127,442	$7,937,923		**$39,221,596**	$29,557,470	$2,329,453	$793,935	$5,820,451	**$38,501,309**	**$720,288**
2015	$20,211,846	$12,796,069	$8,375,670		**$41,383,585**	$30,874,513	$2,411,712	$830,777	$7,178,627	**$41,295,629**	**$87,955**
2016	$21,325,520	$13,501,413	$8,837,438		**$43,664,371**	$32,124,366	$2,496,876	$869,331	$7,636,524	**$43,127,097**	**$537,274**
2017	$22,500,442	$14,245,486	$9,324,542		**$46,070,470**	$34,813,004	$2,585,046	$909,678	$7,319,181	**$45,626,909**	**$443,561**
2018	$23,739,977	$15,030,410	$9,838,368		**$48,608,755**	$36,220,281	$2,676,331	$951,899	$7,230,377	**$47,078,888**	**$1,529,867**
2019	$25,047,674	$15,858,423	$10,380,378		**$51,286,475**	$39,266,022	$2,770,839	$996,083	$6,694,514	**$49,727,458**	**$1,559,017**
2020	$26,273,446	$16,635,889	$10,889,703		**$53,799,038**	$40,849,516	$2,868,684	$1,040,309	$8,155,162	**$52,913,672**	**$885,366**
2021	$27,559,078	$17,451,306	$11,423,885		**$56,434,269**	$44,301,062	$2,969,984	$1,086,501	$10,797,809	**$59,155,357**	**($2,721,088)**
2022	$28,907,489	$18,306,521	$11,984,133		**$59,198,143**	$46,083,992	$3,074,862	$1,134,747	$10,846,393	**$61,139,993**	**($1,941,850)**
2023	$30,321,743	$19,203,472	$12,571,713		**$62,096,928**	$49,996,784	$3,183,443	$1,185,136	$10,901,909	**$65,267,273**	**($3,170,346)**
2024	$31,805,049	$20,144,188	$13,187,956		**$65,137,192**	$52,005,521	$3,295,858	$1,237,766	$11,000,354	**$67,539,500**	**($2,402,308)**
2025	$33,360,774	$21,130,800	$13,834,254		**$68,325,829**	$54,096,281	$3,412,243	$1,292,735	$11,095,498	**$69,896,757**	**($1,570,929)**
2026	$34,992,450	$22,165,542	$14,512,070		**$71,670,062**	$56,266,249	$3,532,738	$1,350,148	$11,283,442	**$72,432,577**	**($762,516)**
2027	$36,703,780	$23,250,755	$15,222,934		**$75,177,470**	$58,521,572	$3,657,488	$1,410,114	$10,786,167	**$74,375,341**	**$802,129**
2028	$38,498,649	$24,388,896	$15,968,453		**$78,855,998**	$61,778,456	$3,786,643	$1,472,745	$10,617,349	**$77,655,193**	**$1,200,805**
2029	$40,381,128	$25,582,538	$16,750,312		**$82,713,978**	$64,522,536	$3,920,359	$1,538,161	$10,494,786	**$80,475,842**	**$2,238,136**
2030	$42,355,490	$26,834,382	$17,570,277		**$86,760,148**	$67,054,795	$4,058,797	$1,606,485	$12,641,625	**$85,361,702**	**$1,398,447**
2031	$44,426,214	$28,147,259	$18,430,198		**$91,003,671**	$69,686,695	$4,202,123	$1,677,847	$16,464,668	**$92,031,333**	**($1,027,662)**
2032	$46,597,998	$29,524,137	$19,332,019		**$95,454,154**	$72,426,147	$4,350,510	$1,752,382	$16,426,497	**$94,955,536**	**$498,618**
2033	$48,875,769	$30,968,131	$20,277,774		**$100,121,673**	$75,269,435	$4,504,138	$1,830,232	$16,570,201	**$98,174,006**	**$1,947,667**
Total	$643,040,746	$407,293,058	$266,649,999		**$1,316,983,804**	$1,015,714,696	$66,088,129	$24,967,012	$209,961,536	**$1,316,731,373**	**$252,431**

Footnotes:

[1] Reflects revenue from port operations directly related to cargo based on organic growth with no military buildup.
[2] Non-Cargo revenue includes all revenue not derived from the loading and unloading of freight or leases.
[3] Includes lease revenues, demurrage and administrative fees.
[4] Includes interest income and federal reimbursements.
[5] Summary of columns 2,3,4 and 5.
[6] Includes salary, benefits, insurance and other operating expenditures.
[7] Maintenance and Repair of Port facilities at 1% of total buildings and property.
[8] Maintenance and Repair of Port equipment provided by Sarandipity.
[9] Depreciation and amortization of all PAG assets and loans.
[10] Summary of columns 7, 8, 9 and 10.
[11] Difference between column 6 and column 11.

Source: Parsons Brinckerhoff analysis

Table 6-4: Variable Tariff Revision - Mid Build-up Scenario

5-Year Tariff Escalation Assumed to Begin October 1, 2014 **Case: Low -- 4.36% followed by 3.95%**

1	2	3	4	5	6	7	8	9	10	11	12
	Revenues					Expenses					
Fiscal Year	Cargo Revenues[1]	Non-Cargo Revenues[2]	Commercial Revenue[3]	Other Income[4]	Total Annual Revenues[5]	General and Administrative Expenses[6]	Facilities Maintenance and Repairs[7]	Equipment Maintenance and Repairs[8]	Depreciation & Amortization[9]	Total Annual Expenses[10]	Net Surplus/ (Deficit)[11]
2007	$16,571,356	$8,660,680	$3,682,468	$278,747	**$29,193,251**	$24,511,186			$2,459,083	**$26,970,269**	**$2,222,982**
2008	$16,846,476	$9,080,272	$4,393,372	$450,559	**$30,770,679**	$26,436,603			$2,640,307	**$29,076,910**	**$1,693,769**
2009	$15,834,549	$8,912,237	$5,755,915	$1,191,584	**$31,694,285**	$25,169,006			$2,742,614	**$27,911,620**	**$3,782,665**
2010	$17,691,921	$10,720,121	$7,870,846	$3	**$36,282,891**	$28,375,783			$2,838,464	**$31,214,247**	**$5,068,644**
2011	$16,899,590	$10,644,247	$7,915,971	$738,354	**$36,198,162**	$29,230,689			$3,223,788	**$32,454,477**	**$3,743,686**
2012	$16,680,043	$11,182,864	$7,356,319	$111,409	**$35,330,635**	$29,055,114			$3,916,254	**$32,971,368**	**$2,359,267**
2013	$17,971,051	$12,085,869	$7,809,642		**$37,866,562**	$28,710,173		$758,729	$4,758,040	**$34,226,942**	**$3,639,620**
2014	$19,156,231	$12,127,442	$7,937,923		**$39,221,596**	$29,557,470	$2,329,453	$793,935	$5,820,451	**$38,501,309**	**$720,288**
2015	$20,211,846	$12,796,069	$8,375,670		**$41,383,585**	$30,874,513	$2,411,712	$830,777	$7,178,627	**$41,295,629**	**$87,955**
2016	$21,716,059	$13,696,393	$8,995,629		**$44,408,081**	$32,148,475	$2,496,876	$885,069	$7,636,524	**$43,166,943**	**$1,241,138**
2017	$25,940,846	$15,976,825	$10,729,208		**$52,646,879**	$34,863,967	$2,585,046	$1,046,541	$7,319,181	**$45,814,735**	**$6,832,144**
2018	$29,368,232	$17,863,109	$12,136,587		**$59,367,928**	$36,302,729	$2,676,331	$1,174,002	$7,230,377	**$47,383,439**	**$11,984,489**
2019	$32,460,986	$19,632,121	$13,442,047		**$65,535,155**	$39,388,669	$2,770,839	$1,284,244	$6,694,514	**$50,138,266**	**$15,396,889**
2020	$35,413,206	$21,314,521	$14,685,561		**$71,413,288**	$41,012,873	$2,868,684	$1,392,888	$8,155,162	**$53,429,608**	**$17,983,680**
2021	$39,923,184	$23,687,017	$16,483,029		**$80,093,230**	$44,519,365	$2,969,984	$1,566,032	$10,797,809	**$59,853,191**	**$20,240,040**
2022	$43,320,494	$25,498,720	$17,819,293		**$86,638,508**	$46,356,945	$3,074,862	$1,695,166	$10,846,393	**$61,973,365**	**$24,665,142**
2023	$43,770,244	$25,685,407	$17,830,624		**$87,286,275**	$50,298,767	$3,183,443	$1,716,855	$10,901,909	**$66,100,975**	**$21,185,300**
2024	$36,162,778	$22,285,626	$14,925,343		**$73,373,747**	$52,322,492	$3,295,858	$1,407,416	$11,000,354	**$68,026,120**	**$5,347,627**
2025	$37,890,634	$23,356,825	$15,640,268		**$76,887,727**	$54,425,930	$3,412,243	$1,468,376	$11,095,498	**$70,402,047**	**$6,485,681**
2026	$39,701,240	$24,479,495	$16,389,421		**$80,570,156**	$56,612,229	$3,532,738	$1,531,991	$11,283,442	**$72,960,400**	**$7,609,755**
2027	$41,598,567	$25,656,109	$17,174,441		**$84,429,117**	$58,884,663	$3,657,488	$1,598,377	$10,786,167	**$74,926,695**	**$9,502,422**
2028	$43,586,780	$26,889,261	$17,997,045		**$88,473,085**	$62,162,874	$3,786,643	$1,667,657	$10,617,349	**$78,234,523**	**$10,238,562**
2029	$45,670,240	$28,181,667	$18,859,033		**$92,710,941**	$64,922,331	$3,920,359	$1,739,955	$10,494,786	**$81,077,432**	**$11,633,509**
2030	$47,853,522	$29,536,177	$19,762,292		**$97,151,991**	$67,474,261	$4,058,797	$1,815,406	$12,641,625	**$85,990,088**	**$11,161,903**
2031	$50,141,418	$30,955,775	$20,708,798		**$101,805,991**	$70,126,766	$4,202,123	$1,894,145	$16,464,668	**$92,687,703**	**$9,118,289**
2032	$52,538,953	$32,443,590	$21,700,623		**$106,683,166**	$72,887,801	$4,350,510	$1,976,318	$16,426,497	**$95,641,127**	**$11,042,040**
2033	$55,051,391	$34,002,902	$22,739,938		**$111,794,231**	$75,753,695	$4,504,138	$2,062,076	$16,570,201	**$98,890,109**	**$12,904,122**
Total	$761,476,854	$466,065,049	$314,332,776		**$1,541,874,678**	$1,020,896,814	$66,088,129	$29,547,225	$209,961,536	**$1,326,493,704**	**$215,380,975**

Footnotes:

[1] Reflects revenue from port operations directly related to cargo based on organic growth with no military buildup.
[2] Non-Cargo revenue includes all revenue not derived from the loading and unloading of freight or leases.
[3] Includes lease revenues, demurrage and administrative fees.
[4] Includes interest income and federal reimbursements.
[5] Summary of columns 2,3,4 and 5.
[6] Includes salary, benefits, insurance and other operating expenditures.
[7] Maintenance and Repair of Port facilities at 1% of total buildings and property.
[8] Maintenance and Repair of Port equipment provided by Sarandipity.
[9] Depreciation and amortization of all PAG assets and loans.
[10] Summary of columns 7, 8, 9 and 10.
[11] Difference between column 6 and column 11.

Source: Parsons Brinckerhoff analysis

6.3.3.3. Scenario Conclusions and Resulting Tariff Policy

Based on the results of the financial analysis, the following conclusions may be drawn:

- If the port experiences only organic growth over the next 20 years, the tariff policy recommended in this section will be sufficient to fund the minimum PMP investment, up to $150 million in sustainability improvements, and changes to salary and wages required by PL 30-43 within a reasonable margin of safety.

- If the military build-up occurs, PAG will have additional funds available for maintenance and capital improvements for sustainability. The improvements contemplated in the organic growth scenario would likely be achieved earlier than planned. These could be funded on a pay-as-you-go basis or by raising PAG's existing debt ceiling. After completing the sustainability improvements, PAG's tariffs would need to be lowered to bring revenues in line with annual expenditures.

Table 6-5 shows the recommended tariff increase schedule.

Table 6-5: Recommended Tariff Increase Schedule

Date	Tariff Increase
10/01/2014	5.65%
10/01/2015	4.36%
10/01/2016	4.36%
10/01/2017	4.36%
10/01/2018	4.36%
10/01/2019	4.36%
10/01/2020+	3.95%

Source: Parsons Brinkerhoff analysis

6.4. Economic Impact Assessment

Title 5, GCA Chapter 9, §9301 requires that any changes to rules, regulations or fee increases be accompanied by an economic impact statement for review and approval by the Governor and the Legislature. The economic impact statement shall address the following:

1. The purpose and need for the rule or regulation;
2. The financial impact of the proposed rule or regulation;
3. Any potential increase or decrease in the cost of living on Guam;
4. Any direct or indirect impact upon employment on Guam;
5. Any increase or decrease in the cost of doing business as an enterprise or industry on Guam; and
6. Any adverse or beneficial economic impact which is attributable to the proposed rule or regulation.

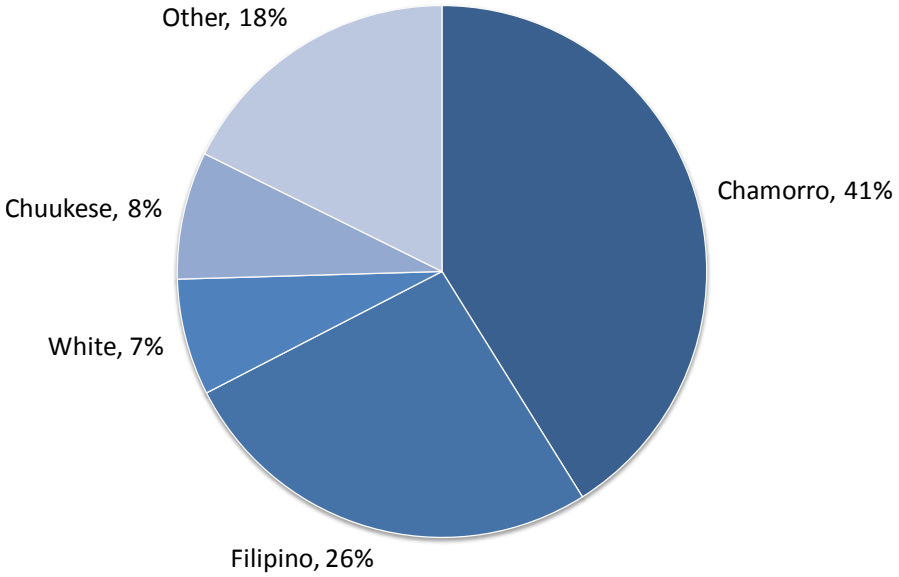
6.4.1. Socioeconomic Overview

6.4.1.1. Residents

In 2011, the population of Guam stood at 159,600. Of this, approximately 6,275 or 4 percent were active duty military, and an additional 7,250 or 4.5 percent were military dependents. Thus the island's military and military related residents make up 8.5 percent of the island population.

Almost half of Guam's population identifies as Chamorro. As shown in Figure 6-3, other Asian ethnicities account for 32 percent of the population People of Caucasian descent make up 7 percent of those living on Guam.

Figure 6-3: Guam Population by Ethnicity, 2011

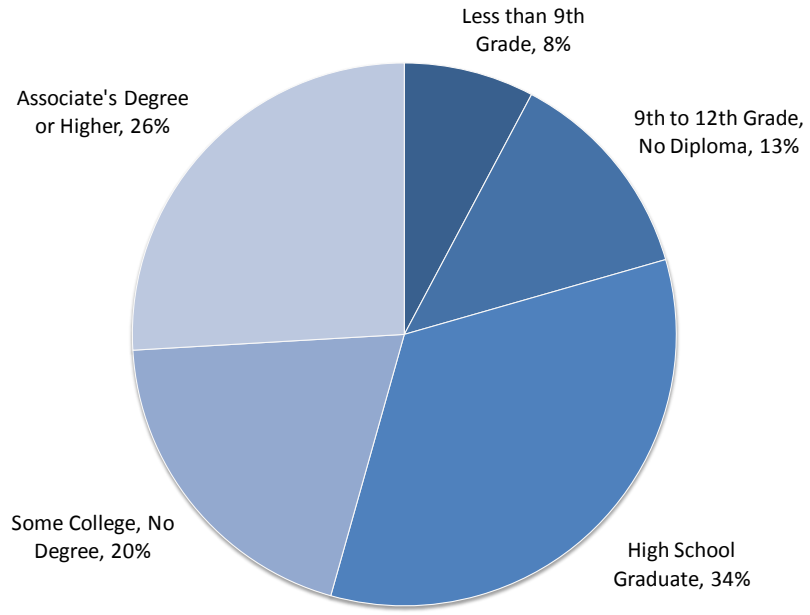


Source: Guam Statistical Year Book 2011

6.4.1.2. Education

On Guam, approximately 85 percent of those over the age of 25 have a High School diploma or equivalency. This is comparable to the mainland's rate of 85 percent. However, a smaller percentage of Guamanians have received an Associate's Degree or higher when compared with the U.S. (26 percent vs. 36 percent). Figure 6-4 illustrates educational attainment.

Figure 6-4: Educational Attainment, 2010



Source: Guam Statistical Year Book 2011

6.4.1.3. Household Income

Median household income in Guam for 2010 was $39,052. This is significantly lower than the 2010 level for the US mainland of $50,046 (28 percent lower). That same year on the mainland, 7.6 percent of households reported having an annual income of less than $10,000. On Guam this figure was 11.6 percent; 5.6 percent reported having no annual income.

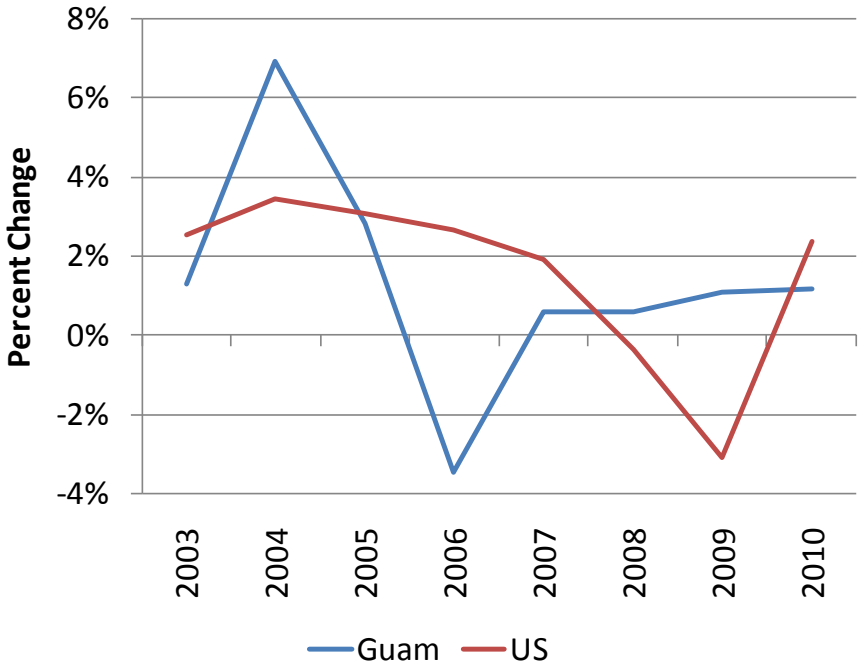
6.4.1.4. Economy

In 2010, Guam's GDP was approximately $4,577[4] million, which is roughly 0.03 percent of U.S. mainland GDP ($13.3 trillion). Guam's GDP per capita that year was $28,721 –38 percent lower than the U.S. figure of $46,616.

Despite Guam's status as a U.S. Territory, its overall economy does not appear to follow the same trends as the mainland. For example, Guam saw a peak in real GDP growth in 2004, followed by a recession in 2006. Since then, it has experienced real GDP growth rates of between 0.5 percent and 1.2 percent. The U.S., on the other hand, saw growth between 2.0 percent and 5.5 percent for the years 2003 through 2007 inclusive, followed by negative growth of -0.3 percent and -1.3 percent in 2008 and 2009 respectively, then increasing to 2.4 percent in 2010 (Figure 6-5).

[4] As a US territory Guam's currency is the US dollar.

Figure 6-5: Change in Real GDP, Guam vs. U.S.



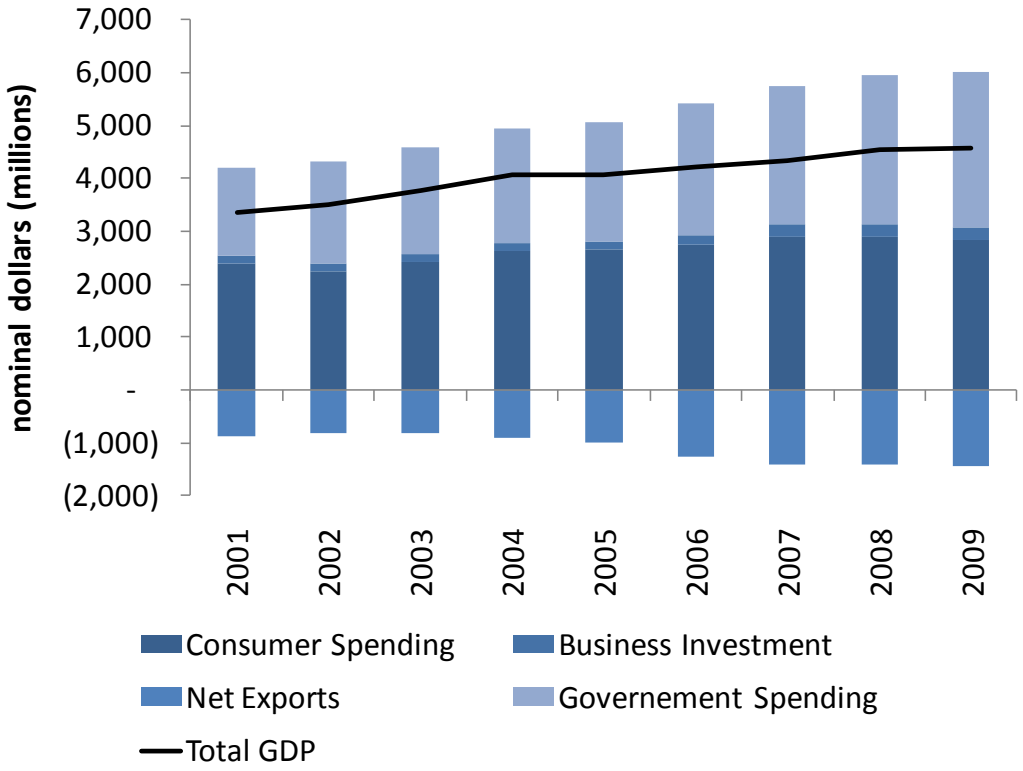
Source: Guam Statistical Year Book 2011 and U.S. Bureau of Economic Analysis

Guam's economy is largely driven by consumer and government spending. Net exports (exports minus imports) reduce statistical measures of GDP, as the island's economy is highly dependent on imports (Figure 6-6).

Not including net exports, consumer and government spending each account for roughly 43 and 45 percent of total GDP respectively. Of consumer spending, 20 percent is estimated to be tourism related. In 2007, the federal government made up almost 27% of Guam's economy. Business investment only comprises around 4 percent of the economy.

The impact of Net Exports on the overall GDP of the island is substantial. At $1,445 million in 2010, it was roughly one third the size of total GDP; this includes imports/exports to and from the mainland.

Figure 6-6: Guam GDP by Component, Nominal Dollars



Source: Guam Statistical Year Book 2011

6.4.1.5. Tourism, Military and the Local Economy

Guam's limited productive resources and lack of economies of scale prevent it from achieving the type of economic diversification seen in larger economies. It would not be much of an over-simplification to view Guam's economy as a triad, comprised of three industries (tourism, the military and the local economy), or as serving three groups of customers (tourists, military personnel and families, and local residents).

6.4.1.6. Tourism

Tourism clearly is Guam's leading economic sector, accounting for up to 60 percent of the government's annual revenues; and with services, including hotels and lodging, providing more than 26 percent of Guam's total payroll employment. The total annual economic impact of visitors on Guam ranges from 20 percent to over one-third of the total island economy, depending on the measure and year.

In 2011, the island had 1.1 million visitors – 7.2 times the island's population. Nearly three-quarters of these visitors are from Japan (72 percent) and another 13 percent come from Korea, and around five percent were U.S. nationals.

Shopping on Guam is one of the main attractions for tourists and is a significant contributor to the local economy. Retail spending accounts for an estimated 43 percent of all tourism

spending. In 2008, the Guam Visitors Bureau (GVB) reported 1,179,246 visitor arrivals to Guam, with each tourist spending an average of $600 on-island.

Over the past decade or so, tourist arrivals have struggled in the midst of a worldwide economic slump, compounded by the September 11, 2001 terrorist attack on the World Trade Towers, the invasion of Afghanistan by the U.S. and its allies, the war with Iraq, and the fury of Typhoon Chata'an and Supertyphoon Pongsona in 2002. Furthermore, the earthquake and tsunami events in Sendai, Japan in March 2011 have added to the struggles facing Guam's major source market.

6.4.1.7. Military

Guam has a large U.S. military presence, which includes Navy and Air Force bases that encompasses nearly 27 percent of the island's land mass.

Defense spending on Guam is about $700-800 million a year, with 6,500 active duty personnel and approximately 7,000 dependents. In 2010, there were roughly 3,600 Federal civilian employees. Federal taxes returned to Guam were about $45 million.

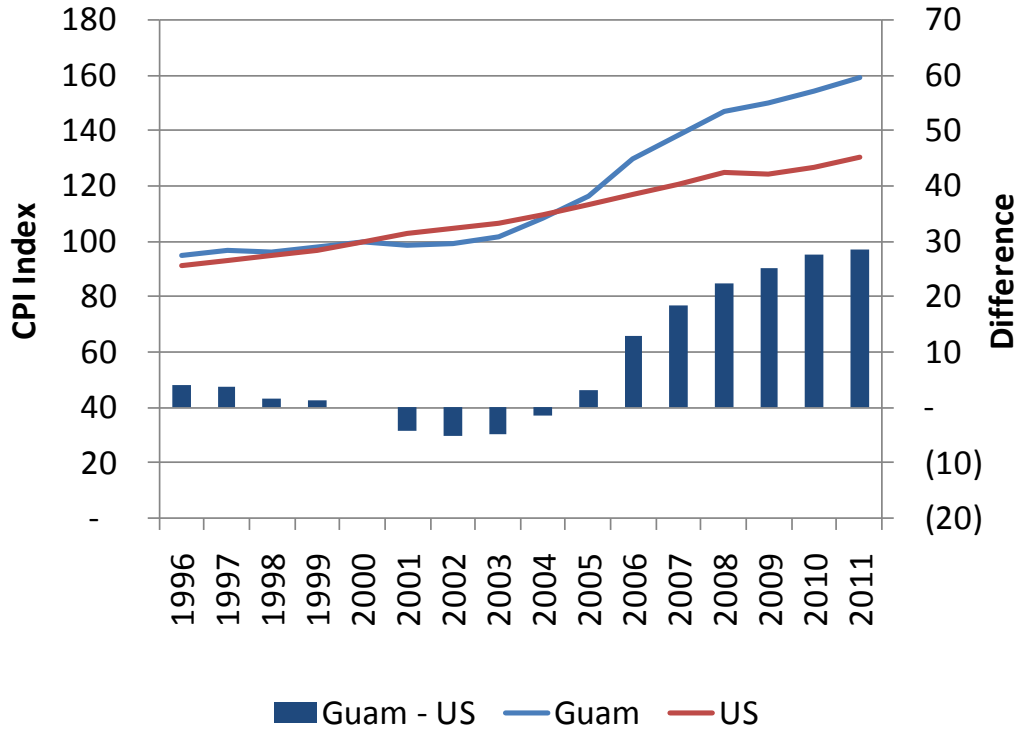
6.4.1.8. Local Economy

This sector provides strong support for retail trade and many different services including health, education, financial, legal, etc. The instability of tourism, the unpredictability of the military build-up, combined with the inability of Guam to significantly influence either of these sectors have made this 'third sector' a priority for the Island's government.

6.4.1.9. Inflation

Prior to 2005 inflation on the mainland and in Guam tracked one another fairly well. Since 2005 inflation in Guam has greatly outpaced the U.S. Between 2005 and 2011, U.S. CPI had a CAGR of 2.4 percent while Guam's CPI had a CAGR of 5.4 percent. With both indices set to 100 in the year 2000, the spread between them has grown to 29 points or 22 percent as of 2011. This has the effect of reducing the island's GDP and personal income (i.e., purchasing power of households) when measured in real, or inflation adjusted, terms. The island has seen both nominal and real personal incomes fall since 2005, when inflation began to accelerate. Figure 6-7 shows CPI for Guam vs. the U.S.

Figure 6-7: CPI Guam vs. U.S., Base Year 2000

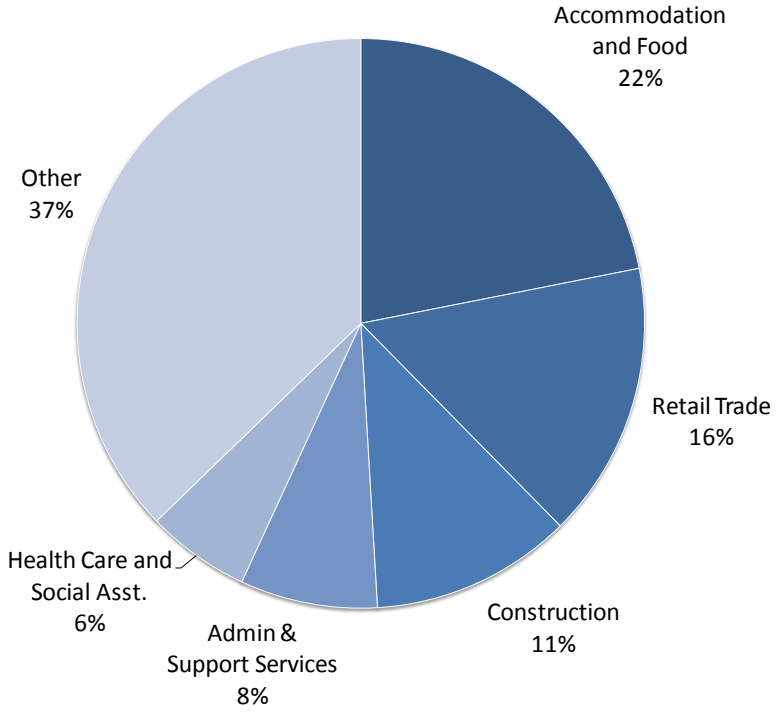


Source: Guam Statistical Year Book 2011 and U.S. Bureau of Labor Statistics

6.4.1.10. Employment (Civilian)

As noted above, Guam's economy is driven in large part by the tourism industry, thus it is unsurprising that the Accommodation and Food industry and Retail Trade are the largest employers on the island, representing 22 percent and 16 percent of total jobs, respectively. Construction is also an important sector, accounting for 11 percent of private employment in Guam (Figure 6-8). The public sector in Guam supplies over a quarter of all employment on the island with the territorial government accounting for 19 percent. The amount of those on the island in active military service is equivalent to approximately 10 percent of the total civilian employment, again underlining the important role of the military in Guam's economy.

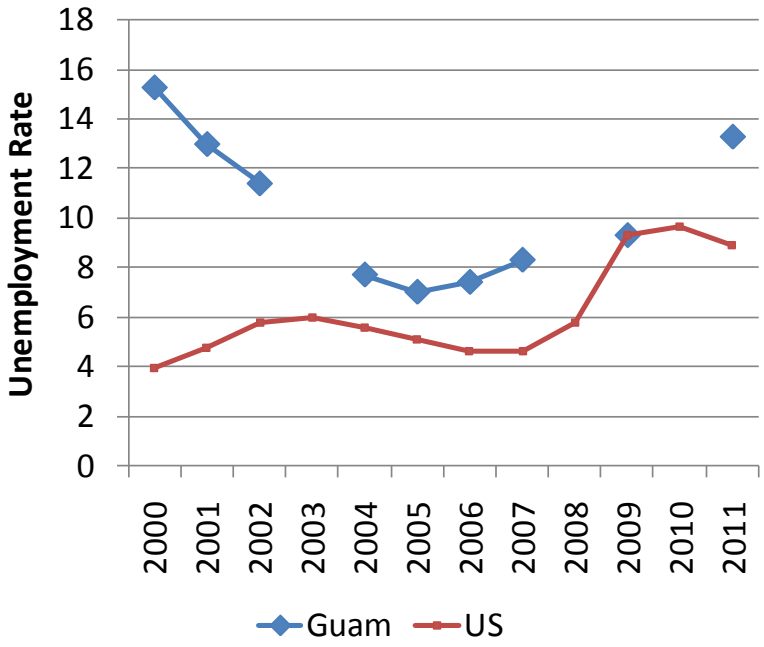
Figure 6-8: Private Civilian Employment by Sector, 2007



Source: Guam Statistical Year Book 2011

Guam's labor force participation rate has varied between 57 and 67 percent since the year 2000, averaging around 63 percent. This is lower, but not significantly lower, than the mainland's rate of 66 percent. However, the Island's unemployment rate over that time was markedly higher than the U.S., averaging a whopping 10.3 percent compared to 6.2 percent. In 2011, the unemployment rate on Guam reached 13.3 percent, compared to 8.9 percent on the mainland. Figure 6-9 indicates unemployment in Guam vs. the U.S.

Figure 6-9: Unemployment Guam vs. U.S.



Source: Guam Statistical Year Book 2011 and U.S. Bureau of Labor Statistics

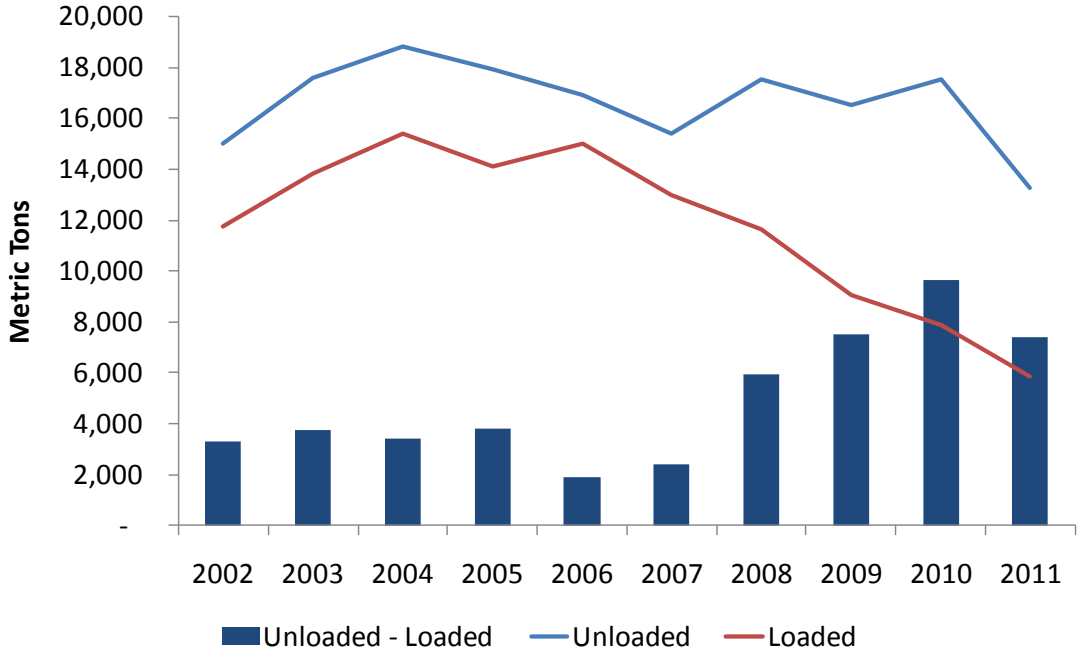
6.4.1.11. Imports

Guam has a history of carrying a sizeable trade imbalance, bringing into the country far more goods than it ships elsewhere. As shown in Figure 6-10, the gap between imports and exports has only expanded during the recent global downturn.

In 2011, $251 million dollars in goods were imported into Guam: 20 percent by air and 80 percent via ship. When considering imports by value ships still bring in three times more imports than airplanes this reflects the high cost of sending cargo via air as compared to the cost of sending it by water.

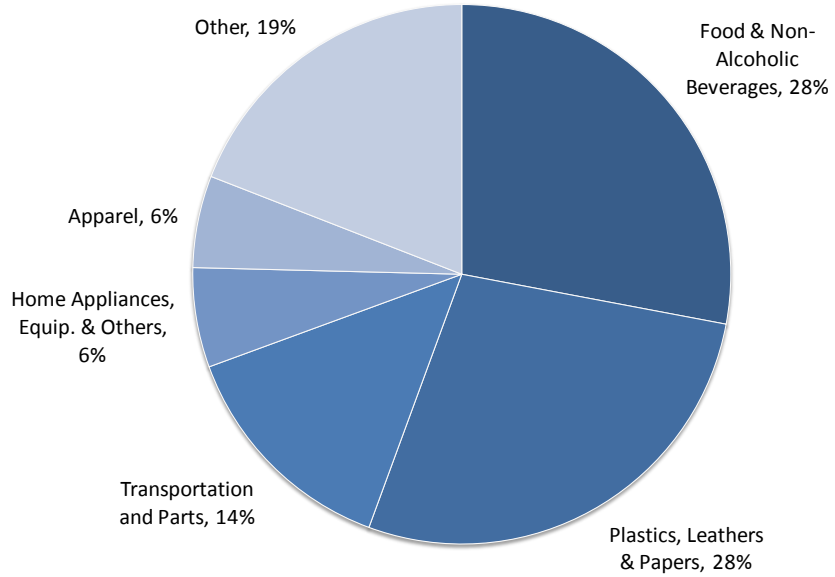
The majority of imports fell into one of two categories: Food & Non-Alcoholic Beverages or Plastics, Leathers & Papers. Together these account for 56 percent of all goods brought into the territory. Transportation and Parts—largely motor vehicles—accounted for another 14 percent of all imports; thus 70 percent of island imports fall into one of those three categories. Construction materials brought to Guam accounted for only 4 percent of total imports. Figure 6-11 shows the value of imports by commodity group in 2010.

Figure 6-10: Metric Tons Loaded and Unloaded



Source: Guam Statistical Year Book 2011

Figure 6-11: Imports by Commodity Group, 2010 (by Value)

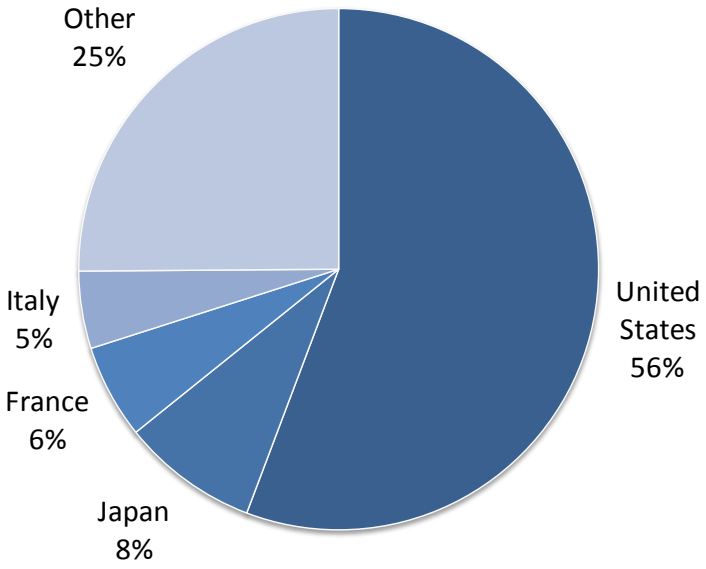


Source: Guam Statistical Year Book 2011

More than half of all imports to Guam originate from the U.S. After the U.S., Japan, and countries in the Eurozone are Guam's largest suppliers. This is somewhat surprising given the relative proximity of Guam to countries such as Taiwan and China—countries heavily geared towards exports. In fact, China accounts for only four percent of Guam's imports. This highlights

Guam's economic dependence on the U.S. mainland, despite its geographic distance. Figure 6-12 shows the value of imports by country of origin.

Figure 6-12: Imports by Country of Origin (by Value)



Source: Guam Statistical Year Book 2011

6.4.1.12. Other

Guam is an organized, unincorporated territory of the U.S., which means that in some cases federal laws do not automatically apply to the island. For example, U.S. import tariff laws do not apply, and Guam is considered to be a duty free port. On the other hand, federal banking and transportation laws and regulations apply to Guam, with some exemptions, to address the island's unique political, geographical, and social circumstances.

Although Guam receives no foreign aid, it does receive large transfer payments from the general revenues of the U.S. Federal Treasury into which Guamanians pay no income or excise taxes; under the provisions of a special law of Congress, the Guam Treasury, rather than the U.S. Treasury, receives federal income taxes paid by military and civilian Federal employees stationed in Guam.

6.4.2. Impacts of Proposed Tariffs Increases on Guam's Economy

6.4.2.1. Economic Incidence of the Tariff

Before examining the potential impact of tariff increases on business costs or consumer prices, it is necessary to consider who really pays the tariff - whether it is the shipper (i.e., the importing or exporting business) or the consumer. In the case of Guam, where a large majority of consumer items, raw materials, capital goods, and construction items are imported by ship through the port, it is reasonable to assume that most of the tariff is and will continue to be

borne by residents and businesses located in Guam, rather than the original shippers (original cargo owners) or the steam ship companies.[5]

Once imported goods enter the country, competition among island retailers and other suppliers is relatively minimal; as a result, increased costs arising from higher port tariffs will likely be passed on wholly or in large part to consumers (i.e., residents and tourists) in the form of slightly higher product prices. As demonstrated below, however, those increases will represent a very small fraction of consumption spending and business sales.

6.4.2.2. Impact of Tariff Increase on Consumer Prices and Consumers

As previously noted, Personal Consumer Expenditures (PCE) accounts for a large portion of Guam's GDP. In nominal terms this came to $2,838 million in 2010. Imported goods are an important part of that consumer spending. In 2010, Imports totaled $1,986 million.

The current recommended schedule of tariff increases from the financial plan includes increases of 5 percent annually over the next 6 years followed by four percent annual increases through the rest of the time period (2033). Inflation on the island over the past 16 years, 1996 through 2011, had a CAGR of 3.6 percent, thus the projected increases in the tariff are in line with Guam's inflation levels.

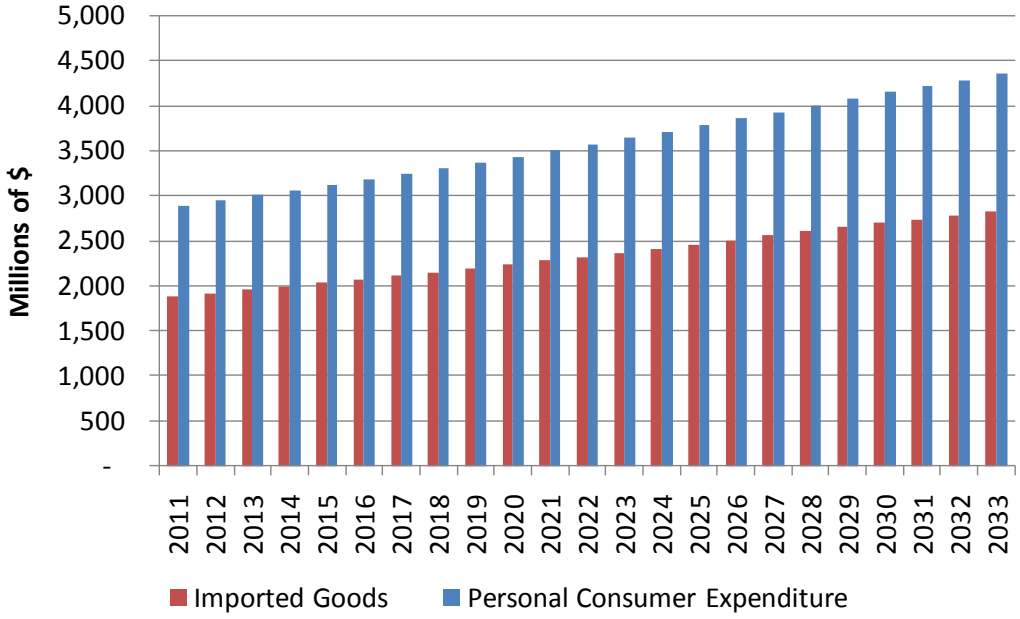
All goods imported to the island will not be for direct consumer consumption. Some will be intermediate goods, that is to say a good used as in input into the production of some other product. Thus, looking at potential tariff revenues as compared to PCE or the value of imported goods will not provide the most accurate analysis of the tariff's effect. However, it will provide information concerning the order of magnitude of the impact.

6.4.2.3. Forecasting Personal Consumer Expenditures and Imported Goods

In order to assess how the increased tariff may affect consumers on Guam, it was necessary to forecast PCE, imported goods and tariff revenues. To forecast PCE, an annual growth rate of 1.9 percent was used; this is the CAGR for PCE from 2001-2010 (most recent 10 years of data). Over this time, imported goods averaged 65 percent of the value of PCE; this was used to forecast imported goods in future years (Figure 6-13).

[5] From a technical standpoint, the lack of domestic substitutes makes demand for imports highly inelastic, or insensitive to price increases. In economics, this means that in this case, the incidence of a fee imposed on goods would be borne almost entirely by the consumers, rather than suppliers.

Figure 6-13: Forecasted Personal Consumer Expenditure and Imported Goods

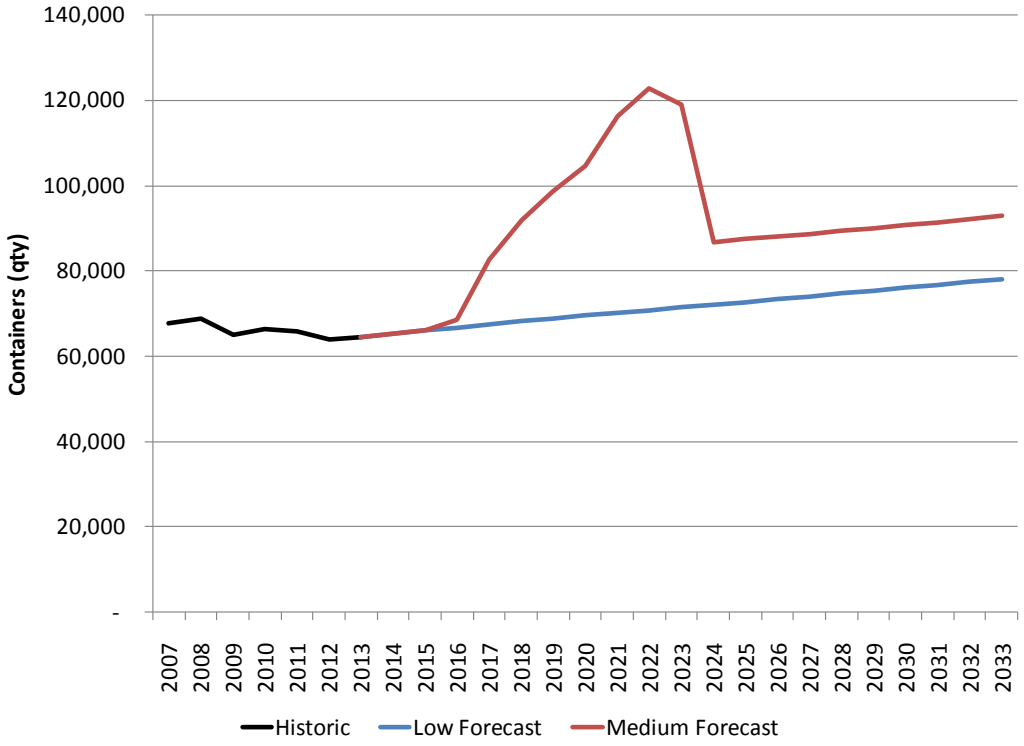


Source: Guam Statistical Yearbook 2011 and Parsons Brinckerhoff analysis

6.4.2.4. Forecasting Tariff Revenues

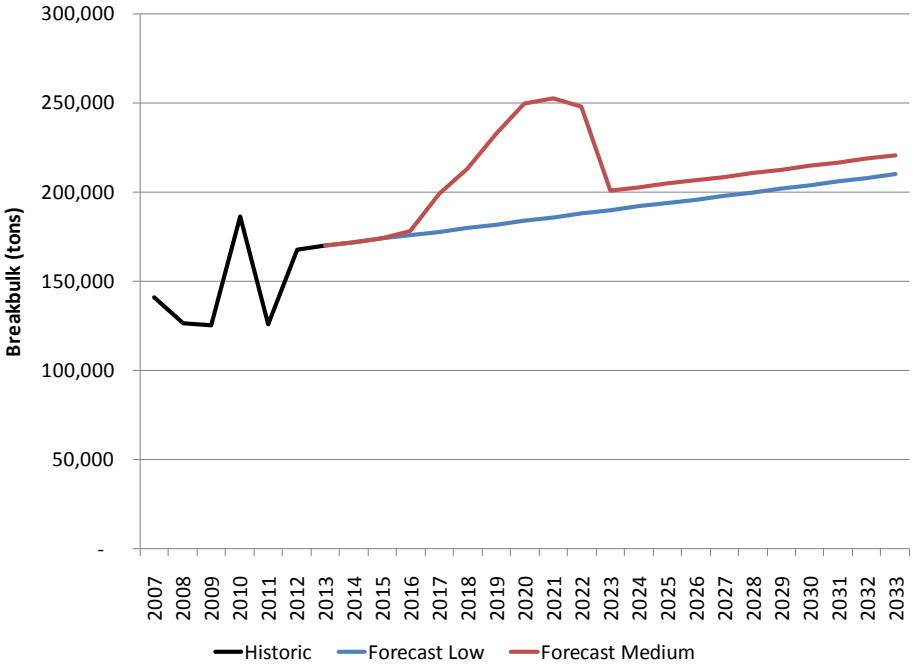
The financial plan contains annual forecasts for quantity of containers and the weight of breakbulk freight. The Organic Growth (Low) Scenario and the Current Build-up (Mid) Scenario from the financial plan were used in this analysis. It is important to note not all goods subject to the tariff will be consumed on the island. Roughly 30 percent of all containers will be transshipped and tariffs levied on these goods will not impact consumers on Guam. Thus, the revenues derived from transshipped goods were not included in this portion of the analysis. Figures 6-14, 6-15 and 6-16 illustrate historic trends, forecasts, and tariff revenues.

Figure 6-14: Non-Transshipped Containers Historic and Forecasts



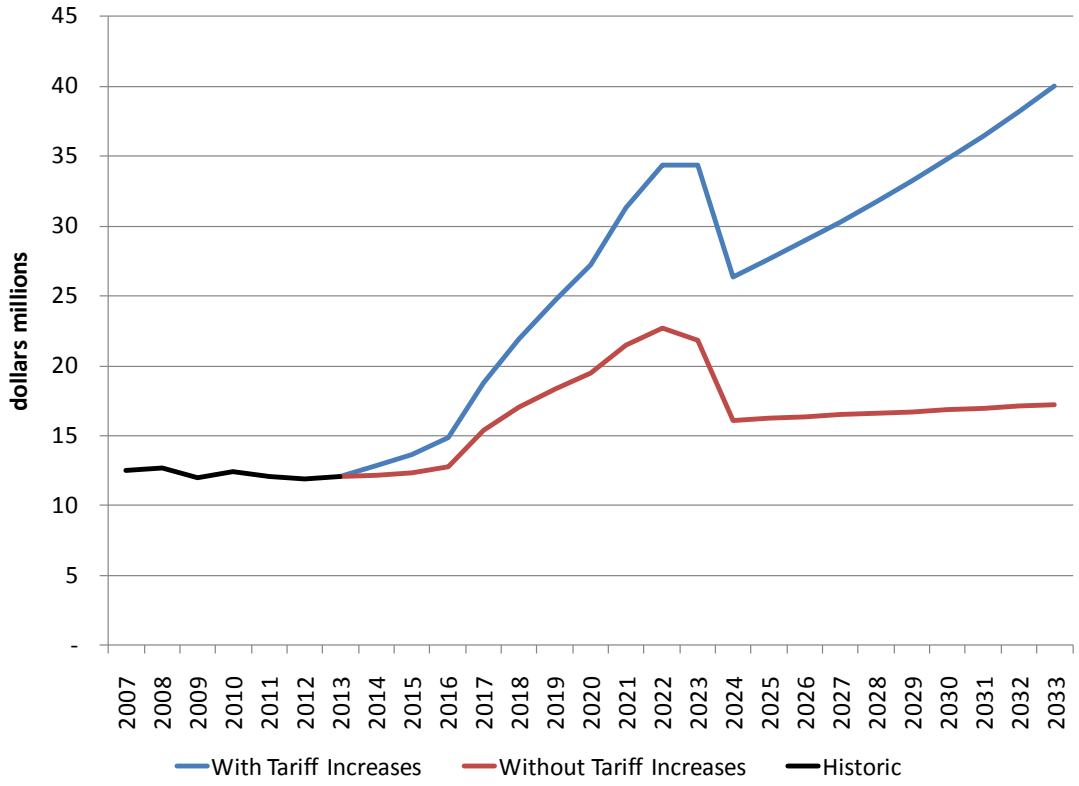
Source: PAG (historic volumes) and Parsons Brinckerhoff analysis

Figure 6-15: Breakbulk Cargo Historic and Forecasts



Source: PAG (historic volumes) and Parsons Brinckerhoff analysis

Figure 6-16: Tariff Revenues with and without Tariff Increases (Medium Growth in Imports)



Source: PAG (historic volumes) and Parsons Brinckerhoff analysis

When comparing the additional revenue gained from the increased tariffs to the value of total imported goods or to PCE, it becomes apparent that any potential impact they might have is minimal. Even under the medium growth scenario, by the end of the forecast period, the additional revenues are less than half a percent of forecasted PCE and approximately 0.6 percent of the forecasted value of all imported goods (See Table 6-6 and Table 6-7). Furthermore, these estimates were made under conservative assumptions:

- The full impact of the tariff is passed on to island residents and businesses, not to foreign shippers or to the steamship companies
- PCE and imported goods both grow at the moderate rate of 1.9 percent annually Medium growth scenario for imports
- If a military buildup occurs, PAG would be compelled to reduce tariff levels. Future tariff reductions are not evaluated in this analysis.

Table 6-6: Organic Growth Scenario Increased Revenues Compared to PCE and Imported Goods

	2014	2019	2024	2033
Increased Revenues as a % of PCE	0.02%	0.13%	0.23%	0.44%
Increased Revenues as a % of Imported Goods	0.03%	0.20%	0.36%	0.68%

Source: Parsons Brinckerhoff analysis

Table 6-7: Mid Build-up Scenario Increased Revenues Compared to PCE and Imported Goods

	2014	2019	2024	2033
Increased Revenues as a Percentage of PCE	0.02%	N/A	N/A	N/A
Increased Revenues as a Percentage of Imported Goods	0.03%	N/A	N/A	N/A

Source: Parsons Brinckerhoff analysis

To put this into context, Table 6-8 lists retail items prices from the island and the corresponding estimate of the how much the tariff increase under the organic growth scenario could affect these prices should the 2033 impact be felt today.

Table 6-8: Tariff Impact on Retail Prices

Item	Current Price	Impact of Cumulative Tariff Increases
20 oz. Coca-Cola	$0.89	< $0.01
Can of Spam	$2.99	$0.01
T-Shirt	$12.99	$0.05
160 oz. Laundry Detergent	$17.99	$0.07

Source: Parsons Brinckerhoff analysis

6.4.2.5. Impact of Tariff Increase on Business Costs

As discussed previously, increases in the tariff under the organic growth scenario will be felt primarily by consumers, as importing businesses will tend to pass transportation cost increases (in this case tariff increases) on to island consumers. For example, tariffs on imported building materials will tend to be passed forward to building contractor customers, although competitive pressures among non-government contractors may result in some increases in costs that cannot easily be passed forward to consumers. However, even if businesses cannot easily pass on those tariff related cost increases, the impacts to businesses will be minimal.

In 2007, the most recent data year[6], the total Sales/Receipts/Revenue in Guam was $6.2 billion. When compared to the $16.5 million raised in additional tariff revenues (in 2033), this represents less than half of one percent of all Sales/Receipts/Revenue on the Island.

If you look more specifically at Wholesale and Retail trade, the two sectors that one might suspect would be the most effected; in 2007 their Sales/Receipts/Revenues were $2.4 billion. The $16.5 million raised in additional tariff revenues (in 2033) represents only 0.7 percent of the total revenues for these sectors.

[6] The Economic Census of Guam for 2012 has not yet been published.

Again, the expectation is that consumers and not businesses will bear the incidence of the tariff. Should this not be the case, the additional revenues raised by the tariff are less than one percent of 2007 Sales/Receipts/Revenues for Retail and Wholesale trade.

6.4.3. Impact of the Port Improvement Program on Guam's Economy

6.4.3.1. Construction Impacts

The Port Improvement Program is expected to create near-term economic impacts for the Island of Guam. The economic impacts from the program will be driven by an increase in construction spending in the region. These program expenditures would generate a short term increase in demand for engineering and technical services, as well as construction-related labor and materials.

To quantify the near-term economic impacts of this program, this analysis utilized an input-output modeling framework based on multipliers from MIG Inc., the developers of IMPLAN.[7] Data specific to Guam were used for the economic profile and multiplier set.

For the purposes of measuring economic impacts, all dollars amounts are expressed in terms of the most recent completed year, which is 2012. This is the most recent year for which all econometric data have been collected and analyzed.

Two types of economic impacts are identified for the purpose of this analysis.

- **Direct/Indirect Impacts**: Direct impacts represent new spending, hiring, and production by civil engineering construction companies to accommodate the demand for resources in order to complete the program. Indirect impacts result from the quantity of inter-industry purchases necessary to support the increase in production from the construction industry experiencing new demand for its goods and services. All industries that produce goods and services consumed by the construction industry will also increase production and, if necessary, hire new workers to meet the additional demand.

- **Induced Impacts:** Induced impacts stem from the re-spending of wages earned by workers benefitting from the direct and indirect activity within area. For example, if an increase in demand leads to new employment and earnings in a set of industries, workers in these industries will spend some proportion of their increased earnings at local retail shops, restaurants, and other places of commerce, which would further stimulate economic activity.

[7] http://implan.com/V4/Index.php

Three types of economic impacts were estimated:

- **Person Years**: 100 person-years may translate into 50 jobs supported for 2 years or 100 jobs supported for 1 year.
- **Earnings:** All forms of employment income, including Employee Compensation (wages and benefits) and Proprietor Income.
- **Output:** Output represents the value of industry production. For manufacturers, this would be sales plus/minus change in inventory. For service sectors, production equals sales. For Retail and wholesale trade, output equals gross margin (as opposed to gross sales).

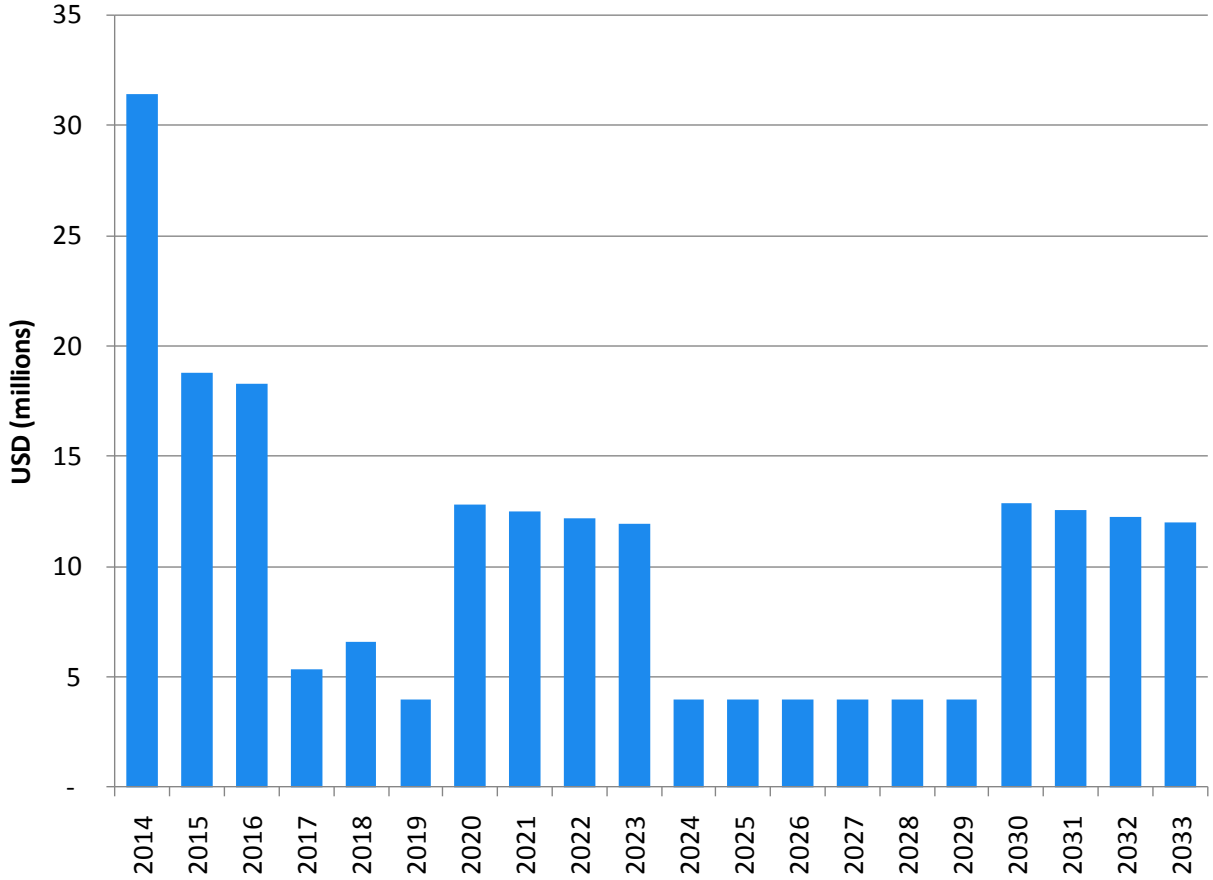
6.4.3.2. Costs

For the purposes of projecting economic impacts, only future capital spending is considered. The total remaining capital cost of Phase I of the PMP is forecast to be approximately $58.8million (2012 USD). An additional $141.9 million in sustainability improvements are expected to be constructed over the next 20 years, both on a pay-as-you-go basis and through the use of proceeds from the issuance of General Obligation bonds.

Costs associated with crane surcharge revenues are not included in this analysis. The crane surcharge is currently being levied at a rate of $125 per container and $5 per breakbulk ton. This amount is sufficient to pay for capital and operating costs associated with the cranes for the next 20 years. It is expected that PAG will take over the duty of maintaining and operating the cranes in the near future. However, this action would not result in a net increase in jobs or economic activity.

The projected spending schedule for the minimum PMP and sustainability improvements is seen in Figure 6-17.

Figure 6-17: Capital Costs 2012$ (millions)



Source: Parsons Brinckerhoff analysis

6.4.3.3. Results

Table 6-9 summarizes construction economic impacts. The limited size of the indirect and induced impacts is because of the nature of Guam's economy. As an Island geared heavily towards tourism much of the needed labor and materials for the Port Improvement Program will need to be brought in from elsewhere. When goods and labor are purchased outside the region this is referred to as "leakage" or spill-over. When "leakage" occurs the impact of a program on the local region is reduced. In the case of Guam the level of anticipated "leakage" is high.

Table 6-9: Summary of Construction Economic Impacts

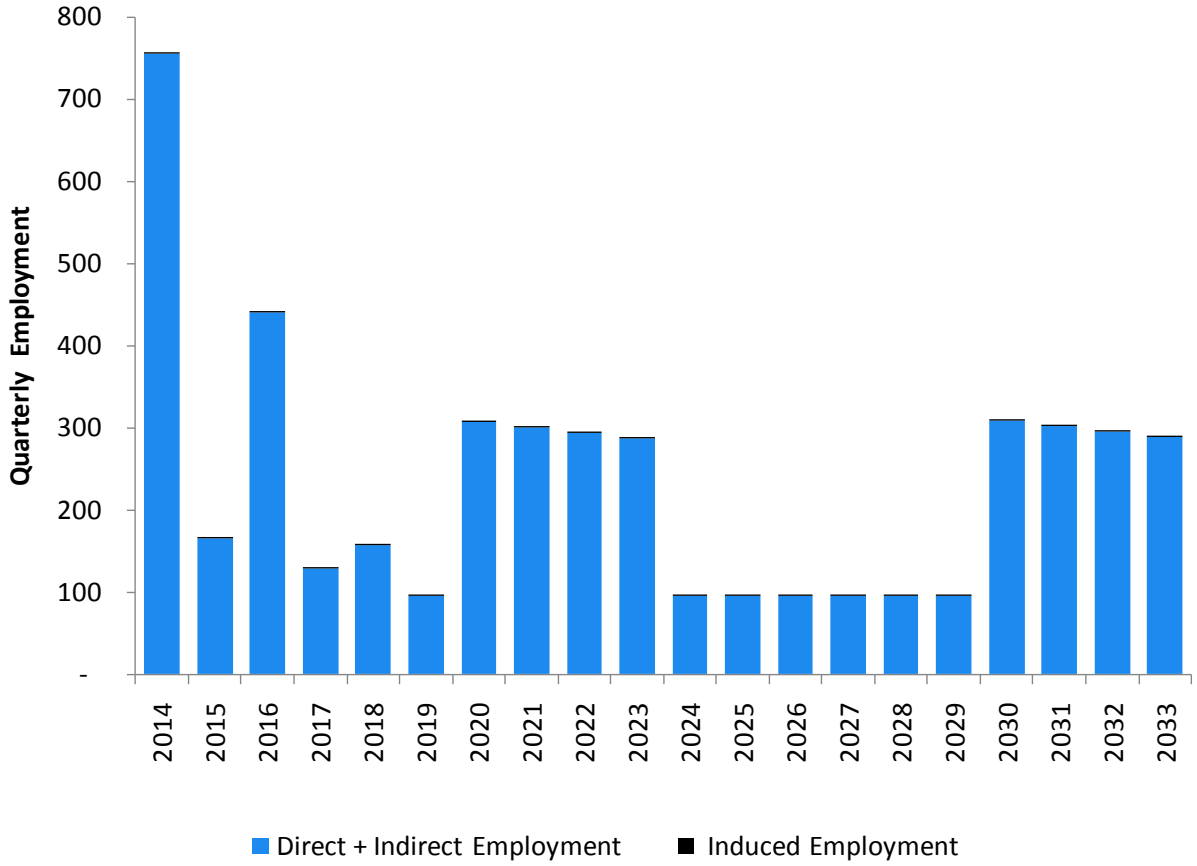
Direct + Indirect Impacts	
Employment (Annual Average)	249
Annual Earnings (2012 USD)	$8,007,590
Annual Output (2012 USD)	$10,371,462
Induced Impacts	
Employment (Annual Average)	2
Annual Earnings (2012 USD)	$29,430
Annual Output (2012 USD)	$48,511
Total Impacts	
Employment (Annual Average)	251
Annual Earnings (2012 USD)	$8,037,019
Annual Output (2012 USD)	$10,419,973

Source: Parsons Brinckerhoff analysis

Construction associated with the minimum PMP has begun to generate economic impacts for the region as of Q3 2013. In total, completion of the minimum PMP and sustainability improvements are projected to create approximately 5,019 job-years of employment.

The program will generate an estimated annual average of 251 direct, indirect, and induced jobs per year. This includes 249 direct and indirect jobs, and two induced job. Figure 6-18 shows annual employment generated by the program's annual expenditures.

Figure 6-18: Annual Employment during Construction

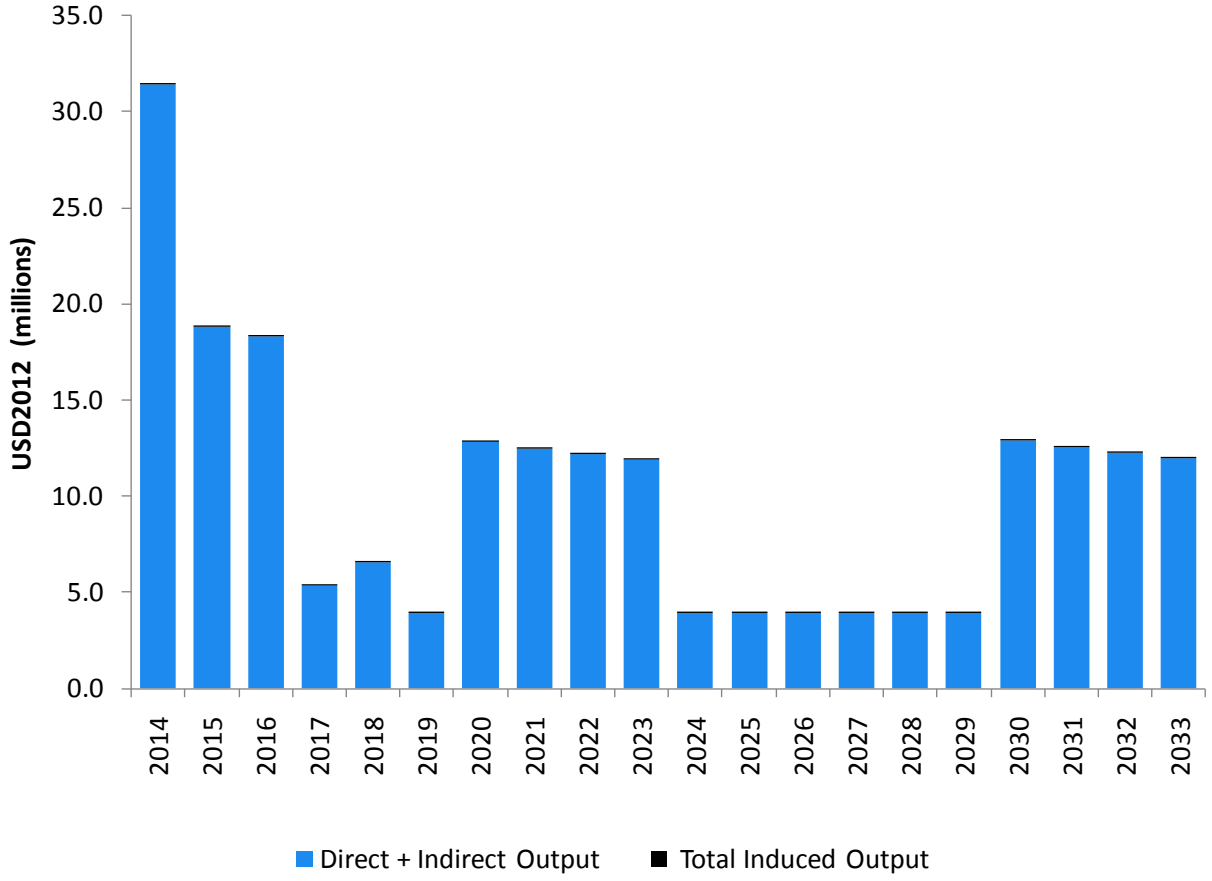


Source: Parsons Brinckerhoff analysis

As expected, the construction industry is estimated to receive the largest increase in jobs from the program, 4,977 person-years, almost all of which are direct jobs created. Other industries on the island will see little impact in terms of jobs. Again, this is due to the nature of Guam's labor force and the need for outside labor and expertise.

Figure 6-19 shows the amount of short-term economic activity generated by the program. In total, the program would generate $208.4 million in real economic output (measured in 2012 dollars), with $68.9million dollars generated in the first three years, 2014-2016.

Figure 6-19: Breakdown of Economic Output Generated by Contract

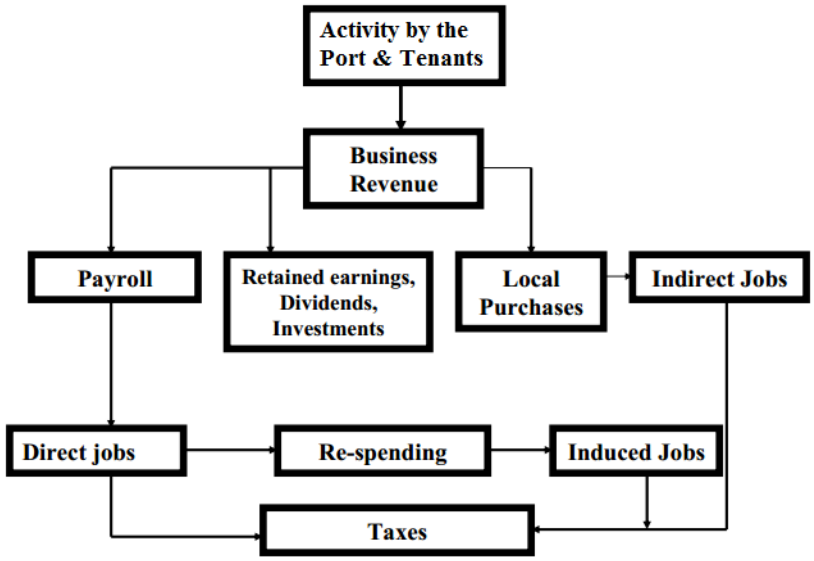


Source: Parsons Brinckerhoff analysis

6.4.3.4. Operations Impacts

Passenger and air cargo activity at an airport, waterborne activity at a seaport, and real estate activity all contribute to the local and regional economy by generating business revenue to local and national firms. These firms, in turn, provide employment and income to individuals. Figure 6-20 shows how the activity in the Port of Guam and Port tenants generates impacts throughout the economy.

Figure 6-20: Flow of Impacts



Source: Parsons Brinckerhoff analysis

Activity at a seaport (i.e., manufacturing, the handling of cargo and the servicing of vessels) initially creates business revenue to firms providing those cargo handling and vessel services.

This revenue is in turn used for several purposes:

- To hire employees to provide the services;
- To pay stockholders dividends, retire debt, and invest;
- To buy goods from other firms; and
- To pay federal, state, and local taxes

6.4.3.5. Increased Capacity

The planned work on the port will greatly increase PAG's capacity. Additional breakbulk as well as container storage will be added, a new breakbulk terminal will be constructed and 4 new ship-to-shore cranes purchased.

This additional capacity will be critical in facilitating the planned DOD build-up. In 2012 the PAG processed about 93,000 containers and 168,000 tons of breakbulk freight. At the anticipated peak of the military build-up, 2021/22 the Port is forecast to see 265,000 TEUs and 252,000 tons of breakbulk, 67 and 63 percent higher than 2012 levels, respectively.

Additional capacity means greater economic activity on the Island as businesses are able to increase their production levels and generate more revenue. Business revenues flow through the rest of the economy creating further positive impacts.

6.4.3.6. Efficiency Gains

The program will not only increase capacity but it will also greatly improve the port's efficiency, allowing the PAG to do more with less. For example, when the TOS comes on-line the number of checkers required is expected to decrease from around 25 to 2 (one per shift). The TOS is expected to come on line in 2015. Further the program is expected to reduce the level of overtime currently being paid. Currently the percent overtime charged to carriers at the PAG is roughly 85 percent. Increasing the speed and efficiency of the port will decrease the need for employees to work overtime, allowing the port to process more freight at a lower cost. So while there will be significant gains in the volume of goods processed, there will not be a commensurate increase operating costs.

The combination of increased capacity and efficiency will work together to keep the cost of importing goods down; the port will be able to both supply more to the Island and do so at a lower cost. These influences will help to offset any impact consumers might see from the increased tariffs.

It is important to note that, in the short term, the construction associated with the Improvement Program will greatly increase the demand for materials such as cement, steel, and other associated commodities. This has the potential to inflate prices during the construction phase. Also, if work on the port restricts the ability to import other goods to the Island, this too has the potential to increase prices in the short term. Once the construction is complete and the port is fully operational, these inflationary pressures will reverse. However, if the port is not expanded as demand on the island increase, both naturally overtime and with the anticipated military build-up, this would place long term inflationary pressures on the prices.

Carriers rationalize their calls based on the cost of doing business at a particular port. If costs or inefficiencies are not acceptable, carriers that have choices will use another port to serve the same trade. USAID published a study finding the penalty incurred by carriers due to inefficiencies at ports is in part responsible for the low cargo volumes observed at ports in Central America[8]. Without the increased efficiency that would come from the Port Improvement Program, Guam may lose cargo to more cost-effective ports.

Without the port expansions, the ability of the DOD to implement this plan will be greatly restricted. The development and additional jobs the DOD expansion is expected to bring would therefore, also be limited should the Port expansion not go forward.

[8]The Broad Economic Impact of Port Inefficiency; A Comparative Study of Two Ports, by USAID, 2004 http://pdf.usaid.gov/pdf_docs/PNADC612.pdf

6.5. FINANCIAL MODEL

This section outlines the objective of financial modeling while conceptually defining the architecture of the model created for PAG.

6.5.1.1. Model Architecture

Created and operated in Microsoft Excel, the Master Plan Update Financial Report Model is contained in one single Excel workbook, with different input and output summary displays divided between separate worksheets noted at the bottom of the Excel screen display. The model layers key management decisions concerning the level of investment in facility and equipment recapitalization in the Port on top of contextual factors (economy, military build-up, and others) that drive revenue growth at PAG.

Financial performance, tariff projections, and debt sizing considerations can be drawn from comparison of alternatives constructed of inputs such as:

- **Cargo Throughput Revenues:** Chassis, ground, reefer, breakbulk, unitized, Ro/Ro, stuffing/devan, heavylift, longlength, and out-of-gauge cargos

- **Other Cargo-Related Revenues:** Lift-on/lift-off, preslung, export of scrap containers, transshipment of containers, over-stowage of containers, shifting of containers, rigging of containers, reefer plug/unplug, direct labor billings, equipment rental, port fees, wharfage, fuel surcharges, maritime security fees, facility maintenance fees, and the forthcoming crane surcharge

- **Non-Cargo Revenues:** Facilities revenues, marina revenues, coastal zone revenues, harbor of refuge, demurrage, claims fee, bulk scrap, material used, cruise passenger service, fuel bunker service, special services, PAG documentation, tariff subscription, penalties, hazardous material fees, security administration charges, and reimbursements

- **General and Administrative Expenses:** Salaries/wages, insurance benefits, retirement benefits, other benefits, other personnel costs, communications, leases/rentals, utilities, general insurance, damage/shortage/write-down/supplies, miscellaneous, advertising, agency and management fees, PMC management fee, professional services, contractual services, earthquake expenses, and typhoon expenses

- **Other Expenses:** Interest expense for USDA loan, claims settlement, contributions to public sector retirement plan, federal expenses, and gain/loss on asset disposals

APPENDIX 1-1: MASTER PLAN UPDATE SCOPE

Introduction

The intent of this 2013 PAG Master Plan Update is to more concretely articulate the Port's near and long term approach to modernization while PAG becomes more self-sufficient, achieves fiscally sustainable operations, and promotes increased awareness and consensus among all affected stakeholders.

Our approach to updating the plan will involve four elements of validation, review and coordination:

1. Analyze and update, when appropriate, the assumptions and criteria that underlie the PAG Master Plan Update 2007 Report
2. Validate and integrate key elements of the following other reports that were developed since the Master Plan Update 2007 Report was released:
   - Master Plan Approval Documents
   - Cargo Forecast Update
   - Terminal Development and Operations Plan
   - Terminal Operating System and Gate Operating System Reports
   - Phase 1A Implementation Plan
3. Expand the scope of the Update to include an implementation strategy based on updated cargo and revenue projections, planned tariff adjustments, progress under the Port Improvement Enterprise Fund initiative, and a coordinated funding approach involving grants and self-financing
4. Validate and incorporate decisions and outcomes of various initiatives and policy changes that have occurred over the past five years that include:
   - The Port signed an MOU with the U.S. Maritime Administration (MARAD) to complete program design and construction
   - The Port established an Owner's Agent/Engineer (OAE) Contract to perform preliminary engineering and design, program definition, and program oversight assistance
   - The Federal Government created a Port of Guam Improvement Enterprise Program (PIEP) and Funding Account to be managed by the MARAD
   - MARAD solicited and awarded the services of a Program Management Team (PMT)
   - The Port received authorization to pursue $ 50 million in USDA Loans to support the PMP
   - The Port submitted a Program Implementation Plan, Economic Impact Statement and Financial Feasibility Assessment to the Guam Legislature in support of the Master Plan Approval process and therein established Phase 1A, Phase 1B and Phase II of the PMP
   - The Port submitted an ARRA (Tiger) Grant application and in so doing defined Phase 1A of the PMP to include uplands improvements financed by the $50 million in USDA Loans and $49.7 million in grant funds

- The Guam Legislature approved Phase 1A and Phase 1B of the program acknowledging that Phase 1A was addressed by the ARRA Grant application, Phase 1B was unfunded, and Phase 11 was pushed beyond the 20-year planning horizon
- While approving the PMP, the Legislature imposed a $54.5 million Debt-Ceiling on the Port
- The Legislature advanced a component of Phase 1B by requiring the purchase of two Gantry cranes by December of 2012 and doing so within the $54.5 million Debt-Ceiling
- PAG moved Under the PUC for tariff adjustments
- The OAE performed site investigation and produced preliminary design documents in support of Phase IA of the PMP
- The Port solicited the services of a PMC to manage terminal operations and maintenance. The PMC wound up in the Guam courts under protest
- The OAE produced a Phase 1A Implementation Plan to be used by MARAD/PMT
- The Port initiated discussions with TRISTAR for the relocation of Fuel Lines
  - The Port provided Design Build Documents to support TRISTAR execution of the work
  - Negotiations for the Financial Approach stalled
  - TRISTAR initiated a pipeline inspection to validate life-expectancy if the lines remain in place
  - The PMT design solution for Phase 1-A is assuming a storm water design that crosses these lines in their current location
- The Port received $50 million in DOD funds that were deposited in the PIEP Fund
- MARAD and their PMT worked with PAG to refine the Phase 1A Implementation Plan
- The OAE commenced preliminary design of Phase IB waterfront facilities
- The Port discovered unanticipated damage to its F-5 Wharf Structure
- The Military Build-up Program experienced a call for a re-set
  - DOD needs to update its Environmental Impact Statement
  - The Military Build-up is likely to be delayed and downsized
  - Cargo projections are now subject to significant uncertainty
  - Cargo-related revenue projections are now subject to the same uncertainty
- The Port began looking at a Balanced Modernization Program in 2011
  - The Port redirected the OAE to switch from preliminary design of wharf replacement and dredging to Wharf Service Life Extension Design
  - The Port Modernization Program timeline stretched out
  - Phase 1A uplands work was reduced to stay within available PIEP Funds
  - The Port and MARAD agreed to repair Berth F5 using PIEP Funds
  - Execution of USDA Loans was deferred in favor of just-in-time borrowing
- The DOD Inspector General issued a Risk Assessment Report focusing on the vulnerability of PAG's waterfront facilities
- MARAD introduced the idea of replacing uplands investments with partial wharf replacement utilizing PIEP Funds
- MARAD conducted a risk assessment on PAG Berths F4 and F6
- The MARAD Risk Assessment validated that Wharf Service Life Extension was feasible

- The Port pursued independent execution of Service Life Extension Work (cathodic protection, F5 repairs, and ground stabilization) using SLE Loan outside PIEP
- The Port deferred ground stabilization
- The Port solicited an SLE/Equipment/FMS Loan
- The Port filed a Base Rate Case Petition in 2011 with the PUC in order to institute systematic tariff adjustments. The PUC authorized adjustments for 2012 and called for:
  - A Rate Plan filing detailing tariff rate increases for the next five years
  - A Financing Plan filing to address completion of Phase I and Phase II of the 2007 Master Plan
- The Port received an unsolicited proposal to acquire four gantry cranes from Matson/Horizon. As a consequence:
  - The Port pursued the purchase of the POLA cranes by requesting special legislation from the Guam Legislature.
  - The Port received authorization to explore a sole source purchase of the cranes backed by a third party crane condition assessment, independent valuation, determination of unique value, and creation of a structured maintenance program accomplished by a PMC
  - The Port established a committee, met legislated requirements, and negotiated a sales agreement and an interim crane maintenance agreement.
  - The Port obtained PUC approval of the sales agreement and interim maintenance agreement
  - The Port sought and obtained PUC approval of a commercial loan offer to support the crane purchase
  - The Port sought and obtained PUC approval of a Crane Surcharge Tariff to support financing of crane acquisition, crane maintenance, and a crane casualty and replacement reserve
  - The Port issued an RFP soliciting Crane Maintenance Services by a PMC
  - The USDA Guaranteed Loan was dropped, changing the PMP financing premise
- The Port responded to the PUC by generating a 5-Year Tariff Projection and 20-Year Financial Plan which prompted:
  - The escalation of Tariff Planning
  - Coordination of a Crane Surcharge Tariff and all other tariffs
  - The 5-year focus to be on PMP requirements
  - The 20-year focus to be on sustainability of all Port assets
  - The exploration of self-financing capabilities
  - The evaluation of CIP investment potential with and without a debt-ceiling
- The PMC for terminal operations and maintenance was released from the court system with further action on a PMC contract now pending
- MARAD and their PMT completed the Environmental Assessment for Phase 1-A
  - MARAD issued a Finding of No Significant Impact
  - SLE Work at the Wharf was addressed as outside the PMP
  - TRISTAR fuel line relocation is addressed as outside the PMP

  - The scope of the EA is broad enough to allow for the Phase 1-A work to expand beyond that which is financed by the PIEP Fund (currently containing DOD funding)
- The Port has initiated discussions with local lenders to investigate the feasibility of issuing Revenue Bonds to cover PMP Execution
- The Port is developing a Structured Maintenance Program for Yard Equipment

This Master Plan Update is intended to provide a comprehensive review of the Port's current condition, identify the elements of continuous improvement and sustainability, and articulate an implementation strategy that remains coordinated with the anticipated forces of change within the foreseeable planning horizon.

The following technical approach is envisioned in order to achieve the goals described above.

Task 1: Project Kickoff & Data Collection

The Parsons Brinckerhoff team will initiate this task by conducting a project kick-off session over a one week period. It is anticipated that the new PAG Strategic Planning Group (SPG) will be created before the project kickoff week begins and this group will be the primary interface between the Parsons Brinckerhoff Planners and the PAG.

Blair Garcia, Hardik Gajjar and Jeff Peck will begin the kickoff week by meeting with the SPG for a review of the port master plan, modernization plan and activities that are currently under way. This week-long session will amplify the basic components for the project and provide better-defined information useful for both PAG management and Parsons Brinckerhoff's planning activities. Inventory and facility review efforts for other project tasks will begin during this week as well. Stakeholder participation in the master planning process will begin this same week through meetings with organizations identified and scheduled by the SPG.

Utilizing existing PAG site and facility drawings and reports developed since the last Master Plan update, Parsons Brinckerhoff will assemble an existing inventory and review the current uses/conditions of landside and waterside properties, pertinent facilities and applicable operating equipment as well as adjacent related complementary properties. Not only will the inventory serve as an essential foundation for the master planning effort, it can be a useful tool for PAG as a stand-alone and up-gradable database.

In addition to the review of current land and water uses/conditions, Parsons Brinckerhoff will review relevant information provided by the SPG and PAG management staff and other relevant documents to include those listed in the introduction provided above. As the information is collected and the inventory is developed, a data log will be created and maintained throughout the execution of the Task Order. Periodic updates of the data log will be provided to the SPG. Relevant Task Order information (background documents, collected data, deliverables, transmittals) will be warehoused on the PB ProjectSolve site as is the norm for all other Task Orders.

Task 2: Update PAG Overview

Once the initial data collection and project kickoff phase is completed, the master planning efforts will focus on updating the PAG Overview from the 2007 Master Plan Update to reflect changes that have occurred. Some of the key overview characteristics that will be updated include but are not limited to the following:

- Summarize goals and objectives for the MP Update
- Review and update the current PAG governance and reporting structure to the PUC
- Update the current port employment description to include
    - PAG organization, responsibility and staffing
    - PMC and other outsourced support
- Summarize funding issues/opportunities/strategies
    - Tariffs
    - Leases
    - Debt Ceiling
    - Reserve Covenants
    - Grants
        i. DOD PIEP Funds
        ii. Security Grants
        iii. Other Grants
    - Loans
        i. USDA PMP Loans
        ii. SLE Loan(s)
        iii. Crane Loan
        iv. Equipment Loans
    - Revenue Bonds
    - Autonomous Agency Contributions
    - Development Opportunities
    - Cargo and Revenue Projections

Task 3: Review Current Conditions

Since the completion of the last master plan update, several facility conditions (i.e. wharf F-5 and F-6 conditions) have been investigated. The studies, investigations, designs and construction that have occurred since 2007 will be investigated and summarized along with the inventories developed in Task 1. A review of current condition, utilization, and adequacy of the following PAG assets will be performed:

- Landside access (road)
- Waterside access (channel/berths)
- Current infrastructure (buildings, wharfs, utilities, structures) inventory
    - marine waterside facilities
    - non-waterside facilities
    - facilities inside the commercial cargo terminals
    - facilities outside the cargo terminals

- Current equipment and systems inventory
- Navigation aids
- Owned, occupied and leased land
- Environmental constraints

A comprehensive summary of the above list of attributes will be developed to set the foundation of for the infrastructure, equipment planning that will occur. The current operating structure/procedures and pending lease agreements will be included as part of this conditions review and summary.

Task 4: Stakeholder Outreach

During Task 1 and the project kickoff week, an initial series of stakeholder outreach meetings will be conducted to inform key port stakeholders about this master planning effort and to begin collecting their perspective and input as it relates to the future development and modernization of the port. The SPG will arrange and coordinate all stakeholder meetings. Prior to the meetings, informative materials will be produced and agreed to by the SPG prior to presenting them to the stakeholders. The following groups are anticipated to be included in the initial outreach meetings:

- Port BOD
- Port Management and Staff
- Legislative Oversight Chair
- Port Users Group
- Others as Port indicates

Other groups or combinations of these groups may meet together or separately. Follow-up discussion with stakeholders as required during the planning tasks will be conducted through the direction of the SPG. It is anticipated that an initial stakeholder outreach effort will be conducted during the project kickoff (as described above) and once the draft report is completed. The second outreach effort would include all of the initial groups listed above as well as the following groups:

- Public Utilities Commission
- Office of the Governor
- Guam Legislature
- Civilian Military Coordination Council
- Others as Port indicates

If required, additional outreach efforts may be provided by Parsons Brinckerhoff's on island staff but this effort is not included in this technical approach.

Task 5: Market Analysis & Cargo/Revenue Forecast Review

The intent of this effort is to assess revenue generating opportunities/requirements and review and validate cargo forecasts used to support the Master Plan Update prepared in 2007, the

terminal development and operations plan, financial feasibility assessments and the recent (October 2012) PUC financial reports and crane surcharge petition.

The master plan update will be driven by Port commercial and non-commercial operating requirements, revenue generating opportunities, infrastructure (land, equipment, facilities) expansion and sustainability needs, and the demand/revenue forecasts relevant to recommended services and scenario alternatives.

SPG, Commercial, and PUGG engagement will be needed to identify commercial opportunities and current/projected tenant requirements. This will include confirmation of compatible facility and land use inside and outside the Port and its impact on services (demand, investment) and revenue (leases, fees) requirements.

Because the magnitude and timing of the military build-up has changed several times over the past five years and is not yet defined, it will be necessary to review the past cargo forecasts that have been developed and confirm the range of possible demand/revenue scenarios to plan for.

To develop the market demand forecast scenarios, the planning team will first initiate discussions with the Military to obtain the latest build-up planning projections, if available. The term will then evaluate the impact of the updated military build-up plans used in the October 2012 PUC Financial Reports to adjust the previous container and bulk cargo forecast to represent the market scenarios relevant to:

- Organic growth (Low) with no military build-up
- Current (Mid) build-up with delays
- Full (High) build-up with delays

Once the forecasts for container and bulk cargoes are updated, they will then be compared to the existing and future throughput capacity estimates developed in Task 6.

Task 6: Update Capacity & Demand Analysis

Using the throughput capacity models developed for the Terminal and Operations Development Plan, capacity estimations for each of the cargo demand scenarios will be performed. This effort will include but is not limited to:

- Reviewing all operating and equipment assumptions to verify that they are currently being used or change them to emulate current operations.
- Meet with PAG Management and review planned action resulting from the PUC Management Review Report
- Review the equipment sustainability and performance assumptions associated with structured maintenance programs managed by Performance Management Contractor(s)

To verify the updated operating variables in the model, vessel, storage yard and gate observations of current operations will be performed to verify or update key model inputs such as productivity rates. It is anticipated that University of Guam students could be invited to assist in this effort under the guidance of Parsons Brinckerhoff Staff. Once the model inputs are validated or updated, capacity analyses will be performed for each of the demand scenarios to identify the optimum market driven scheduling required to implement the modernization program. This modeling effort will begin with identifying the throughput capacity estimations for each end year demand scenario and then work backward to determine the suitable phased improvement schedule driven by market need. This will be accomplished by comparing the three demand scenarios (yearly) against capacity estimates to size infrastructure, equipment and operations to meet annual needs.

Task 7: Update Modernization Program Progress & Scenario Requirements

The port modernization plan and the land use master plan will then be combined to develop an end state (20 year) infrastructure and land use plan for each of the demand scenarios. These plans will include a review of ongoing commercial terminal development efforts supported by MARAD and their PMT utilizing Port Improvement Enterprise Funds while also identifying potential non-commercial terminal development opportunities and requirements. The plans will also include the following considerations:

- Review implications of PAG plans related to Management Review: potential staffing changes, process changes, systems development
- Review implications of PMC support agreements
- Integration of relevant stakeholder input on scenario analysis, related development requirements, scenario gaps and flexible implementation approach

Once the three full build scenario plans are developed, a CIP development phasing program for accommodating market demand gaps for near-term (0-5 years) and long-term (6-20 years) will be developed. This will include phased development land use plans, a program schedule and estimated development costs estimates for each phase. Elements of modernization and sustainability inside and outside the commercial cargo terminals will be included in the phased plans. The estimated development costs will be created as order of magnitude conceptual annual Capital Expenditures (CapEx) including infrastructure, equipment procurement, systems and equipment for a series of phased improvements for each demand scenario. Close coordination and discussion with the SPG will be required during the development of the market driven phased development programs. Program phasing will be coordinated between market demand scenarios to incorporate elements of flexibility to react if a change in the military build-up occurs again.

For each market scenario driven phased program, annual variable Operating Costs (OpEx) will be estimated using the same throughput capacity models form Task 6. The model will be calibrated to emulate the current operations and will then be used to estimate the labor,

energy (fuel and electricity) and consumables required for handling cargo through the port and maintaining the infrastructure/equipment.

Task 8: Financial Analysis and Economic Impact Assessment

Identifying the revenue available for funding future growth and ensuring that resources are available to maintain existing assets is essential for the long-term viability of the Port. This task will identify/confirm the current and future revenue projections at the Port and develop (a) related funding strategies to maximize the financial resources available for operations and future CIP improvements and (b) an assessment of the economic impact that CIP investments, increasing tariffs, and growing cargo volumes will have on Guam.

This task will begin by working with the financial controller to review the revenue and expense history at the Port for the prior five years and evaluate noticeable trends or anomalies that when combined with updated build-up information and other new initiatives can establish baseline data for future projections.

The next step will involve forecasting future revenue based on Commercial, SPG, and PUG input on non-cargo revenues and potential military input related to the cargo forecast associated with the timing and magnitude of the military build-up (identified in Task 5). Any changes or refinements to the 2012 Five Year Tariff Projection and 20 Year Financial Plan will also be incorporated. Likewise, adjustments to the 20-Year CIP and future O&M costs, considering year of execution and escalation will be reviewed and updated.

Once the historical trends, new opportunities, and cargo forecasts have been confirmed, projecting future cash flow from operations and leases can begin. For the cargo-related portion, the financial analysis will project cargo volumes based on three scenarios:

- Organic Growth (Low) with no military build-up
- Current (Mid) build-up with delays
- Full (High) build-up with delays
-

The revenue projections will incorporate cargo volumes/schedule, non-cargo leases, potential outside investments and grants, and projected/necessary tariff adjustments. Revenues from non-cargo operations and lease revenue will be analyzed and projected based on likely growth and future rate increases. All revenues will be summarized to attain gross revenues. The next step will involve taking gross revenues to net revenues. Net revenue and net revenue available for financing (net revenue less reserves and other encumbrances) will be calculated by identifying operating expenses, and capital expenses as identified in Task 7 along with any other expenses identified as part of our research (e.g. Autonomous Agency Contributions, Reserve Accounts, other encumbrances). Gross revenues less CapEx and OpEx (and other) will provide the amount of net revenue available for financing. A net present value calculation will be applied to mitigate the risk of inflation or other impacts on future revenues and to help accurately assess bonding capacity.

Inherent in each scenario that is developed will be unique revenues and costs associated with the selected operational modes and funding strategies, including the benefits of changes to staffing and equipment.

The final objective of this task will be to identify the amount of bonding capacity that the net revenue can accommodate taking into consideration the debt ceiling, loan covenants, reserve covenants, DOD PIEP Funds, Security Grants and other relevant loans and grants. This task will also identify and evaluate alternative funding strategies to maximize the potential bonding capacity.

A full description of the architecture of the financial model and its operation, along with any changes that have been designed since the previous submittal (for PUC purposes) of model-generated materials will be included. An outline of the contextual assumptions that surround the inputs and outputs of the model will be identified as part of this task.

The economic assessment will have the following subtasks:

- Task 1 – Identify and review relevant reports, findings, and studies. Identify economic data sources, trends, forecasts, and models (e.g., customized input output models) relevant to Guam economic conditions. From this research effort, selected consumption and business expenditure trend patterns will be investigated for use in determining economic impacts.
- Task 2 – Review Tariff Study assumptions. Evaluate potential impacts of tariff increases on island prices, cost of living, business costs. Relationships between port tariffs and product prices/cost of living and producer price indices (holding other economic and demographic factors constant) will be investigated to determine if correlations can be identified. This information will help to assess whether, and to what extent, on-island product prices may be affected by tariffs or other transport cost factors, holding other factors constant. To the extent possible (data availability permitting), estimates of the impacts on specific products will be considered. No formal statistical/econometric modeling is proposed.
- Task 3 – Evaluate the economic impacts of different cargo volume and CIP investment scenarios. Based on the previous tasks, and other internal sources, assumptions will be made regarding the potential increase in commodity prices, other business and government costs, and changes to economic activity that might occur with and without Port CIP investments and efficiency gains in response to the proposed military expansion. Avoided adverse economic impacts attributable to the modernization will be identified and evaluated and serve to offset the negative impacts from higher port tariffs. Scenarios will include variable levels of build-up and the corresponding increases and reductions in the private sector local economy. Qualitative assessments will be made, supplemented by supporting data, but no formal economic modeling is proposed.
- Task 4 – Economic Analysis Report. A summary report outlining the methodology, assumptions, and findings from the first three tasks will be provided as an Appendix to the Master Plan Update.

The Task 7 effort will continue into and be performed in parallel with this Task 8 financial analysis because an iterative analysis process will be required to balance the market driven phased programs for each scenario against their estimated annual financial performance. This analysis will help identify the optimum timing of infrastructure improvements and major equipment/supply acquisitions so that excess capacity is not wasted and insufficient capacity does not cause a loss of potential revenue or escalate operating costs.

Task 9: Final Recommendations

Upon the completion of Tasks 1-8, it is anticipated that previously (in PUC Reports) identified investment capacity for selected scenarios will be refined. In addition, updated condition assessments combined with updated operational assumptions, a more comprehensive look at non-Port assets/initiatives, and an accounting of progress made since the 2007 Master Plan Update will result in more clearly defined CIP projects covering all Port assets and programs.

The recommended phased development program scenario will be identified by comparing the performance of each and consider sustainable organic requirements, modernization objectives, and the most likely military build-up impacts (adaptive management considered) needing to be accommodated.

The proposed schedule and financial strategy for implementing the recommended program elements will be both stable and flexible to adapt to changing circumstances over time.

Any briefings needed to update key stakeholders (legislature, PUC, PUGG) will be accomplished at Port direction and at a time and budget to be determined.

Deliverables:

1. Data Collection Summary: A working Excel log table that summarizes the data collected and being used for this study. This log will be shared with the SPG on a regular basis throughout the project.
2. Draft Findings Presentation (through Task 6): An interim presentation of key findings through Task 6. While on island presenting these draft findings, additional required stakeholder meeting will occur and Tasks 7 and 8 will begin.
3. Draft Findings (through Task 8) Presentation: Prior to finalizing the draft report, a presentation of all analysis findings will be performed. While on island final outreach efforts will be performed.
4. Draft Report: Submitted to the SPG for review and comment.
5. Final Report: Submitted upon considering SPG review comments.
6. Post-Release Briefings: TBD

APPENDIX 1-2: MEETING NOTES

Site Visit 1 – April 8th 2013 to April 12th 2013

Meeting: Port of Guam Master Plan (MP) Update Kick-off Meeting

Date: April 8, 2013 (9AM – 11AM)

Place: DGM's Office

Attendees: Joanne Brown, PAG General Manager
Felix Pangelinan, PAG Deputy General Manager
Jeff Peck, Parsons Brinckerhoff
Blair Garcia, Parsons Brinckerhoff
Mark Linsenmayer, Parsons Brinckerhoff
Matthew Smith, Parsons Brinckerhoff
Hardik Gajjar, Parsons Brinckerhoff
Zachary Sprute, Parsons Brinckerhoff

Purpose:

The purpose of the meeting was to brief the General Manager and Deputy General Manager of the Port of Guam about the overview and the approach for the Master Plan Update.

Discussion:

- Jeff introduced everyone to the GM, briefly describing their roles within PB and their past involvement under the OAE Contract. He stated that all team members were involved in the previous PUC reports and that Blair's involvement also goes back previous Operations analysis and development of the Modernization Program. He indicated that Blair, and Mark and Matthew would offer a brief explanation of what they hoped to accomplish during the week.
- Blair explained the overall process of the MP Update and addressed some of the difference in approach between the past MP Update and the current MP update. He introduced what a master plan includes. He mentioned that the first area of focus is condition assessment and market forecast which will set a baseline and forecast the future opportunities. The first MP followed this process and went up to Capital improvement plan based on land use. The current MP update will combine elements from other planning and design projects completed since the 2008 MP Update and will include more detail in the CIP and financial elements (i.e. tariff study).
- Mark mentioned that in this MP Update we will be focusing on updating the financial analysis by looking at 2012 performance and 2013 revenue and cost projections associated with future port strategies and necessary tariffs. General Manager (GM) asked for an outbrief meeting to summarize the week's meetings and identify key concerns/details.
- Jeff confirmed that we had a scheduled outbrief meeting on Friday.

- Deputy General Manager (DGM) mentioned that some managers have made a request to sit in on other meetings that might be relevant to them and their focus areas.
- Jeff mentioned that meeting minutes will be prepared for all meetings and will be shared with the GM, DGM and managers via ProjectSolve where Port staff has access.
- Matthew mentioned that they (Matthew and Zachary) will be inspecting facilities to verify the condition with high level visual assessment to determine where each facility is in the current CIP to link it with modernization program. Visual inspection will be surface inspections only and no in water or underwater inspections will take place.
- GM and DGM requested to include the Hotel Wharf in the assessment. PAG wants to have that facility as a resource to other customers in the future.
- Jeff mentioned that there were limited (mooring dolphins and bollards) and long -term (wharf replacement) solutions and that we would evaluate both. He also mentioned that work would need to be done on the road between the Port and Hotel Wharf.
- The GM agreed and emphasized the need for a near-term solution and mentioned that Hotel Wharf is definitely a priority and there may be opportunities to use USCG/Federal funding for some improvements. PAG is considering vessels more than 500 ft. LOA to be docked and consequently will be looking at land side bollards to accommodate larger vessels.
- Matthew mentioned that the Hotel Wharf property is in poor condition (sheet piles, etc.) and the condition of the facility is documented in the Inspection Reports done a few years ago for the facility. A copy of this report will be provided to the General Manager this week.
- Jeff reviewed some basic assumptions regarding the minimum and maximum modernization programs that remain consistent with the 2007 MP Update. He mentioned the crane acquisition. Wharf Service Life Extension, Systems Upgrades, Equipment Purchases and the work performed by MARAD as being the near-term minimum program. He also mentioned that borrowing for that program was at $ 32 M and that an additional $ 22 M could be borrowed based on the currently authorized debt ceiling. He mentioned that that would be used for sustainability components.
- Jeff discussed the departure from the2007 MP. He mentioned that the original MP Update assumed the Port would pay $ 50 M and the Federal Government would pay $ 150 M and that the new approach assumes the Federal Contribution will be what we have received thus far and that the balance of the modernization would be paid for by the Port through tariffs.
- The GM mentioned “reasonable tariffs”, and Jeff concurred.
- Jeff also mentioned other changes from the 2007 plan including we would not be doing the 900 foot wharf expansion, and that there would be no dredging, no 100 ft. gauge cranes and expansion to the Northeast would be deferred.
- Blair mentioned that Parsons Brinckerhoff has a deep knowledge of the facilities. We are validating the data that we already have and are assessing the changes that have occurred since the last Master Plan Update.

- Jeff also described how we will use our Project Solve (data share) site to communicate with PAG. Port staff has access at this time as well. We are creating a separate directory on the site for the MP update.
- Jeff mentioned that the overall schedule was about 23 weeks and that we would also be doing Transshipment Study and support a 5-year Tariff Petition.
- Blair mentioned that the team would like to go over the schedule during the out-brief meeting to identify the follow on trips and meeting dates.
- Jeff inquired about having meetings with Senator Ada, the PUC and other stakeholders. He mentioned the need to talk to JGPO to gather a better understanding of the military build-up. He mentioned that the BOD wants PUG to be more involved and hence we have scheduled a meeting with them to keep them in the loop.
- GM agreed with having meetings with PUG, Senator Ada, and possibly PUC Attorney Mair.
- GM mentioned that she would like the DGM to sit in the meeting with Senator Ada.
- DGM mentioned not to provide any information about the project to any person other than the Port Management. The data should be routed through Planning (Dot or Joe). Any requests for data should be directed to the DGM.
- DGM also mentioned about Task Order 28 and said that Parsons Brinckerhoff needs to submit a summary that describes the efforts of each individual working on that TO.
- It was agreed that stakeholder meeting requests would go through Margret Duenas.

Meeting: Port of Guam Master Plan (MP) Update – Operations Meeting

Date: April 8, 2013 (1PM to 3PM)

Place: DGM's Office

Attendees: John Santos, PAG, Operations Manager
Joe Ulloa, PAG, Terminal Supervisor
Jeff Peck, Parsons Brinckerhoff
Blair Garcia, Parsons Brinckerhoff
Hardik Gajjar, Parsons Brinckerhoff
Mark Linsenmayer, Parsons Brinckerhoff

Purpose:

The purpose of this meeting is to discuss the operations and labor for the Port of Guam.

Discussion:

- Parsons Brinckerhoff discussed the project, MP Update and Tariff Analysis (Transshipment charges). Crane charge for import/export and how it is covering the transshipment lifts was discussed.
- John mentioned that PAG did a presentation to PUC to explain transshipment charges and how transshipment uses terminal space.
- Parsons Brinckerhoff mentioned the initial MP which was followed by the operations and modernization plan and management review. Parsons Brinckerhoff already has this information and is weaving it into the MP Update along with the revenue data, also to be included in the tariff study.
- PAG mentioned the 1993 Master plan study which showed Guam can be a transshipment hub. It was recommended to review the previous reports to tie everything together. Guam's competition with Majuro was also brought up.
- PAG mentioned about Horizon's transshipment cargo, earlier coming to Guam, is being diverted to Majuro.
- Parsons Brinckerhoff explained different alternatives of the modernization plan.
- PAG talked about the 5 year plan and said that it spells out how PAG is going to pay back loans.
- Parsons Brinckerhoff talked about different tariff rates for various plans (5 year, 7 year, etc.).
- PAG mentioned the SLE and TOS Projects for $10 M.
- Parsons Brinckerhoff described the MP Update approach. The team has the knowledge of how the facility works and will verify the current information along with collecting the new data (peak week data).
- PAG described the vessel and labor schedule. Vessel and gang schedule will be provided by PAG.
- PAG recommended not to consider the financials for January 2013 as MEL started calling on weekends and changed their schedule back to week day calls.

- PAG suggested that the tariff study should incorporate all aspects of Port operations and not just for a specific loan.
- Parsons Brinckerhoff stated that a summary of data needs and a list of assumptions will be provided to John Santos (PAG) for his review and comment.
- PAG recommended that Parsons Brinckerhoff should talk to Ernest Candoleta about the requirements for the equipment wash down area.
- PAG described the gate operation. Typical gate operating schedule is 8AM to 5PM. Matson occasionally requests to open the gate early or keep it open late. Any gate operations before or after normal gate hours will go under a special request and are charged as OT to the customer.
- PAG mentioned that they will provide a summary of the current gang structure for the cranes/yard equipment, gate and warehouse.
- PAG described the yard operations. It was mentioned that the only thing that has changed since the previous study is the stack height for empty (5 high) as the side picks are no longer used. The grounded containers have been moved farther from the berth. The port is currently operating at 90% capacity. It was mentioned that PAG will provide a storage use layout for the terminal.
- A Port tour was scheduled between maintenance and IT meeting on Tuesday, April 9, 2013.
- PAG mentioned that for the TOS, the hardware and software will be different and has to be discussed with the Procurement department.
- Parsons Brinckerhoff mentioned that the GOS will be discussed next week with Rob van Eijndhoven. Anticipate implementation of GOS is three years from now.

Meeting: Port of Guam Master Plan (MP) Update – Maintenance Meeting

Date: April 9, 2013 (9AM to 11AM)

Place: DGM's Office

Attendees: Ernest Candoleta, PAG, Maintenance Manager
John Santos, PAG, Operations Manager
Jeff Peck, Parsons Brinckerhoff
Blair Garcia, Parsons Brinckerhoff
Mark Linsenmayer, Parsons Brinckerhoff
Hardik Gajjar, Parsons Brinckerhoff

Discussion:

- The purpose of the MP Update and Tariff analysis was discussed and the role of maintenance program in this update was explained.
- The Parsons Brinckerhoff team discussed the yard equipment maintenance layout templates provided by Tony Simkus. Current layout was discussed along with proposed future changes.
- Type of equipment maintained in the fleet shop was mentioned. PAG noted that Hostlers, bomb-carts, forklifts, Top-lifts are maintained in the fleet shop.
- Issue of the size (width) of the door on the west end of WH1 was discussed to see if it is sufficient enough for a spreader bar to be moved in and out for maintenance activities. It was decided that this matter will be checked with Matthew Smith during the port tour to see if necessary changes are possible.
- PAG mentioned that the intended use of WH1 is for port police (boats, etc.), preventive maintenance, crane mechanics, and building maintenance electricians.
- It was decided to walk through the EQMR Bldg. and WH1 during the port tour to check the present utilization and what changes, if any, can be accommodated.
- The facility cost analysis for the maintenance program for crane and yard equipment was discussed. The requirement for an overhead crane inside the maintenance building was mentioned.
- It was mentioned that any new building that will be constructed on the property will be required to be 2 feet higher than adjacent high ground to meet 100-year flood plain requirements. The need for ramps into and between adjacent buildings was discussed.
- The previously proposed new MSR building concept was discussed. It was concluded that a review of the need for the new MSR building in the 20 year planning horizon is advisable.
- The use of the Hotel Wharf property for cruise ships and breakbulk was discussed.
- It was mentioned that the existing wash down area is between WH1 and the welding area. The area is intended for the use of light equipment only and cannot be used for top-picks.
- PAG mentioned that the port has 4 top-picks (1 new) out of which 2 top-picks are not operational due to procurement issues and the time it takes to acquire parts.

- The Crane Maintenance PMC scope and award status was discussed. The need for delegated procurement authority was discussed in light of the fact that the Crane Maintenance PMC cannot perform yard equipment maintenance.
- The meeting was concluded with a port tour. Parsons Brinckerhoff team members along with Ernest Candoleta and John Santos were present during the Port tour.

Meeting: Port of Guam Master Plan (MP) Update – IT Meeting

Date: April 9, 2013 (11AM to 12PM)

Place: DGM's Office

Attendees: Sooja Suk, PAG, Systems Manager
Arden Bonto, PAG, Systems Programmer
John Santos, PAG, Operations Manager
Jeff Peck, Parsons Brinckerhoff
Blair Garcia, Parsons Brinckerhoff
Mark Linsenmayer, Parsons Brinckerhoff
Hardik Gajjar, Parsons Brinckerhoff

Discussion:

- Meeting was initiated with brief overview of the approach and the efforts for the MP update.
- PAG mentioned that to update the FMS, the hardware needs to be upgraded. JD Edward needs to be upgraded from A7.2 to A9.3 which in turn needs to upgrade the operating system in order to run the JD Edward system. Also the server (IBM S400 i5) is to be upgraded and replaced with an IBM S400 i7.
- It was mentioned by PAG that since the Modernization Program started, the reconfiguration of IT has not happened. All the systems are exactly the same as they were since the last visit by the Parsons Brinckerhoff team.
- Priorities of IT were discussed and it was mentioned by PAG that TOS, JD Edwards system and server upgrades are the top priorities. Remodeling of server room is not a priority and the current server system will work even though it is not the latest one. It was also mentioned that once the new TOS is upgraded, it will require less server space.
- PAG mentioned that the Dell Server is able to support all windows applications and that if the selected version of TOS is windows based, then it could likely be sufficient to run the TOS software.
- PAG mentioned the need for dedicated backup (generator) power for the server room.
- Funding issues for TOS Implementation were discussed.
- Parsons Brinckerhoff inquired about the cost of the FMS Upgrade and PAG plans for network improvements. PAG mentioned that the FMS upgrade will cost $450k. PAG mentioned that it appeared that there were other priorities for using excess Security Grant funds, i.e. not for IT issues but that the issue should be further discussed with planning. Parsons Brinckerhoff mentioned that the existing network supports TOS and at the very least it would seem that we could bring up a new TOS without an enhanced network even though the broader plan is to use the communications backbone from the C2 project to support security, TOS, GOS, and general computing requirements.
- It was agreed that further review of hardware and network requirements would take place during TOS Implementation discussions.
- Parsons Brinckerhoff reiterated that the intent of the future tariff structure is to provide sufficient funding for IT issues to be resolved and be sustainable in the future.

Meeting: Port of Guam Master Plan (MP) Update – Guam Customs

Date: April 9, 2013 (1PM to 2PM)

Place: PAC Air Building, 2nd Flr, Suite 250, Airport Road.

Attendees: Pedro Leon Guerrero, Director, Guam Customs and Quarantine Agency
Major Vincent Perez, Division Chief, Guam Customs and Quarantine Agency
F.U. Jerang, Guam Customs and Quarantine Agency
Blair Garcia, Parsons Brinckerhoff
Hardik Gajjar, Parsons Brinckerhoff

Purpose:

The purpose of the meeting was to provide an overview on the Master Plan Update and determine whether there was a need to address any changes from the perspective of Guam Customs for cargo and passenger processing and facilities usage requirements at the Port.

Discussion:

- The Guam Customs team was briefed about the Master Plan Update approach. Guam Customs addressed their responsibilities at the Port for cargo processing and passenger screening.
- Parsons Brinckerhoff inquired about the minimum requirement for performing passenger screening.
- Guam Customs explained the need for a processing area for passenger screening and baggage clearance. The process of screening of passengers on board the vessels and clearing baggage was briefly described. It was noted that the baggage inspection area is only required for passengers terminating at Guam and for change over of crew members.
- Guam Customs emphasized the desire to minimize the time required for screening, citing economic implications.
- Guam Customs also mentioned that the U.S. Navy dry dock pier can be taken as an alternate site for development of a cruise passenger terminal.
- Guam Customs stated that it will be highly efficient if the customs office is located near the point at which the cargo leaves the port facility and it will be an ideal location for cargo screening setup. This will streamline the process due to a centralized office location.
- Parsons Brinckerhoff inquired about the feasibility of co-locating the customs operation near the new WIM scale. Guam Customs expressed an interest in examining that but also noted that it will be desirable to locate the customs office close to where documents are processed by the port.
- The cargo screening process was briefly described. The breakbulk, if inspected, is usually done in the yard. The crew members of the cargo ships are cleared on the vessel when customs boards the ship.
- The meeting was concluded with Guam Customs summarizing their requirements for space allocation for customs office and setup and agreed to follow-up with a summary and description of the footprint requirement for the screening setup.

Meeting: Port of Guam Master Plan (MP) Update GEDA Meeting

Date: April 8, 2013 (3:30PM – 4:30PM)

Place: GEDA's Office

Attendees: Henry Taitano, GEDA Interim Director

Mark Linsenmayer, Parsons Brinckerhoff

Purpose:

The purpose of the meeting was to provide an overview of our work and objectives for the Master Plan Update and query GEDA regarding their leases with PAG and their view of economic development on Guam that may impact port cargo, operations and leases.

Discussion:

- Parsons Brinckerhoff provided an overview of the MP Update project and a brief history of Parsons Brinckerhoff's work at the Port.
- GEDA feedback during the discussion is as follows:
  - GEDA helps support future economic development planning and revenue opportunities on the Island.
  - GEDA is well aware of the Port's history and sees a lot of opportunity there, particularly with leases.
  - The Port needs to develop, integrate, and utilize plans for all their facilities.
  - GEDA is interested in learning more about how the Port is supporting customs, and understanding how their relationship with customs is progressing.
  - GEDA feels that all Guam Ports of entry need to be run more efficiently and better understand their impact to the other agencies on the Island.
  - GEDA feels that all Guam agencies need to maintain a big picture mentality
  - GEDA indicated that all the agencies should be integrated with each other to better understand what they are doing and how their projects may impact what other agencies are doing. Their planning functions need to be coordinated and they should be coordinated through GEDA via a roundtable or some other function so they can be centralized.
  - GEDA sees a lot of opportunity for the leases and thinks the Port needs to evaluate longer term leases and get away from their current short and mid-term lease structures.
  - GEDA feels tariffs are a bad idea because they do not have broad community support.

Meeting: Port of Guam Master Plan (MP) Update – Engineering Meeting

Date: April 10, 2013 (9AM to 10AM)

Place: DGM's Office

Attendees: Simeon Delos Santos, PAG, Engineering Manager
Ernest Candoleta, PAG, Maintenance Manager
Glenn Nelson, PAG, Commercial Manager
Jeff Peck, Parsons Brinckerhoff
Blair Garcia, Parsons Brinckerhoff
Matthew Smith, Parsons Brinckerhoff
Hardik Gajjar, Parsons Brinckerhoff
Zachary Sprute, Parsons Brinckerhoff

Purpose:

The purpose of this meeting was to get the Port engineering department's perspective for current and future CIP projects.

Discussion:

- Overview of the approach and efforts for the MP Update was explained by Parsons Brinckerhoff.
- PAG mentioned the following perspective and projects sponsored by Port engineering and the MARAD Program Management Team (PMT):
  - Port engineering efforts are currently focused on issues not being addressed by the Modernization Program. These include:
    - Limited Marinas work, although current funding is not sufficient as it requires more than a $1 M for each dock
    - Replacement of the Mobil fuel pipelines funded by FHWA and administered by DPW.
    - Repairs to WH1: 7 columns were repaired; however additional concrete repairs will be required. Such repairs will include the restoration of roof expansion joints, repairs to spalls on concrete surfaces and other concrete repairs to preserve the concrete section
  - Other requirements were discussed in the context of what the PMT is doing and what impacts that has in delaying Port activities.
  - It was noted that improvements and repairs to the main terminal drainage system have been pushed back due to the construction schedule of the Modernization Program which installs oil-water separators at the end of the project.
  - It is anticipated that the existing drainage channels throughout the previously expanded yard may require complete demolition and reconstruction with the replacement of all the grates.
  - The terminal yard(s) requires significant pavement repairs as indicated by the existence of exposed reinforcement at the top surface of the concrete pavement. The worst conditions were noted in the previously expanded yard area.

  - Other projects include replacement of perimeter fencing along the shoreline and along the drum lot near EQMR. It was noted that at this time this project is included as an option in the Modernization program and should sufficient funds be available, the fence repair and replacement will be included in the Modernization.
  - The PMT is preparing the design for the wash down area as part of the Modernization.
  - Additional reefer outlets (60 outlets) to be connected to LC-4 as part of the Modernization.
  - The CFS structure will undergo some internal reconfiguration and structural rehabilitation correcting concrete delamination and spalls, etc.

- Parsons Brinckerhoff asked for the estimated cost of repair for Hagåtña Marina. This is to be provided by Engineering.
- The Structural Condition at the Hotel wharf property was discussed and Parsons Brinckerhoff mentioned that for the facility to be used for typical port-related activities it needs to be rebuilt as the sheet piles are not in serviceable condition.
- PAG mentioned that they tried unsuccessfully to get a grant for about $17M to fix the Hotel Wharf property which includes bollards at the East and West ends. Note: this does not include repairs for Route 11.
- PAG mentioned that the hotel wharf property is designated under the previous master plan for passenger and fishing operations.
- Parsons Brinckerhoff asked for a full list of 2013 CIP projects (original list: before budgeted projects). Engineering indicated it would provide this information.
- PAG mentioned that most of the projects the port undertakes are reactive, while the Modernization Program is proactive.
- Funding and repair phases for Agana marina were discussed.
- PAG mentioned that it is the sub-grantee for all three marinas.
- It was mentioned that the loading docks at Agat marina have structural problems.
- PAG mentioned that they have a grant with the Fisheries and Wildlife for building a pump station.
- PAG mentioned that there is no security at Agat marina. There are plans to install cameras at Agat marina which will be grant funded but not under the current EOC security grant.
- PAG mentioned that there are some major projects at F-1 which includes addressing erosion and corrosion problems at 2 tanks. USACE performed a feasibility study which determined that USACE would not participate in the construction funding for the project as it did not meet their B/C ratio requirement.
- Tank farm A is under management agreement and is inactive due to the current condition of the tanks, 2 of which cannot be fixed per EPA requirements. It was mentioned that Tristar has shown interest in those 2 tanks but has not submitted a statement of intent or formal proposal yet. The current capacity of Area A is 225K barrels.
- PAG also mentioned that there is no CIP planned for Route 18.

Meeting: Port of Guam Master Plan (MP) Update – CBP Meeting

Date: April 10, 2013 (2PM to 3PM)

Place: 355 Chalan Pasaheru, Suite 333, Tamuning, GU

Attendees: Jerry Aevermann, US CBP, Assistant Port Director
Michael Paul, US CBP, Supervisory CBP Officer
Jeff Peck, Parsons Brinckerhoff
Hardik Gajjar, Parsons Brinckerhoff

Discussion:

- An overview of the approach and efforts for the Master Plan Update was provided to US CBP by Parsons Brinckerhoff.
- Custom's Space requirements needs were discussed and CBP mentioned that they require space for 3 people at the port. They are currently stationed in the port police building and the current location is substandard and small.
- Elimination of the new gate building, relocation of the gate complex, and the planned renovation of the existing gate building was discussed.
- CBP mentioned that the port police building is their preferred location due to its proximity and easy access to the terminal.
- CBP explained the immigration process for personnel on cargo and cruise vessel. They mentioned that the process is carried out on board the vessel at the dock.
- Parsons Brinckerhoff asked if CBP they had a space requirement for detention of personnel. They indicated yes and that it was part of their previously tendered space requirements which have not changed.
- CBP mentioned that they would prefer a combined customs and immigration screening area if the Hotel Wharf property is developed for cruise operations.
- Parsons Brinckerhoff mentioned that we would check into possibilities for locating CBP in the existing or a reconfigured Police Building, the renovated gate building or possibly into the new EOC building.
- Parsons Brinckerhoff asked for the information that was provided by CBP earlier. Note: This was later received in an email from Michael Paul on 4/9/13 and is attached.
- Parsons Brinckerhoff mentioned that CBP's current co-habitation and space issues would be discussed with the Port Police.
- Parsons Brinckerhoff and CBP exchanged contact information in order to facilitate future engagement

Attached: Gen Aviation Facilities Requirements

Meeting: Port of Guam Master Plan (MP) Update – Port Police Meeting

Date: April 10, 2013 (4PM to 5PM)

Place: DGM's Office

Attendees: Doris Aguero, PAG, Port Police Chief
David Esplana, PAG, Police Officer II
Blair Garcia, Parsons Brinckerhoff
Hardik Gajjar, Parsons Brinckerhoff

Purpose:

Needs for space and other requirements

Discussion:

- An overview of the approach, changes from the previous master plan and efforts of the follow on studies was described.
- PAG mentioned that there has been a staff change from the 2008 MP update. (2008: 32 people, 2013: 25 people). It was also mentioned that there is a requirement for a staff increase to fulfill MARSEC security level requirements. Manpower is a current priority.
- A control and compliance document was provided with all the information as listed in the bullet point agenda for the interview.
- PAG mentioned that a portion of the staff will be moved to the new EOC. Operations staff and officers will stay in the existing port police building.
- Space requirement was discussed and it was agreed that the Port Police will provide the latest updated information.
- Areas required:
  - Office space
  - Training room
  - Location (access to the terminal) – Preferred location will be next to GPA – Ideal location during MARSEC level increase for sufficient space for container inspection.
  - Detention space
  - Interview space
  - Equipment storage space
- PAG mentioned that they have acquired two boats from the U.S. Navy. The boats are seaworthy but need to be outfitted. They have been looking for quotes for about 2 years. The boats will be kept at Agana and Agat marina and the boat located at the Port will be stationed at F-6 and near Hotel Wharf (location where it is easily accessible).
- PAG expressed no condition concerns about the existing building.

Meeting: Port of Guam Master Plan (MP) Update – Senator Ada Meeting

Date: April 11, 2013 (8AM to 9AM)

Place: Parsons Brinckerhoff Office

Attendees: Senator Thomas Ada
Felix Pangelinan, PAG, Acting Deputy General Manager
John Santos, PAG, Operations Manager
Jeff Peck, Parsons Brinckerhoff
Blair Garcia, Parsons Brinckerhoff
Mark Linsenmayer, Parsons Brinckerhoff
Matthew Smith, Parsons Brinckerhoff
Hardik Gajjar, Parsons Brinckerhoff
Zachary Sprute, Parsons Brinckerhoff

Discussion:

- Overview of approach and efforts for Master Plan Update and Tariff Study was provided.
- It was mentioned that extended yard expansion, wharf expansion, gate expansion and dredging will not be considered in MP update as was previously described in the 2007 Master Plan.
- Funding issues in regards to uncertainty in federal funding and the need for PAG to provide self-sufficiency by increasing tariff and associated sustainable approach to the CIPs was discussed.
- Upgrade to FMS, TOS and GOS and associated funding plans for TOS were discussed.
- Senator mentioned the PUC process for tariff increment and stated that the process cannot be quicker and depends on PUC's processing time.
- Senator also mentioned to evaluate adjacent property's development in this MP update.
- PAG mentioned that there is a legislation that all cargo other than military cargo has to come through the port's facilities and/or is subject to port tariff
- Issue of transshipment containers not being charged was raised by the Senator. He also mentioned the parallel issue with transshipment charges on fuel.
- It was mentioned that a study on fuel transshipment was performed by Nick Captain which states that there is a disparity. Note: A copy of this report was obtained after the meeting and is attached.
- PAG mentioned the competition affecting transshipment cargo with goods moving through Majuro where MEL is talking about using the old Horizon Lines route.
- Senator agreed to work collaboratively with the Port to move all issues forward.

Attachment: Captain and Associates Fuel Study Report Dated Oct 30, 2012

Meeting: Port of Guam Master Plan (MP) Update – PUC Meeting

Date: April 11, 2013 (11AM to 12PM)

Place: DNA Building

Attendees: Joephet Alcantara, AG Office
David Mair, AG Office (On Phone)
Felix Pangelinan, PAG, Acting Deputy General Manager
John Santos, PAG, Operations Manager
Jeff Peck, Parsons Brinckerhoff
Blair Garcia, Parsons Brinckerhoff

Discussion:

- Parsons Brinckerhoff provided a summary of the MP Update and explained how the new version will track with and departs from the 2007 Update.
- Discussed the shift to downsize improvements, sustainability for aging and new facilities, and financial self-sufficiency supported by the tariff structure.
- Responded to David Mair's question about why the Modernization Program is being downsized and explained the linkage between upfront investment, unpredictable cargo growth and how limited cargo flow means limited revenue and limited improvement when financed by the Port.
- Discussed Interim Tariff Petition and indicated it would be submitted in 1-2 months
- David Mair indicated that he would do what he could do to expedite the approval for Tariff Petition.
- Discussed 5-Year Tariff Petition and indicated it would be submitted following completion of the MP Update.
- PAG indicated it would establish a new POC in dealing with PUC.
- Discussed whether the level of documentation required for an Interim Tariff Petition could be reduced. PUC will look into this matter.
- PAG mentioned piggybacking off of previous petition activities, i.e. a continuation of the previously established process and initiative.
- PAG mentioned a possible focus on CPI as justification.
- Parsons Brinckerhoff was authorized to communicate directly to PUC while copying PAG.
- The ALJ indicated it would prepare a status report for PUC members to give them a heads up on planned activity. This will be provided to the Port for review and possible comment prior to being sent to PUC members.

Meeting: Port of Guam Master Plan (MP) Update – Commercial Meeting

Date: April 11, 2013 (11AM to 12PM)

Place: DGM's Office

Attendees: Glenn Nelson, PAG, Commercial Manager
Mark Linsenmayer, Parsons Brinckerhoff
Hardik Gajjar, Parsons Brinckerhoff

Discussion:

- An overview about the meeting Parsons Brinckerhoff had with GEDA was provided.
- PAG mentioned that there is no rent sharing with GEDA.
- PAG explained the structure of the leasing process with GEDA. It was mentioned that current rents are not shared and future rents will be shared.
- GEDA limitations with respect to port leases were discussed.
- PAG mentioned that there is a 5-year lease limit mandated by the Law and that is expected to remain. PAG has previously attempted to change the lease limit through proposed legislation but it was not approved.
- Sub-letting problem with lease holders was discussed.
- PAG discussed long-term leases, management agreements, and month- to- month leases.
- PAG mentioned that fee schedules are renegotiated every 10 years for subsequent 10 years.
- Other potential opportunities for the Port were discussed. These included:
  - Marinas
    - Agana Marina (million dollar worth of dock work has been completed)
    - Agat Marina (possibility of commercial development such as a restaurant)
  - Submerged properties for fishing (11 cents to 4 cents fees)
  - Port enterprise zone (current recycling area)
  - Extending commercial wharf by back filling the areas near hotel wharf
  - Restoring Fishing Leases (10 tenants earlier, now 6 tenants)
  - Preferred alternative of placing a GPA LNG facility at Hotel Wharf

Meeting: Port of Guam Master Plan (MP) Update – Guam Water Authority Meeting

Date: April 11, 2013 (11AM to 12PM)

Place: DNA Building

Attendees: Tom Cruz, GWA, Chief Engineer

Jeff Peck, Parsons Brinckerhoff

Purpose:

The purpose of the meeting was to inquire about possible GWA plans on or adjacent to Port properties and to identify whether such plans would impact the Master Plan Update.

Discussion:

- Parsons Brinckerhoff provided an overview of the status of the Port Modernization Program and plans to update the Master Plan
- Parsons Brinckerhoff inquired if there were any GWA Plans for Systems Upgrades on Route 11 or in proximity to Agat and Agana Marinas.
- GWA indicated that there are no immediate plans for water system improvements in these areas.
- Parsons Brinckerhoff mentioned the issue of separation of potable and fire main water within the cargo terminals.
- GWA brought up the issue of the waterline easement through the Port. Parsons Brinckerhoff mentioned that the original property conveyance from the U.S. Navy provided for that and that conversion of the Port access to a public road, i.e. Route 11, would come with a 100' ROW that would normally be used for all utilities and the road but that termination of the current easement would not occur before a new water line was installed in Route 11.
- Parsons Brinckerhoff inquired about GWA's experience with replacing or rehabilitating water lines using bursting technology or HDPE linings. GWA indicated they had no such experience. Parsons Brinckerhoff indicated that it was conceivable that PAG would initiate some kind of pilot project using this approach as it selectively works on separating and rehabilitating potable and fire water lines.
- GWA Plans were discussed and synopsized as follows:
  - CIP focus is on meeting demand through supply enhancements. Addressing supply reductions induced by leaks is secondary priority.
  - Supply enhancement plans include:
    - Replacement of water tank at Agana Heights, which is schedule for this year.
    - Replacement of the water tank at Piti is scheduled to be completed in the next 3 years.
    - The schedule for replacing others would follow as inspections and condition assessments dictate

  - GWA has an ongoing leak detection program which could lead to CIP replacement projects if leakage is determined to be severe. GWA mentioned that sewage system leaks are of more concern than waterline leaks at this point.
  - Replacement of the trunk line through the Port and moving it into Route 11 Right of Way may be considered in the future. However, GWA has not identified a CIP project to do this in the near-term.
- PAG Plans were discussed and synopsized as follows:
  - Improve current fire-fighting capabilities by installing tanks and pumps as part of the MARAD/PMT work.
  - Separate potable and fire-main water lines in the near-term.
  - Have future PAG CIP project(s) progressively replace fire main system; connecting it to either the existing GWA trunk line or a new line in Route 11 ROW.
  - PAG will allow GWA trunk line and related easement to remain in Port until such time as condition deteriorates and/or a GWA CIP project to relocate it to Route 11 ROW becomes a reality.

Meeting: Port of Guam Master Plan (MP) Update – Port Marketing Meeting

Date: April 11, 2013 (1PM to 2PM)

Place: Harbor Master's Office

Attendees: Felix Pangelinan, PAG, Acting Deputy General Manager
Glenn Nelson, PAG, Commercial Manager
Mark Linsenmayer, Parsons Brinckerhoff
Blair Garcia, Parsons Brinckerhoff
Hardik Gajjar, Parsons Brinckerhoff

Discussion:

- An overview of marketing requirements included in the management review was provided.
- Functions of PAG marketing at the port were discussed.
- PAG mentioned they have a strategy to close down the marketing department and infuse it under other relevant departments.
- PAG does not have any plans for marketing budget and to come up with new future initiatives other than keeping the current labor for updating the website. There is no single person to do only marketing work. All staff members are doing their job for marketing the port.
- PAG mentioned that it is not desirable to actively market for cruise ships when there is no good cruise facility available at the Port.

Meeting: Port of Guam Master Plan (MP) Update – Harbor Master and Port Pilot

Date: April 11, 2013 (2PM to 4PM)

Place: DGM's Office

Attendees: Felix Pangelinan, PAG, Acting Deputy General Manager
Charlene, PAG, Assistant Harbor Master
Joe Cruz, President, Cabras Marine Corporation
Carlos Salas, Cabras Marine Corporation
Blair Garcia, Parsons Brinckerhoff
Hardik Gajjar, Parsons Brinckerhoff

Discussion:

- PAG mentioned that there has been no change since the management review. Harbor master and administrative assistant will be moving into the EOC building, assistant harbor master and radioman will remain in the current Harbor Master space. There is enough space available for harbor master functions.
- PAG mentioned that they have purchased an AIS system but they need to train the personnel.
- MARAD's MarView will be utilized to run the program.
- PAG mentioned that equipment acquisition for navigation aids will be funded by a Port Security grant. A radio upgrade is funded from reprogramming from the new EOC grant (not directly funded via EOC grant). A radar intrusion system acquisition will not be funded but PAG will be submitting the purchase request when it applies for the next Port Security grant.
- Currently, U.S. Navy and U.S. Coast Guard radar systems are used to support the Port's Harbor Master functions.
- Harbor Master control tower will be getting access to 44 CCTV (along with GM, Port Police and EOC) which will be mounted at various locations in the port. CCTVs are funded through the EOC grant. The EOC grant is divided into 3 grant years.
- Parsons Brinckerhoff has asked for a layout of CCTV locations.

Port Pilot

- Cabras Pilot's mentioned that all activity for pilots is at F-2 (4 harbor, 2 ocean going and 1,000 ton floating dry dock). There is a ship repair shop at the side of F-2 to provide maintenance services for Matson (chassis maintenance).
- All ships entering the harbor are required to use the tugs.
- Cabras Pilots mentioned the following future needs to be addressed:
  - Drainage – Oil-water separator needed
  - Bollards – need to be repaired
  - Water supply – Doesn't meet fire code. GWA is not currently addressing this

Meeting: Port of Guam Master Plan (MP) Update – Port Users Group Meeting

Date: April 12, 2013 (1PM to 2PM)

Place: Board Conference Room

Attendees:

Name	Company	Contact Information
Jeff Peck	Parsons Brinckerhoff	Peck@pbworld.com
Blair Garcia	Parsons Brinckerhoff	GarciaB@pbwolrd.com
Mark Linsenmayer	Parsons Brinckerhoff	Linsenmayermr@pbworld.com
Matthew Smith	Parsons Brinckerhoff	SmithMat@pbworld.com
Hardik Gajjar	Parsons Brinckerhoff	Gajjarhm@pbworld.com
John Santos	PAG	jb_santos@portguam.com
Ricardo Leon Guerrero	Seabridge Inc.	rsleonguerrero@seabridgeguam.com
Gregory R. David	Ambyth	gdavid@ambyth.guam.net
Rick Sablan	Marianas Steamship	rsablan@msa-guam.com
Tom Dillon	Matson	tdillon@matson.com
Byron Valera	Marianas Steamship	bvalera@msa-guam.com
Tina Garcia	ISS Guam	Iss.guam@iss-shipping.com
Annie Nonesa	CTSI/MEL	Annie_nonesa@mariana-express-guam.com
Gerry Neyes	NLI	Guam.ops@nortonlily.com

Discussion:

- The group was briefed about the approach and efforts of the MP Update and transshipment study.
- Overview of 2011 site layout update was discussed.
- Funding and debt ceiling issues and its effects on the Master Plan Update was discussed.
- Parsons Brinckerhoff mentioned that wharf extension, dredging, 100 gauge cranes and yard expansion will no longer be addressed in the master plan update.
- Overview of the purpose of the current visit was described.
- Tenant and space utilization issues were discussed.
- Question was raised for the schedule for demolition of WH1. PAG mentioned that it will take about 3 months to start the demolition work.
- Question was asked on what was the catalyst for downsizing the program?
    - Parsons Brinkerhoff mentioned the various reasons for downsizing of program which includes funding support, cargo volume, delay of military build-up and existing condition of structures.
- Question was raised on master plan approach if the military build-up suddenly accelerates on Guam?

- Parsons Brinckerhoff explained the various scenarios that will be addressed in the master plan update that will include;
- organic growth
- partial build-up
- full build-up

Meeting: Port of Guam Master Plan (MP) Update – Out-Brief Meeting

Date: April 12, 2013 (2PM to 4PM)

Place: DGM's Office

Attendees: Joanne Brown, PAG, General Manager
Felix Pangelinan, PAG, Acting Deputy General Manager
Jeff Peck, Parsons Brinckerhoff
Blair Garcia, Parsons Brinckerhoff
Mark Linsenmayer, Parsons Brinckerhoff
Matthew Smith, Parsons Brinckerhoff
Hardik Gajjar, Parsons Brinckerhoff

Discussion:

- The GM was briefed on selected issues from the scheduled meetings and discussions.
- Structural issues of Hotel Wharf property were discussed.
- Parsons Brinckerhoff provided a copy of a previous Hotel Wharf inspection report to the GM and the report was discussed (condition of the property, deterioration, cathodic protection of sheet piles, etc.).
- Feedback received from GPA regarding an option of developing an LNG off-loading facility along with storage and regasification system at Hotel Wharf property was discussed.
    - GM made it clear that PAG operations take priority over GPA or other agency requirements. GM also indicated that any use related to LNG, while it might be considered, would have to be on a not-to-interfere basis, citing concern about safety zones and operational schedules.
    - Parsons Brinckerhoff acknowledged GM's position and indicated that any and all land use options and opportunities would be identified, evaluated and prioritized objectively as a matter of routine and that bringing it up at this meeting was to mention that the idea was presented to us but that no conclusions were being made at this time
- A structural concern related to the newly constructed mezzanine in EQMR was brought up by Parsons Brinckerhoff. It was explained that this new structure cannot be safely anchored to the building walls or columns without creating structural problems during a seismic event. Parsons Brinckerhoff recommends that the structure be isolated from the building structure and separately braced.
- Parsons Brinckerhoff discussed GEPA concerns about Best Practices at the outdoor crane shop drum containment facility. It was recommended that a containment area valve that could lead to improper drainage into the soil be welded shut, that the roof over the containment area be replaced, and that any spills or accumulated water mixed with fuel be pumped into drums and be properly disposed of.
- Parsons Brinckerhoff observed that dry dock operations conducted near the Harbor of Refuge are not in compliance with tenant leases. Random inspections are encouraged by Port staff to ensure compliance with GEPA regulations.

- Construction related insurance issues for Cementon were brought up by Parsons Brinckerhoff.
- It was mentioned that there are no crane bumpers at F-6 and a possible solution was suggested.
- The undermining of Tri-star property at the shoreline was discussed. It was mentioned that while the U.S. Army Corps of Engineers may not have funding for stabilizing this area, the requirement remains and cannot be safely ignored.
- The issue of sinkholes in the expanded yard was brought up by Parsons Brinckerhoff and a possible solution was suggested.
- Parsons Brinckerhoff provided a brief overview of the maintenance function discussions, operations and labor utilization discussions, and analysis that will take place with CAPEX and OPEX modeling.
- The GM was briefed about the port tour conducted by operations and maintenance.
- The MP Update project schedule (attached) was discussed and a copy of schedule was handed to the GM. It was determined that the next trip to Guam will occur during the week of May 27th.
- An overview of the financial, commercial and procurement meetings was provided. Financial model inputs and outputs were briefly described.
- Parsons Brinckerhoff's meeting with GEDA was briefly described.
- Parsons Brinckerhoff's meeting with Senator Ada and PUC was briefly described.
- The issue of charging a crane surcharge on the transshipment cargo and how it may affect the cargo volumes was discussed.
- PAG asked for any near term response that they can provide for the public hearing on the Waiver of Sovereign Immunity legislation.
- Intent of the next meeting in May was briefly described.
- A question was asked about PAG plans relative to maintaining tenants and either filling vacant space in the Administration Building with new tenants or reprogramming it for internal use. PAG indicated a desire to keep the current tenants and bring more tenants in the future, as they will bring revenue to the port.
- Issues of maintenance of all port properties were discussed.
- Legislation of paying taxes by autonomous agencies was discussed.
- Issue of procurement process through GSA was discussed. PAG wants to be independent and perform its own supply procurement in order to sustain efficient operations.
- Communication issue was discussed. PAG authorized direct communication with department managers with DGM and/or GM copied as necessary.

Site Visit 2 – May 28th 2013 to May 31st 2013

Meeting: Port of Guam Master Plan (MP) Update In-brief Meeting

Date: May 28, 2013 (10AM – 12PM)

Place: Board Room

Attendees: Joanne Brown, PAG General Manager
Felix Pangelinan, PAG DGMO
Maria Taitano, PAG DGMA
Blair Garcia, Parsons Brinckerhoff
Hardik Gajjar, Parsons Brinckerhoff
Zachary Sprute, Parsons Brinckerhoff

Purpose:

In-brief the GM, DGMA, DGMO and other managers on the MP Update progress to date.

Discussion:

- Parsons Brinckerhoff discussed the intent of the meeting. Copies of the meeting schedule for current trip and a project schedule was provided to the attendees.
- Parsons Brinckerhoff mentioned the unavailability of Mark Linsenmayer. Michael Medve will be in-charge of financial modeling going forward.
- Parsons Brinckerhoff brought up the subject of the fuel transshipment study to ascertain PAG intentions. Parsons Brinckerhoff will propose a Task Order Adjustment to perform the work.
- Communications issues with JGPO were mentioned and how important it is to meet JGPO so as to complete the demand forecast.
- Parsons Brinckerhoff did a presentation of various key points such as operations, current conditions at port facilities, outreach approach, market analysis and cargo forecast, build-up assumptions, financial forecast and next steps.
- PAG expressed that they can help to get approval for taking pictures at Tristar facility to show the extent of undermining at the pier.
- PAG inquired about the feasibility of a short-term solution for Hotel Wharf without driving new sheet piles, i.e. do minimal repairs to get Coast Guard compliance. PAG mentioned that it is looking to install bollards at the shoreline and not mooring dolphins.
- Parsons Brinckerhoff mentioned that the issues concerning Hotel Wharf and the condition of Tank Farm A will be discussed with Jeff Peck and that we will have more answers by the end of the week.
- Parsons Brinckerhoff asked about the information that PAG is comfortable sharing with stakeholders. Parsons Brinckerhoff mentioned that they will discuss this issue again in the out-brief meetings.

- PAG mentioned to include all the aspects of transshipment cost in the response to the PUC for the transshipment study.
- PAG mentioned to talk with John Santos (operations manager) to check the percentage of transshipment container and include pre-2006 numbers in the forecast charts.
- PAG recommended that Parsons Brinckerhoff ask JGPO for the rotation of marines (schedule and quantity) and the amount of money devoted to infrastructure development outside the base for organic growth of the island.
- Parsons Brinckerhoff asked if PAG wants the transshipment study separate from the Master Plan report. PAG indicated a desire to keep them as separate reports.

Meeting: Port of Guam Master Plan (MP) Update Operations Meeting

Date: May 29, 2013 (8AM – 10AM)

Place: DGM's Office

Attendees: John Santos, PAG Operations Manager
Maria Taitano, PAG DGMA
Jeff Peck, Parsons Brinckerhoff
Blair Garcia, Parsons Brinckerhoff
Michael Medve, Parsons Brinckerhoff
Hardik Gajjar, Parsons Brinckerhoff
Zachary Sprute, Parsons Brinckerhoff

Discussion:

- Parsons Brinckerhoff mentioned about the progress to date and stated that Michael Medve will be replacing Mark Linsenmayer.
- PAG explained rates for import containers and cycle rates for transshipment containers (empty transshipment and returning transshipment).
- PAG suggested meeting Matson-Kyowa and Mel lines for transshipment study. PAG suggested meeting with them separately. PAG suggested meeting Ed Cruz from MELL.
- PAG stated the difference between the tariff rate and crane surcharge. The crane surcharge will be on the initial import. The crane surcharge for container is $125, for breakbulk is $5 per revenue ton not to exceed $125 (per Bill of Lading) and for Autos in containers is $40. Currently, PAG does not charge for autos in containers.
- PAG mentioned that the crane surcharge is charged directly to the shipping lines by the Port.
- Any box coming will be charged a crane surcharge. Any loaded container going out of Guam (through the gate) will be charged a crane surcharge.
- All maintenance on POLA cranes is done by Matson.
- PAG mentioned to check for the fuel transshipment charges (all liquid bulk commodities) with Glenn Nelson and Joann Conway.
- Parsons Brinckerhoff discussed the level of detail for the tariff analysis and the Task Order amendment issues for the fuel transshipment study.
- Parsons Brinckerhoff asked if anything has changed in labor shifts.
- PAG mentioned that there was an analysis carried out for labor shift timings and cost charged to carriers.
- The operations overtime are scheduled based on vessel schedules, however the other task such as maintenance, port police, etc are not based on vessel schedules.
- PAG described the labor schedule.
- PAG stated that casual labor that is hired when necessary can work as drivers, hustler operators, stevedore, lashers, bookmen and pinmen. PAG also stated that they can train casual labor to lift the containers.
- PAG mentioned that TOS implementation will reduce the labor requirement (checkers).

- PAG stated the following project priority for implementation of modernization program:
  - Refurbishment of CFS
  - WH2 demolition
  - SLE
  - Gantry 2 demolition

  } Top 4 – Urgent Priority

  - Tristar pipeline repair
  - EOC trenching
  - WH1 demolition
- Parsons Brinckerhoff asked for historic labor schedules to forecast overtime (check for overtime trend) and also asked for labor hours and labor cost for the last 3 months (weekly).

Meeting: Port of Guam Master Plan (MP) Update Procurement Meeting

Date: May 29, 2013 (10AM – 12PM)

Place: DGM's Office

Attendees: Alma Javier, PAG Procurement Manager
Maria Taitano, PAG DGMA
Michael Medve, Parsons Brinckerhoff
Blair Garcia, Parsons Brinckerhoff
Hardik Gajjar, Parsons Brinckerhoff

Discussion:

- PAG provided Parsons Brinckerhoff with a copy of their 2-year competitive Procurement Plan and went over the procurement list.
- PAG mentioned that the Port is upgrading the JD Edwards system to version 9.3 as suggested by the IT department. The Port has an option to upgrade the JD Edwards system to Version 9.3 or Enterprise 1.
- PAG also mentioned that the Oracle approved vendor did analysis and provided an option of Version 9.3 or Enterprise 1 for their system upgrade.
- JD Edwards Version 9.3 will be awarded by August 2013 and the Port looks to implementing the new version by December 2013 which will cost $450,000.
- PAG stated that Senator BJ Cruz amended the language for SLE loan so that the Bank of Guam cannot take the possession of the land in the case the Port defaults as the land belongs to Government of Guam.
- PAG mentioned that once the FMS is upgraded, Port's first priority from the SLE loan will be to repair the wharf and then anticipate purchasing one Top-lifter.
- Gantry 2 is a surplus asset of GSA and it is no longer a Port property. Hence the Port cannot demolish Gantry 2 on its own at the moment. Currently, there is a bidder who has responded to the GSA RFP for taking possession of surplus property. This includes Gantry 2 and the RTGs and old Top-lifters. The bidder is required to remove this property from the Port within 15 days of award. Failure to meet these requirements could result in ownership of the Gantry-2 disposal issue being transferred back to the Port.
- PAG mentioned that the GM has recommended to the BOD that special legislation be requested to enable the Port to have procurement authority and not have to go through GSA.
- PAG mentioned wanting to acquire an emergency back-up generator for about $1 million through the Port Security grant.

Meeting: Port of Guam Master Plan (MP) Update BOD Meeting

Date: May 29, 2013 (2PM – 4PM)

Place: Board Room

Attendees: Christine Baleto, PAG Vice Chairperson
Mary Michelle Gibson, PAG Secretary
Joanne Brown, PAG General Manager
Felix Pangelinan, PAG DGMO
Maria Taitano, PAG DGMA
Jeff Peck, Parsons Brinckerhoff
Blair Garcia, Parsons Brinckerhoff
Michael Medve, Parsons Brinckerhoff
Hardik Gajjar, Parsons Brinckerhoff
Zachary Sprute, Parsons Brinckerhoff

Purpose:

Present to the Board of Directors the work completed to date on the Master Plan Update

Discussion:

- Parsons Brinckerhoff provided a presentation of the preliminary draft progress to date on the Master Plan Update efforts which included key points such as conditions assessment, outreach approach, data collection, market analysis, cargo forecast, revenue forecast and steps going forward.
- Parsons Brinckerhoff discussed the upcoming meetings with stakeholders and the key points that will be discussed during those meetings.
- PAG suggested meeting with Ambyth Shipping.
- PAG mentioned that PUC has requested going ahead with the fuel transshipment study.
- PAG mentioned that they are looking to go ahead with design of improvements at the Hotel Wharf property and then apply for a TIGER grant next year.
- PAG inquired about interim use options for Hotel Wharf. Parsons Brinckerhoff indicated that there should be no ship impact loads transferred to the Wharf structure and no cargo stored on the Wharf structure. Minimal use of the facility under good weather conditions might work but the facility is in very poor condition and is susceptible to seismic events. Using it at this point is not without risk.
- PAG mentioned the Area Maritime Security meeting and plans to install additional CMU Security Fencing. Parsons Brinckerhoff mentioned that there is a fair amount of new CMU Security fencing being installed by MARAD. It was agreed that this issue should be discussed further in a separate meeting with the planning team.
- PAG requested that the Parsons Brinckerhoff team meet with Matson and MEL to gather their perspectives.
- PAG mentioned to include all the aspects of transshipment cost and related charges in the response to the PUC for the transshipment study.

Meeting: Port of Guam Master Plan (MP) Update Port Users Group Meeting

Date: May 29, 2013 (2PM – 4PM)

Place: Board Room

Attendees:

Name	Company	Contact Information
Ed Cruz	MELL	ed_cruz@mariana-express-guam.com
Tony Reyes	MSA	treyes@msa-guam.com
Rolan Comia	MSA	rcomia@msa-guam.com
Bernie Valencia	Matson	bvalencia@matson.com
Emy Reyes	Ambyth	hreyes@ambyth.guam.net
Teresa Gotti	Ambyth	teresa.gotti@ambyth.guam.net
Gerry Reyes	Norton Lilly	guam-ops@nortonlilly.com
Tom Dillion	Matson	tdillion@matson.com
John Santos	PAG	jb_santos@portguam.com
Felix Pangelinan	PAG	frpangelinan@portguam.com
Michael Medve	Parsons Brinckerhoff	medvem@pbworld.com
Jeff Peck	Parsons Brinckerhoff	peck@pbworld.com
Blair Garcia	Parsons Brinckerhoff	garciab@pbworld.com
Hardik Gajjar	Parsons Brinckerhoff	gajjarhm@pbworld.com

Purpose:
To update the PUGG members on the status of the work to date.

Discussion:

- Parsons Brinckerhoff did a presentation the covered key points such as outreach approach, data collection, military build-up assumptions, forecast scenarios and next steps.
- Stakeholder outreach was discussed which involved meetings with MELL, Matson and Kyowa for transshipment study (containers and fuel), requirements from PUC, inputs from JGPO for military build-up and meeting with the Oversight Chairman.
- PAG explained the Master Plan Update and Transshipment Study (tariff analysis) that will be carried out by Parsons Brinckerhoff.
- MELL asked if the development will be half of what was projected in the previous Master Plan.
- Parsons Brinckerhoff explained that it will have a better answer after talking to JGPO but that current numbers point to about a 17 percent reduction in budget.
- Parsons Brinckerhoff explained, for the benefit of those not in attendance at the kickoff meeting, how the MP Update has transitioned from a 3-4 year crisis build-out based on full terminal expansion and a wheeled operation to one involving a limited expansion, hybrid operations, more emphasis on sustainability, and more emphasis on self-sufficiency financially, i.e., through tariff adjustments.

Meeting: Port of Guam Master Plan (MP) Update Commercial Meeting

Date: May 30, 2013 (9AM – 12PM)

Place: DGM's Office

Attendees: Glenn Nelson, PAG, Commercial Manager
Jeff Peck, Parsons Brinckerhoff
Blair Garcia, Parsons Brinckerhoff
Michael Medve, Parsons Brinckerhoff
Hardik Gajjar, Parsons Brinckerhoff

Purpose:
Discuss the liquid bulk transshipment properties/operations and non-port properties.

Discussion:

- Parsons Brinckerhoff mentioned the tentative date for delivery of the draft Master Plan Update and Transshipment Study reports.
- Parsons Brinckerhoff also mentioned that Michael Medve will be replacing Mark Linsenmayer on the project.
- PAG stated that they will send the agreements and management contracts data for fuel pier and terminals to Parsons Brinckerhoff.
- PAG mentioned that Hansen does not have any pier designation. Hansen usually operates at pier F-1, Casamar operates at pier F-2 and PAG operates at pier F-3.
- PAG stated that Guam Power Authority (GPA), South Pacific Petroleum Corporation (SPPC) and Isla Petroleum and Energy (IP&E) are customers of Tristar.
- PAG stated that the fuel imported by Mobil is stored in tanks at Area C. Mobil operates at Golf Pier and has its own pipeline (which is port owned) to supply the fuel.
- There is no revenue stream from the storage tanks in Area A, only one tank being used for fire protection water.
- PAG stated that Golf pier, pipeline leading to Area A, pipeline at Y junction leading to Area C and Area A (tank farm – 225k bbl capacity, 7 tanks) are port owned assets. Assets at Area C are owned by Mobil till 2061. SPPC has a tank next to Mobil at Area C.
- The Seaplane ramp is used by Seabridge for barge operations (about 10,000 SF) and all fuel bunkering operations are carried out at F-3 using the pipelines. Pier F-1 is owned by PAG and maintained by Tristar.
- Maintenance responsibilities for storage tanks at tank farm A are the responsibility of the tenant.
- PAG pays $6,000 per month to Mobil to maintain Golf pier.
- PAG will provide a property map of the port.
- PAG mentioned that GPA provides low grade diesel (dirty fuel) to Matson Islander vessel at F-1 at $0.53 per bbl.
- PAG stated that the rate for fuel import is $0.50 per bbl with expense of $0.04 per bbl and for export is $0.24 per bbl with expense of $0.01 per bbl. PAG mentioned that any taxes or fees imposed on the rate is carried to the sister islands.

- PAG re-evaluates the rate structure every 3 years and are allowed to raise the rates up to 10 percent.
- GEDA track (Mobil, SPPC, Cabras Marine, and Hansen) is outside the port rates and has long term leases. The areas inside the port rates have month to month leases.

A follow-up meeting was held with Glenn Nelson, Zach Sprute, and Jeff Peck on June 4th at the DGM Office. Information received in this meeting is as follows:

- The management agreement on F-1 is currently month-to-month and is with Tristar. It was re-solicited and it appears that IP&E will take it over
- Tristar owns 4 lines that run away from F-1, one of which is abandoned. Tristar pipeline users are:
  - GPA
  - SPPC (76)
  - IP&E (for Shell)
  - Tristar/DLA (Defense Logistics Agency)
- Mobile has a Management Agreement for Golf Pier, fuel lines, and Tank Farm A, both of which are Port owned
- The Port has to modify the Mobile Management Agreement to allow Mobile to create a sub-agreement between themselves and Cementon. Mobile wants to have hands off of Gulf Pier Management (and responsibility) during the timeframe when Cementon is pumping product
- The Port is working toward allowing Cementon to install pipeline to Golf Pier and then set up an arrangement to take ownership of the line through reduced throughput charges until investment is paid for. This puts the Port in legal position of owning the asset that the product is moving through, something legally necessary in order to impose a throughput charge
- Area A Tank Farm
  - There were eight tanks
  - Tank 5 is missing
  - Two tanks may have been identified by Mobile as re-serviceable. PAG will send us their most recent inspection report
  - The rest are highly questionable
  - One tank is used currently, and it is for fire suppression support
  - Mobile holds the Management Agreement for this area. That agreement expires in 2020
  - Mobile has corporate policy not to invest in infrastructure they don't own. As a consequence they won't spend money on these Port owned tanks. Instead they built new tanks on Lot 1 (Area C) and maintain those
- Lot 2 – SPPC Tank Farm
  - IP&E Rents Tank Storage Space from SPPC
- Port has, or will have, R&M and CIP responsibility for Port-owned assets:
  - F-1 Pier

  - Golf Pier
  - Golf Pier Pipelines
  - Future Cementon Lines

- Port pays Tristar $0.077/import barrel and $0.038/export barrel to manage F-1
- Port pays Tristar $28,800/year to do routine R&M on F-1. Non-routine R&M or CIP investments are reimbursable and require Port approval so they can be budgeted
- Port used to Pay Mobile $0.04/import barrel and $0.01/export barrel to do routine R&M on Golf Pier and Pipelines. This was stopped when Mobile abandoned use of Tank Farm A and didn't pay the Port some $200,000 in AR's related to a Tank Farm investment
- Port currently pays Mobile $6,000/month to do routine R&M on Golf Pier alone. They provide nothing for pipelines at this point
- Mobile leases Area C Tank Farm property but owns the Tank Assets. They maintain those on their own

Meeting: Port of Guam Master Plan (MP) Update Finance Meeting

Date: May 30, 2013 (1PM – 5PM)

Place: DGM's Office

Attendees: Felix Pangelinan, PAG Deputy General Manager
Joanne Conway, PAG, Acting Financial Affairs Controller
Richard Quiambao, PAG, Accountant III
Alma Javier, PAG, Procurement Manager
Michael Medve, Parsons Brinckerhoff
Hardik Gajjar, Parsons Brinckerhoff

Discussion:

- Parsons Brinckerhoff asked PAG what aspects of the model they have worked with.
- PAG asked for the financial model for interim tariff petition for June 2013.
- PAG mentioned that the tariff increase will not be for crane surcharge (there will be increase in tariff only and not crane surcharge).
- PAG mentioned that the SLE Loan will be used for Wharf repair, equipment purchase and upgrading the FMS and TOS. There is a proposed bill to waive the sovereign immunity which is currently under committee review. The bank is also reviewing the bill.
- PAG will provide the rate and the amount for the loan and other information as debt service. PAG will also provide the GEDA requirements.
- PAG is hoping to close the loan and get tariff increase approval by the end of FY2013.
- PAG currently has a crane loan ($12 million – Dec 2012) and an equipment loan ($3.5 million – Dec 2010) from the Bank of Guam.
- 9.5 percent of crane surcharge will go to sinking fund based on the baseline of 44,100 containers. Any crane surcharge for more than 44,100 containers will also go to the sinking fund. (Sinking fund can be used for emergency unplanned repairs, loan debt if the port defaults on any payments against the loan, but primarily to finance for new cranes starting in 15 years per the current planning horizon) The crane surcharge also covers the expense of the Crane Maintenance PMC.
- PAG considers that the military build-up will not have that much effect on the port and will rather be a flat growth instead of a peak.
- PAG mentioned that they are applying for TIGER grant this year for Yard Drainage Repairs and are considering next years' TIGER grant for Hotel Wharf property.
- PAG stated that GAO has visited the port and other Government of Guam agencies to study the effect of military build-up on Guam. The report is pending.
- PAG is looking for the facility maintenance fund to pay for their facility maintenance program.
- PAG mentioned that there has been no new building in the port premises in last 15 to 20 years because there has been no increase in the port tariff.
- Port cannot charge military cargo at higher rate and the tariff is not divided by commodities.

- PAG also mentioned that the last tariff increase did not cover salary increments for Port staff. They mentioned the need to include annual salary increments in the upcoming tariff petitions. They also brought up the subject of increasing salaries to the 50th percentile as mandated by law. Parsons Brinckerhoff indicated that it would modify the financial model to address annual salary increments at 4 percent, general annual cost of living increases at 3.155 percent, and the requirement to progressively move salaries from the 10th percentile to the 50th percentile.

Meeting: Port of Guam Master Plan (MP) Update Matson-Kyowa Meeting

Date: May 30, 2013 (1PM)

Place: Matson's office

Attendees: Len Isotoff, Matson
Bernie Valencia, Matson
Tom Dillion, Matson
Jeff Peck, Parsons Brinckerhoff
Blair Garcia, Parsons Brinckerhoff

Discussion:

- Parsons Brinckerhoff talked about being tasked by the Port to look at the Transshipment Business both for Container Cargo and Fuel. During this discussion the following points were made:
  - The driver for this effort is a request from the Oversight Chair to look at whether Container Transshipment Cargo should be subject to the Gantry Crane Surcharge based on there being extra lifts involved.
  - The approach to looking at this would evaluate all expenses and all revenue categories involved with Transshipment Cargo, develop a perspective about baseline business (Guam Imports) and marginal business (transshipment) lines, and then make a recommendation after consultation with the Port
  - The Port was not pre-disposed to assessing the Crane Surcharge to Transshipment boxes
- Matson talked about Guam's historic desire to be a hub and that Matson moved its transshipment from Hawaii to Guam with the understanding that it would be treated as a marginal business line
- Matson mentioned that 40 percent of the transshipments have now moved through Majuro via Mariana Express Lines. Matson mentioned breaking off its prior partnership with MELL and forming a new partnership with Kyowa. Matson talked about MELL using five ships with two being added to their rotation. MELL's involvement with this new rotation has been the cause of the drop-off in Matson's Transshipment business. They mentioned a transshipment distribution of 20-25 percent in Pohnpei, 40 percent in Majuro, and 15 percent in Chuuk.
- They mentioned a transshipment volume of 60-80 boxes bi-weekly
- Matson mentioned Guam Terminal Charges of approximately $600/box on Imports and $200/box on transshipment boxes
- Matson expressed surprise and doubts about the viability of MELL handling the transshipments with a five ship rotation (i.e., that on the surface it doesn't appear reasonable that they could cut some rates as they have done and sustain the business).
- Matson shared some rate sheets for our use in conducting our analysis.

Meeting: Port of Guam Master Plan (MP) Update Mariana Express Lines Limited Meeting

Date: May 31, 2013 (10AM – 12PM)

Place: MELL's office

Attendees: Ed Cruz, MELL Lines
Jeff Peck, Parsons Brinckerhoff
Blair Garcia, Parsons Brinckerhoff
Michael Medve, Parsons Brinckerhoff
Hardik Gajjar, Parsons Brinckerhoff

Discussion:

- MELL stated that they currently have a total of 32 vessels. The vessel coming into Guam every week is a 1,300 TEU vessel.
- MELL mentioned that storms are the main reason for increases in the flow of shipments to Guam. Storm will increase the cargo load coming into the port and in turn will increase cargo for them.
- Parsons Brinckerhoff explained the transshipment study approach and crane surcharge process that is charged to the customers.
- MELL stated that they have changed the transshipment cargo flow in 2012. Earlier MELL was bringing in 150 containers every week in transshipment through Guam. The transshipment cargo through Guam has now gone down to 30 containers every two weeks. The majority of the transshipment is now going through Majuro. Majuro is now receiving about 100 transshipment containers every week. Containers destined to outer islands are now transshipped through Majuro via vessels coming in from Honolulu.
- MELL has added 2 more vessels in the rotation to make a total of five vessels serving the islands.
- Out of 150 transshipment containers, 100 containers go through Majuro, 25-30 containers go through Guam and remaining stays on the vessel for additional rotation.
- Parsons Brinckerhoff asked if the 1.4 percent organic growth is a good assumption to forecast the organic growth of Guam. MELL is projecting that the organic growth in Guam and other outer islands will remain flat for the next 10 years.
- MELL mentioned that there has been a significant drop in cargo passing through Saipan.
- MELL does not see any growth in transshipment containers going to Majuro.
- MELL mentioned that Kwajalein will see some growth in cargo.
- MELL briefly stated that out of the total containers coming to the islands every week, 175 import containers are from Asia and 250 export containers goes to Honolulu. Majority of island's import containers are coming from Asia.
- MELL mentioned that a good source of information related to population growth is Mr. Brady in the Bank of Guam.

Meeting: Port of Guam Master Plan (MP) Update PUC Meeting

Date: June 04, 2013 (2:45PM)

Place: Attorney Mair's Office

Attendees: Joephet Alcantara, Attorney
Blair Garcia, Parsons Brinckerhoff
Jeff Peck, Parsons Brinckerhoff

Discussion:

Parsons Brinckerhoff provided a briefing on:

- Progress on the Master Plan Update
- The Interim Tariff Petition, its relationship to the future 5-Year Tariff Petition, and the desire to discuss this with Slater Nakamura to facilitate future evaluation
- Scope of the Interim Tariff Petition, i.e. it is addressing the SLE Loan, the TOS implementation, and across the board cost of living increases. It was mentioned that this is consistent with the minimum Port Modernization Program investments and the PUC Reports submitted last October.

Attorney Alcantara asked what PAG's expectations were concerning implementation of the Interim tariff. Parsons Brinckerhoff indicated that PAG was looking for it to be effective October of this year. He indicated that he thought that might be overly optimistic but that they would do what they could to expedite matters.

Parsons Brinckerhoff also mentioned that:

- The Interim Petition would be prepared by PAG and that the Public Notice has gone out
- Parsons Brinckerhoff is trying to set up a meeting with Slater Nakamura next week, that PAG would notify him of time and place for meeting if it is arranged, and that Attorney Alcantara was welcome to participate. Note: In response he indicated that he would like to go to the meeting.

Meeting: Port of Guam Master Plan (MP) Update Director Guam Build-up Office Meeting

Date: May 31, 2013 (1PM –2PM)

Place: DGM's Office

Attendees: Mark Calvo, Director Guam Military Build-Up Office
Jeff Peck, Parsons Brinckerhoff
Blair Garcia, Parsons Brinckerhoff
Michael Medve, Parsons Brinckerhoff
Hardik Gajjar, Parsons Brinckerhoff

Discussion:

- Parsons Brinckerhoff briefed Mr. Calvo on the MP update approach, funding program and transshipment (tariff) study.
- Mr. Calvo mentioned that the slides from his most recent presentation provide most of the information from the Navy. They are expecting new data in next 60 days.
- Parsons Brinckerhoff described how the cargo forecast has been carried out for organic, mid and full build-up.
- Mr. Calvo mentioned that the Navy does not provide the end date for the build-up and hence he cannot comment on when the build-up will be completed.
- Mr. Calvo mentioned that the decision on the location of the Marine Base is expected to be out in next 6 months (by December 2013).
- Parsons Brinckerhoff asked if Mr. Calvo could provide any updated information related to a list of infrastructure development projects associated with the build-up (barracks, etc.) and in particular any known changes from the previous program. Mr. Calvo indicated he would query the services and contacts in D.C. to see if he can provide the requested data to Parsons Brinckerhoff.
- Mr. Calvo mentioned that clearly known decreases are evident regarding the construction of barracks and family housing.
- Mr. Calvo informed Parsons Brinckerhoff that that 2,000 marines and dependents will be permanent on the island.
- Mr. Calvo also stated that some of the projects such as Apra wharf improvement, Anderson South Live Fire training site, Tinian training area and the Air Combat at Anderson Air Force Base, are already cleared to proceed based on the last Record of Decision.

Meeting: Port of Guam Master Plan (MP) Update Out-brief Meeting

Date: May 31, 2013 (2PM – 4PM)

Place: Board Room

Attendees: Joanne Brown, PAG General Manager
Felix Pangelinan, PAG DGMO
Maria Taitano, PAG DGMA
Jeff Peck, Parsons Brinckerhoff
Blair Garcia, Parsons Brinckerhoff
Michael Medve, Parsons Brinckerhoff
Hardik Gajjar, Parsons Brinckerhoff
Zachary Sprute, Parsons Brinckerhoff

Purpose:

Out-brief the GM, DGMO and DGMA of the work accomplished during the trip

Discussion:

- Parsons Brinckerhoff described the work that was carried out and outreach conducted during the visits being performed this week such as crane surcharge, leases, fuel charges, status report on procurement projects, meeting with MELL, Matson-Kyowa for transshipment, PUC meeting, meeting with Mark Calvo for military build-up data and Senator Ada's meeting.
- Going forward, Parsons Brinckerhoff will be in touch with JGPO to get additional data on the military build-up.
- Parsons Brinckerhoff indicated it would need to develop a Task Order adjustment for the fuel transshipment study. It was conveyed to PAG that transshipment study (container and fuel) will be combined in one report.
- Parsons Brinckerhoff will provide the status report slides by next week.
- Parsons Brinckerhoff mentioned that based on the information provided by Mark Calvo, the draft EIS for military build-up will be completed in 6 months (December 2013).
- Parsons Brinckerhoff discussed the new schedule and provided a copy of the schedule to PAG.
- Parsons Brinckerhoff mentioned that they will try to meet with Major Alvarez to have direct contact with JGPO regarding the military build-up.
- PAG mentioned that they can help to arrange a meeting with Major Alvarez.
- PAG suggested meeting with Ray and George for facility and equipment maintenance.
- Parsons Brinckerhoff mentioned about Tony Simkus' involvement for equipment maintenance plan.
- PAG suggested meeting maintenance team to help them set their budget during Parsons Brinckerhoff's next visit.
- PAG talked about new positions required to upgrade the skill set at the port. Currently, port does not require any hiring but can decide to hire new employees and it will be a public process.

- PAG asked if Parsons Brinckerhoff has talked to Gary Kuwabara about the use of remaining grant funds. Parsons Brinckerhoff replied that they have talked to Gary Kuwabara to reprogram funds in the Project Controls and OAE Support Services grants in order to support the work for the Hotel Wharf assessment. It was stated that the OEA Grants cannot be used for design and engineering services.
- EDA grant is a possible funding source for design and engineering for Hotel Wharf. However, EDA grant will have to have 15 percent matching funds from the Port. Another option is to reprogram funds in open OIA grants which do not require matching funds from the Port.
- Parsons Brinckerhoff mentioned that there are remaining EDA Grant funds following the cancellation of TOs 17 and 18 and reduced spending on the prior Marine Designs.
- PAG mentioned that their discussion with GAO gave them confidence that the Port can get the TIGER grant for Hotel Wharf.
- Parsons Brinckerhoff briefed the GM about the possible solution for Hotel Wharf repair.
- PAG mentioned that in order to meet the short term requirements for Hotel Wharf, they are thinking to use Hotel Wharf for research vessels, fishing vessel and other small vessel.
- PAG is in the process of trying to get a waiver from the Coast Guard to place a tall vessel at Hotel Wharf (300-foot-long vessel) with possible public tours.

Meeting: Port of Guam Master Plan (MP) Update Slater Nakamura Meeting

Date: June 10, 2013 (10:00AM)

Place: Slater and Nakamura Office

Attendees: Roger Slater
Christine Anderson (on phone)
William Hall (on phone)
Jeff Peck, Parsons Brinckerhoff

Discussion:

- Parsons Brinckerhoff stated that the purpose of the meeting was to provide an update on the MP Update, the Interim Tariff Petition and the 5-Year Tariff Petition and how the pieces fit together
- Parsons Brinckerhoff provided an overview of pending and future PUC activity as follows:
  - Master Plan Update underway
  - Draft MP Update will be delivered in July
  - Final MP Update will be delivered in August
  - MP Update will included Financial Feasibility Modeling, Implementation Strategy, and Economic Impact Statement
  - Financial modeling will involve scenarios consistent with the PUC Reports provided last October. This update will fine tune the middle solution based on what is known about the build-up plans today.
  - Military Build-up will involve a reduction from 17,700 marines and dependents to 5,000 operating marines and 1,300 dependents with a third of the operating marines being permanent party. In terms of sensitivity analysis, financial and capacity analyses will differ in how they look at the cargo. Cargo handling capacity should deal with a spike and financial analysis should deal with a flattening of cargo volume increases.
  - Transshipment Study being done in parallel with MP Update
  - Transshipment Study will look at container transshipment cargo and the crane surcharge issue and fuel transshipment and the throughput rates issue
  - Interim Petition Public Notice has gone out and Port is preparing supporting documentation for that
  - Interim Petition is for 5.65 percent across the board increase, has a 3.155 percent CPI component, and is otherwise supporting implementation of the Wharf Service Life Extension Project assuming a 10 year loan and the Terminal Operating System based on defrayment of costs over 5 years utilizing a 5-Year IDIQ Services Contract
  - The Interim Petition is consistent with the minimum PMP Investments and is bridging the gap until the MP Update is complete and approved and the supporting 5-Year Tariff Petition can be brought forward

  - The supporting schedules for the 5-Year Tariff Petition will be based on the minimum PMP investments, organic growth during the next 5 years, 3.155 percent CPI, targeted increments and salary adjustment toward the 50th percentile based on current Port staffing

- Parsons Brinckerhoff indicated that it would support the MP Update and 5-Year Tariff Petition approval processes and be available to answer ongoing questions up through the end of its current contract which is February 2014
- Slater Nakamura asked when they would see the supporting documentation for the Interim Petition. Parsons Brinkerhoff indicated that it was under development by the Port and a precise submission date was not yet clear.
- Slater Nakamura asked for clarification on the Interim Petition rate adjustment being proposed. Parsons Brinckerhoff re-iterated the 3.155 percent for CPI, 5.65 percent across the board.

Site Visit 3 – July 15th 2013 to July 19th 2013

Meeting: Port of Guam Master Plan (MP) Update Kick-off Meeting

Date: July, 2013 (2PM – 3PM)

Place: GM's Office

Attendees: Joanne Brown, PAG General Manager
Felix Pangelinan, PAG Deputy General Manager Operations (DGMO)
Maria Taitano, PAG Deputy General Manger Administration (DGMA)
Jeff Peck, Parsons Brinckerhoff
Blair Garcia, Parsons Brinckerhoff
Michael Medve, Parsons Brinckerhoff
Hardik Gajjar, Parsons Brinckerhoff
Zachary Sprute, Parsons Brinckerhoff

Purpose:

- In-brief the GM, DGMA and DGMO of the progress to date.

Discussion:

- Parsons Brinckerhoff mentioned the deliverable for this visit and stated that the draft report will be handed to the port by Friday. It was mentioned that a powerpoint presentation will be carried out on Tuesday to update and solicit discussion with all managers.
- Parsons Brinckerhoff mentioned about their meeting with Senator Ada and discussed key points of the meeting. During the meeting with the Senator it was mentioned that tariff petition will be done after the Master Plan is approved.
- Parsons Brinckerhoff described the anticipated process of master plan approval reflecting back on how it was done for the previous Master Plan Update 2007 Report.
- PAG mentioned that they will want to review and evaluate both the reports before they are transmitted to Senator Ada or other parties.
- Parsons Brinckerhoff mentioned knowing about a MARAD briefing to be performed this week and asked about anticipated discussion issues for that briefing. PAG mentioned that they will know once the meeting is over.
- PAG asked about considering looking at the impact of not increasing the tariff.
- Parsons Brinckerhoff brought up the crane surcharge issue, what it is intended to cover and described how it is being modeled.
- Parsons Brinckerhoff also mentioned that preliminary indications are that all revenues are not being fully captured and that clarifying discussions with staff will get into this issue.
- There was some discussion about the major points to look at relative to the crane surcharge and transshipment
    - Guam bearing the unfair share of crane operating cost.
    - Additional wear and tear on the cranes
    - Overall revenues and expense balance for transshipment business lines

- It was mentioned that implementation of TOS/GOS will help to remove instances of missing revenue capture.
- PAG asked if foreign transshipment cargo was part of the evaluation.
- It was mentioned that transshipment cargo is steady and is helping the port in terms of revenue and should not be lost.
- Parsons Brinckerhoff asked about requirements for replacement of the Administration Building, i.e. would PAG want space in the building to lease to tenants or size it to only accommodate port employees. There was some discussion about building open space allowing tenants to build out their own improvements and lowering the initial construction cost to PAG.
- PAG mentioned that they would prefer to have a large building with the possibility to lease part of the building to tenants.
- PAG suggested moving the existing administration building near Hawaiian rock area with bottom floor leased to tenants and upper floor to be used for port administration. PAG also suggested using the footprint of the current building as a Mini-industrial Park or waterfront-proximity area to lease to tenants.
- Parsons Brinckerhoff mentioned that during the meeting with Senator Ada, it was suggested to set up a general obligation bond for TBD projects in order to bypass any political limitations.
- Parsons Brinckerhoff mentioned that dealing with new salary structure and increments, the understanding is that the port has new wage scale, with 20 steps with 4 sub-steps each and implementation of increment is done annually. Modeling is done using 4% increments and sticking to the resolution passed by previous board that the salary increment adjustments from 10^{th} percentile to 50^{th} percentile will be done in 10 years. PAG confirmed the desire to go forward with this.
- Parsons Brinckerhoff explained the annual and bi-annual salary structure adjustments that would go with increasing the salary structure to match 50^{th} percentile requirement.
- PAG mentioned that they are no longer providing merit bonuses.
- Parsons Brinckerhoff asked if it is okay to assume that PAG will review the draft report and provide their comments within 2 weeks after providing the draft report. PAG positively responded stating that they will provide the comments in 2 weeks.

Meeting: Port of Guam Master Plan (MP) Update Presentation Meeting

Date: July 16, 2013 (1PM – 4PM)

Place: Board Room

Attendees: *See Attendee list*

Purpose:

- To present the draft Master Plan Update and Transshipment Study findings.

Discussion:

- Parsons Brinckerhoff presented the draft Master Plan Update and explained what is included in the MP Update report and Transshipment Study.
- PAG asked if Parsons Brinckerhoff will have sit down session after the final report is submitted.
- PAG asked if the report will include financial feasibility.
- PAG asked if the transshipment report will be submitted before August 31, 2013 and will it contain fuel study as well? Parsons Brinckerhoff replied that the report will be submitted in the week of August 12, 2013 and will include fuel study.
- PAG asked in what form the draft report will be submitted. Parsons Brinckerhoff replied that the draft will be submitted in hard copy and electronic form (on CD).
- PAG stated that during the last MP update, Petroleum industry and Tuna industry were left out.
- Parsons Brinckerhoff stated that Petroleum and Tuna industry is not being left out of this MP update, however, they have not yet met with any representatives.
- PAG brought up the issue that Gantry # 2 is not to be considered in the inventory. They stated that Gantry # 2 will be surveyed through GSA and won't be considered in the inventory after 2 weeks.
- PAG stated the defining transshipment for tuna should mention ship-to-ship and ship-to-air. The tuna cargo going to the airport is not considered transshipment and is no longer considered port cargo.
- PAG stated that main reason for recent declines to tuna cargo is a shift to Majuro as it (Majuro) does not have strict rules.
- PAG clarified the naming of vessels identified in the berth utilization chart.
- PAG asked if the crane surcharge is going to be escalated in the future or not. Parsons Brinckerhoff replied that the crane surcharge is not currently in need of escalation during the planning horizon (20 years).
- Parsons Brinckerhoff explained the use of crane surcharge and how it is modeled and what outcomes are generated.
- PAG asked if the expense projections factor in future salary increase or not. Parsons Brinckerhoff replied that that it does consider future salary increases in the gross expense.
- PAG mentioned that any increase in tariff will be fully passed on to the customer.
- PAG asked about the amount of financial information that will be included in the MP update report.

- Parsons Brinckerhoff mentioned that PAG will have the opportunity to control the information stated in the report before the final report is submitted.
- Issue of crane surcharge charged for container lift was discussed.
- Purpose of the transshipment study was discussed in detail.
- Parsons Brinckerhoff talked about the anticipated process of MP approval and how that impacts the future 5-year tariff petition application and approval.

Attendee List

NAME	COMPANY	CONTACT INFO
Maria Taitano	PAG-DGMA	mdrtaitano@portguam.com
John Santos	PAG-Operations	jb_santos@ portguam.com
Arden Bonto	PAG-IT	abonto@ portguam.com
Anthony Yatar	PAG-IT	ajsyatar@ portguam.com
Dennis Perez	PAG-IT	djperez@ portguam.com
Dot Harris	PAG-Planning	dpharris@ portguam.com
Joe Javellana	PAG-Planning	jgjavallana@ portguam.com
Donna Lizama-Acosta	PAG-Planning	dlacosta@ portguam.com
Dora Perez	PAG-Planning	dcperez@ portguam.com
Fred Rocia	PAG-Planning	frocio@ portguam.com
Joann Conway	PAG-Finance	jbconway@ portguam.com
Glenn Nelson	PAG-Commercial	gnelson@portguam.com
William Brenna	Senator Ada's Office	will@senetorada.org
Jeff Peck	Parsons Brinckerhoff	peck@pbworld.com
Blair Garcia	Parsons Brinckerhoff	garciab@pbworld.com
Michael Medve	Parsons Brinckerhoff	medvem@pbworld.com
Zachary Sprute	Parsons Brinckerhoff	sprutez@pbworld.com
Hardik Gajjar	Parsons Brinckerhoff	gajjarhm@pbworld.com

Meeting: Port of Guam Master Plan (MP) Update Procurement Meeting

Date: July 17, 2013 (9AM – 11PM)

Place: DGM's Office

Attendees: Alma Javier, PAG Procurement Manager
Maria Taitano, PAG DGMA
Jeff Peck, Parsons Brinckerhoff
Michael Medve, Parsons Brinckerhoff
Blair Garcia, Parsons Brinckerhoff
Hardik Gajjar, Parsons Brinckerhoff

Discussion:

- Parsons Brinckerhoff asked about the crane maintenance PMC.
- PAG stated that they have finalized the PMC and will be presenting it to the BOD for approval. It will be presented to PUC once the PMC contract has been approved by the BOD.
- The contract considers $85,000 per month with minimum 48 weeks per year and maximum of 55 hours per week for two Engineers on Guam. This amount includes expenses for laptops, airfare, transportation, fuel cost, housing, per diem, etc. The PMC will be reimbursed for any parts it acquires in support of the maintenance function and will add a 15 percent mark up to those costs for management and handling. The contract will be for a base year with annual options for extension with a maximum of four option years.
- The contract assumes that the PMC will oversee training. $120,000 per year will be budgeted by PAG to pay for this training.
- PAG stated that they think that out of the two engineers, one is specialized in electrical and one is specialized in mechanics.
- Parsons Brinckerhoff asked if this was the PMC's answer to Sarandipity's suggestion to bring on troubleshooting experts for three years and provide on-the-job training to Port Staff. PAG affirmed that this is the basic intent.
- PAG stated that the training budget will be utilized on a time and material basis.
- PAG assumes that the PMC will mobilize the engineers for PMC contract by the end of FY 13.
- PAG asked for the previously provided assessment of Crane mechanics, Yard mechanics and IT personnel.
- Parsons Brinckerhoff stated that they will model $1 million a year for five years with escalation in the financial model for PMC contract.
- Parsons Brinckerhoff asked if the PMC contractor will be using JD Edwards system for parts purchasing and work order management or will they be using their own system?
- PAG stated that the PMC contractor is flexible and willing to use the JD Edwards system.

Meeting: Port of Guam Master Plan (MP) Update BOD Meeting

Date: July 17, 2013 (11.45PM – 1PM)

Place: Board Room

Attendees: Daniel Tydingco, PAG Chairman of the Board
Christine Baleto, PAG Vice-Chairperson of the Board
Mary Michelle Gibson, PAG Secretary of the Board
Eduardo Ilao, PAG Board Member
Michael Benito, PAG Board Member
Senator Thomas Ada
Joanne Brown, PAG General Manager
Felix Pangelinan, PAG Deputy General Manager
Maria Taitano, PAG DGMA
Jeff Peck, Parsons Brinckerhoff
Blair Garcia, Parsons Brinckerhoff
Michael Medve, Parsons Brinckerhoff
Hardik Gajjar, Parsons Brinckerhoff
Zachary Sprute, Parsons Brinckerhoff

Purpose:

- Present the draft Master Plan Update and Transshipment Study to the Board of Directors

Discussion:

- Parsons Brinckerhoff presented the draft Master Plan Update and Transshipment study assessment processes, findings, and recommendations via powerpoint presentation. The presentation concluded with a preview of next steps going forward.
- Parsons Brinckerhoff mentioned that the Final documents would have additional information related to ancillary facilities and the 5-Year tariff petition and address any questions brought forward in review of the draft.
- BOD suggested meeting with the maritime committee in Chamber of Commerce as part of future outreach.
- There was some discussion about the Transshipment Report and recommendations being made to not adjust current tariff rates and fees given the positive impact that transshipped containers, breakbulk, and fuels revenue is having on meeting the overall cost of operations. Senator Ada mentioned having been the author of the request to evaluate these issues so that lingering questions could be answered. He expressed general satisfaction with the report findings and recommendations.
- BOD expressed general satisfaction with the work and asked when the final report will be submitted. Parsons Brinckerhoff stated that final report will be submitted on August 16, 2013.

Meeting: Port of Guam Master Plan (MP) Update South Pacific Petroleum Corporation Meeting

Date: July 18, 2013 (9AM – 10AM)

Place: DGM's office

Attendees: Victor Torres, SPPC
Blair Garcia, Parsons Brinckerhoff

Discussion:

- SPPC has 100% import operations.
- Primary Customers – 10 service stations (76/Circle K) and commercial (hotels, stores, contractors) accounts and bunkering at F-3 with Trucks (fishing and research vessels).
- SPPC exports LPG though ISO 20' rack containers (approximately 2-4 a week) to Siapan, Rota, Palau, Yap, Chuuk and Pohnpei.
- There was some discussion about the near term volume forecast. SPPC will review this internally and e-mail thoughts on the 1.1% and 0.9% projections on organic growth.
- SPPC will be adding two more tanks for jet fuel. These tanks will be added not to increase volume but to decrease the transit time to Agat to store current jet fuel volumes at those tanks. This fuel is IP&E's fuel and they have a joint agreement to use SPPC facilities.
- IP&E is currently storing other fuels as well in SPPC's tanks.
- Tristar and SPPC had to bypass the city water supply to the F-1 fire protection system with a 6"line from their firehouse (harbor/salt water) after a 2" line was placed on it (who did this is unknown).
- Recommend permanent salt water fire protection systems with potable water flushing capabilities.
- SPPC mentioned that there is a need for street lighting on Industrial Avenue.

Meeting: Port of Guam Master Plan (MP) Update Mobil Meeting

Date: July 18, 2013 (10AM – 11AM)

Place: DGM's office

Attendees: Garet Olivares, Mobil
Joe Pereda, Mobil
Blair Garcia, Parsons Brinckerhoff

Discussion:

- Mobil confirmed that their facilities are represented correctly on the map.
- Parsons Brinckerhoff explained the difference between the PMP and Sustainability projects.
- Key concerns/projects that Mobile is interested in:
  - Fire protection system: Coast Guard is requiring petroleum terminals to maintain fire fighting capabilities.
  - Need the fire water line replaced with the PAG pipeline replacement project. Would like to make sure that this is happening.
  - Currently using their own system and pumps.
  - Discussed using sea water and concrete pipes with the proper flushing system and water supply.
- Mobil stated that Golf Pier bollards need to be replaced. Mobile has already replaced one near Cementon. They would like this to be on top of the port's improvements list. Mobil mentioned that they may need to stop operations if this issue is not fixed.
- Coast guard is requiring lighting on bollards and Golf Pier.
- Golf Pier has one way in and one way out. No safety egress in case of emergency.
- Mobil stated that they are concerned about breasting dolphins at Golf Pier. The structure is aged and may need improvements.

Meeting: Port of Guam Master Plan (MP) Update Isla Petroluem & Energy Meeting

Date: July 18, 2013 (1PM – 2PM)

Place: DGM's office

Attendees: Lyndon Entera, IP&E
Blair Garcia, Parsons Brinckerhoff

Discussion:

- IP&E supplies a lot of jet fuel, hotel fuel, fuel for buses, military and construction.
- IP&E mentioned that fuel volumes are directly related to tourism. If tourism picks up, their volumes do too.
- IP&E mentioned that GPA is their customer for diesel. Though it is not their primary fuel. Main power plants use bunker.
- IP&E mentioned that they supply jet fuel only to commercial customers and not to military. They also supply bunker fuel to fishing vessels and tug boats at F3 and sometimes to research vessels as well.
- IP&E's lease at Agat ends in 2014 and they will start using the new SPPC storage tanks.
- IP&E is interested in additional storage capacity for accommodating LPG. They would be interested in Area A.
- There was some discussion that the pipeline that runs through the cargo terminal may need to be moved. They indicated that if they had capacity at Area A, they would not need the pipeline.
- It was mentioned that the Port issued an RFP for the operation of F1 and that selection of the new manager was not yet made.

Meeting: Port of Guam Master Plan (MP) Update Port Users Group Guam Meeting

Date: July 18, 2013 (3PM – 4PM)

Place: Board Room

Attendees: *See attendee list*

Purpose:

- To present the draft report to the Port Users Group Guam members.

Discussion:

- MELL asked if any case is considered to privatize port operations.
- Parsons Brinckerhoff stated that there have been past efforts to try to privatize the port operations but as of now there is legislation preventing this and that in the current planning process it is considered that it will remain a government run entity.
- Matson asked if there has been any underwater survey or is there a possibility to perform one under the plan.
- Parsons Brinckerhoff stated that there have been a number of past surveys of berth structure including hydrographic surveys of existing berthing areas.
- Parsons Brinckerhoff stated that the Service Life Extension project includes some clean-up of bottom debris in the berthing areas.
- Parsons Brinckerhoff mentioned that the main goals of the Master Plan Update report are to complete the PMP projects and have sufficient funds for sustainability projects.
- There was some discussion about the conclusions of the transshipment reports, i.e. that these business lines are solvent and in no need of changes to existing tariffs and fees.

Attendee List

Name	Company	Contact Information
Ariel Dumapit	Inchcape	Ariel.dumapit@iss-shipping.com
Tom Dillon	Matson	TDillion@matson.com
Ed Cruz	MELL	Ed_cruz@mariana-express-guam.com
Fernando Santos	Seabridge	Fjsantos@seabridgeguam.com
Teresa Gotti	Ambyth Shipping	Teresa.gotti@ambyth.guam.net
Michael Reyes	Ambyth Shipping	M.reyes@ambythshipping.net
Jeff Peck	Parsons Brinckerhoff	Peck@pbworld.com
Blair Garcia	Parsons Brinckerhoff	Garciab@ pbworld.com
Michael Medve	Parsons Brinckerhoff	Medvem@ pbworld.com
Hardik Gajjar	Parsons Brinckerhoff	Gajjarhm@ pbworld.com

Meeting: Port of Guam Master Plan (MP) Update Out-brief Meeting

Date: July 19, 2013 (2PM – 4PM)

Place: GM's Office

Attendees: Joanne Brown, PAG General Manager
Felix Pangelinan, PAG DGMO
Maria Taitano, PAG DGMA
Jeff Peck, Parsons Brinckerhoff
Michael Medve, Parsons Brinckerhoff
Hardik Gajjar, Parsons Brinckerhoff
Zachary Sprute, Parsons Brinckerhoff

Purpose:

- Out-brief the GM, DGMO and DGMA of the work accomplished during the trip

Discussion:

- Parsons Brinckerhoff discussed some of the changes that will be incorporated in the final report after meeting with stakeholders.
- Parsons Brinckerhoff stated that the tariff petition will be provided in the final report.
- PAG initiated a discussion about the $25 million USDA loan for 2010 and whether it is necessary and advisable to go forward with that.
- Parsons Brinckerhoff stated that when one gets a loan from USDA they have to create a proforma that demonstrates that the Port will be able to re-pay the loan.
- Parsons Brinckerhoff stated that the port is better off dropping the direct loan from USDA and work around with alternative sources such as increase in tariff, issue public bonds, etc.
- PAG asked what the restrictions for use of the direct loan are. PB stated that this loan cannot be used for any development in the water. It was also mentioned that use of USDA Loan funds would require going through MARAD; an issue not previously looked on favorably by the Port.
- Parsons Brinckerhoff stated that they do not see any pressing needs to incur additional near-term debt, and especially before the projected tariff increases are implemented.
- Parsons Brinckerhoff initiated discussion about the implementation of TOS and how they assume the port is going to pay to it.
- Parsons Brinckerhoff stated that they recommend starting the process for implementing TOS by using Port's money and not using the SLE loan. It was also mentioned that once the TOS contract was in place, the out-years of that contract could be financed by a loan rather than Port cash flow if they wanted to stretch out the defrayment period.
- PAG expressed some concern about the disconnect between the current FMS and TOS system, stating that they are losing revenue due to data leakage.
- There was some discussion about interim data transfer through manually controlled batch reporting until all systems reside atop a common database in the future.
- The GM expressed general satisfaction with work done to date and looks forward to finalizing the work product.

APPENDIX 2-1: FACILITY ASSESSMENT METHODOLOGY AND LIMITATIONS

METHODOLOGY

The Consultant performed the facilities data collection and assessment according to the methodology described below.

Assessment & Facility Identification

- As the Owners Agent Engineer for the Port Authority, it placed the assessment team in a unique position of having historical insight to perform the facility assessment for this Master Plan Update.
- The consultant assessment team consisted of:
  - Matthew Smith
  - Zachary Sprute

- Site visits of the target facilities included:
  - Landside Access
  - Access Roadway (Route #11)
  - Commercial Marine Facilities
  - Pier F1
  - Berths F-2 through F-6
  - Other Piers (Hotel Wharf, Pier Dog, Golf Pier, Family Beach)
  - Hagatna Marina, Agat Marina, & Aqua world Marina/Harbor of Refuge
  - PAG Landside Facilities
  - Container Yard Pavement
  - Gates & Fences
  - Port Administration Building
  - Horizon Lines Offices (Admin Annex)
  - Container Freight Station
  - Equipment Maintenance & Repair Building (EQMR)
  - Warehouses 1 & 2
  - Welding Shed
  - Miscellaneous Structures (Port Police Station, Control Tower, Gas Station, Sewer Pump House, Oil Tank Farm(Tank Farm A and C)
  - Commercial Port Area Utilities
  - Electrical Service & Load Centers
  - Storm Water Drainage System
  - Sanitary Sewer System
  - Domestic Water System
  - Fire Protection System
  - Yard Lighting
  - Other Building Services
  - Other Locations

- Outhouse Beach
- Port Beach

On-Site Inspection/Survey

- The Consultant performed a standard visual survey of the asset.
- The Consultant documented the overall condition of the facilities for use in preparing the final assessment report.
- The Consultant took a photograph of each target facility, if allowed by the facility; the registered log of each target facility is included in Appendix 2-3.

Interview & Data Collecting

- Interviews were conducted with Engineering, Maintenance and Planning departments of PAG (Port Authority of Guam), GPA (Guam Power Authority), GWA (Guam Water Authority) and DPW (Guam Department of Public Works); observations were made by Consultant during their site assessment of the existing Port area.

Review data

- Review and assessment of available literature, plans, land-use data, documents, and reports during the scheduled working period.
- Request further information, when needed, from PAG through project communication channel.
- Review of the As-Built drawings on file at the PAG Engineering Office. List of reviewed as-built drawings can be found in Appendix 2-2.
- The existing facilities, including domestic water supply, fire hydrants, site drainage, sewerage, manholes, yard lighting poles, mounted crane tracks, gates, fence, and its location associated with buildings and berths have been compiled in a topographic survey and is available from PAG Engineering.

Assessment Report Assembly

- Consultants documented their field observations of the overall condition of the facility in the following parts:
  - Description & Metrics
  - Condition Survey
  - Recommendations for Maintenance and Operational Improvement
  - Appendixes
- Consultants wrote standard overall descriptions and recommendations of the asset and for the architectural, structural, mechanical, electrical, and civil systems.

LIMITATIONS

- Private tenants control facility access for the majority of the Cabras Industrial Park, which includes Pier F-1, Berth F-2 and the Fuel Tank Farms.

  - Consultant was unable to walk the interior area of F-2 occupied by Ship Repair and Cement Operations.
  - Photography was restricted at Pier F-1 and Tank Farm C.
  - Facility as-built drawings, documents, and other materials related to the facility and its associated systems were limited to availability. Historical reference material was not obtained from the tenants and reviewed prior to the site survey stage.

- The on-site assessment was conducted building-by-building, with visual, non-invasive, and non-destructive inspections of the facility and its associated systems.
- The on-site assessment was not to place consultants into any hazardous situations such as confined spaces or contaminated areas.
- No physical measurement was performed during the survey; all dimensions and measurements addressed in this report are referring to provided as-built documents, and are available by topographic survey where applicable.
- No detailed cost estimate for repair, retrofit, or enhancement was conducted.

APPENDIX 2-2: AS-BUILT LISTING FOR BUILDINGS AND FACILITIES ASSESSMENT

The as-built information referenced in the condition assessments can be found in the PAG Engineering records and GPA. The following documents were utilized in the research and preparation of the asset assessments:

- Drawings for Guam Port first Increment (1966). (PAG, Record Drawing June 1970)
- Drawings for Guam Port Second Increment (1967). (PAG, Record Drawing May 1970)
- Drawings for Guam Port Third Increment (1968). (PAG, Record Drawing May 1970)
- PAG Drawings for Container Yard Expansion Project (1984).
- PAG Drawings for Container yard Expansion project (1990) (Phase-II was Not Constructed).
- PAG Drawings for Container yard Expansion project Phase-II (1998). (Not Constructed, Bid Set July 1998).
- PAG Drawings for Concrete Structures for Electrical Substations and Generators (2000).
- PAG Drawings for Electrical Sub-Station upgrade project (2003).
- PAG Electrical Upgrades of Secondary Distribution Panel Boards and Feeder Cables (2009).
- PAG Drawings for Berth F3 to F6 Earthquake Repairs (1996).
- PAG Drawings for Replacement of Wharf Gantry Rail System and Wharf Upgrade Project (2009).
- Details from GPA - single line diagram to illustrate the connection arrangement on the distribution side for the feeder feeding the port (2013).

APPENDIX 2-3: PHOTO GALLERY

Facility I.D.	Facility/Building Title
01	Sea Wall and Route 11
02	Family Beach and Dog Leg Pier
03	Hotel Wharf
04	Golf Pier and Fuel Lines
05	Seaplane Ramp
06	Berth F-1 through F-6
07	Harbor of Refuge/ Aqua World Marina
08	Gregorio D. Perez Marina
09	Agat Marina
10	Oil Tank Farm A
11	Container Yard
12	Terminal Buildings • Gate Administration Building • Port Administration Building • Horizon Lines Building (Admin Annex) • Container Freight Station • Equipment Maintenance & Repair Building • Warehouse 1/2 • Welding Shed
13	Miscellaneous Structures • Port Police • Load Centers • High Tower • Lower Tower
14	Site Utilities
15	Others • Outhouse Beach • Port Beach

Photograph Gallery 01 - Seawall and Route 11

Photo Description: DPW Seawall project looking west towards the Gate Administration Building.

Photo Description: DPW Seawall project looking west at the Gate Administration Building.

Photo Description: DPW Seawall project looking east from the project ending point. The project was not completed.

Photo Description: DPW Seawall project looking west from the ending point. The area west of the Gate Administration Building was not completed.

Photograph Gallery 02 – Pier Dog

Photo Description: Small recreational operation on the area known as Pier Dog.

Photo Description: Sink hole on the shoulder of the access road between Hotel Wharf and Golf Pier.

Photograph Gallery 03 – Hotel Wharf

Photo Description: Fencing along the northern edge of Hotel Wharf (typical).

Photo Description: Building on the Hotel Wharf site looking from the entrance gate southeast.

Photo Description: Interior of building on Hotel Wharf.

Photo Description: Shoreline bollards east of the wharf structure looking east towards the Main Terminal.

Photo Description: Cleat on the Hotel Wharf bulkhead structure.

Photo Description: Cleat on the Hotel Wharf bulkhead structure.

Photo Description: Water Service Pit on Hotel Wharf.

Photo Description: Remains of sheet pile structure on the west end of Hotel Wharf looking north.

Photo Description: Landside bollards north of the Hotel Wharf structure.

Photo Description: Remains of Guard Shack near the gate at Hotel Wharf.

Photograph Gallery 04 – Golf Pier and Fuel Lines

Photo Description: Fuel lines entering onto Golf Pier looking south.

Photo Description: Fuel lines on the north side of the access road. The pipes are elevated on the north side of the road as they continue to Tank Farms A and C.

Photo Description: Domestic water supply line to Golf Pier.

Photo Description: Backflow preventer and valves on the domestic water supply line. The main valve on the right is closed before engaging the fire pumps.

Photo Description: Fencing around Golf Pier (typical).

Photo Description: Cross over pipe from a converted fuel line that supplies water from the fire pumps in tank farm A and C to Golf Pier.

Photo Description: Domestic line at static pressure of roughly 80psi.

Photo Description: Pressure drops to 40 psi with a hose bib open.

Photo Description: Breasting and mooring dolphins to the east of the Golf Pier main structure.

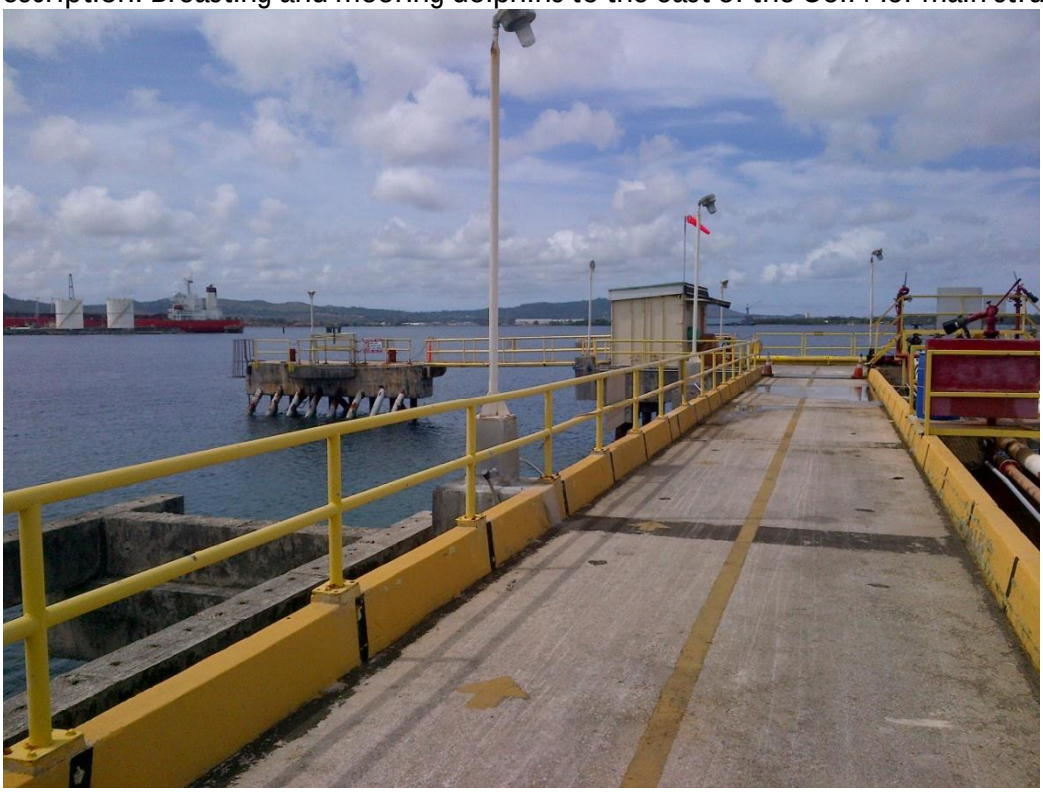


Photo Description: Golf Pier eastern half looking south.

Photo Description: Golf Pier western half looking south.

Photo Description: Breasting and mooring dolphins to the west of the Golf Pier main structure.

Photo Description: Fuel lines from landside to pier structure.

Photo Description: Golf Pier main structure has shifted away from the shore approximately 6-8 inches since originally constructed. As seen on eastern side at pier.

Photo Description: The shift away from the shore as seen on western side at pier.

Photo Description: Catwalk to the breasting dolphin to the east of the Golf Pier main structure.

Photo Description: Valves and hoses on the Golf Pier structure.

Photo Description: Fenders on the breasting dolphin and eastern end of the Golf Pier main structure looking east.

Photo Description: Fenders on the breasting dolphin and western end of the Golf Pier main structure looking west.

Photo Description: Western breasting dolphin and associated catwalk from the Golf Pier main structure.

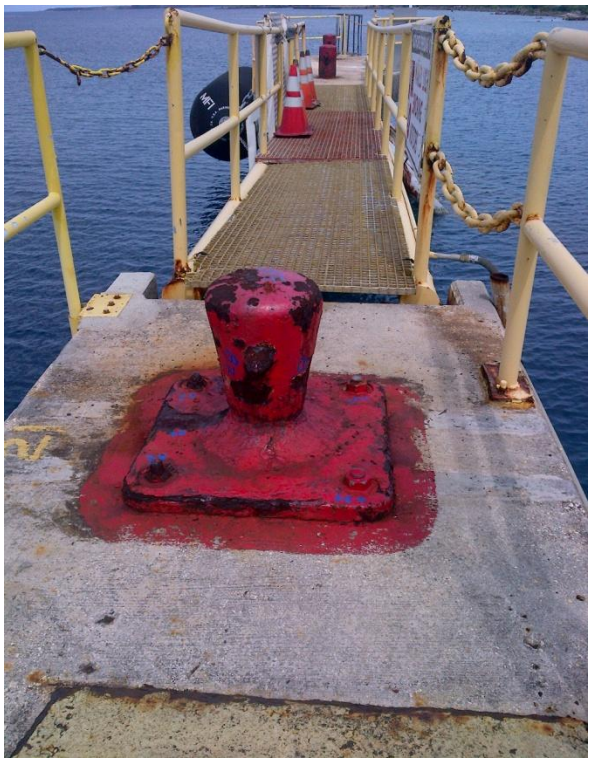


Photo Description: Catwalk to the breasting dolphin to the west of the Golf Pier main structure.

Photo Description: On top of the western breasting dolphin looking west.

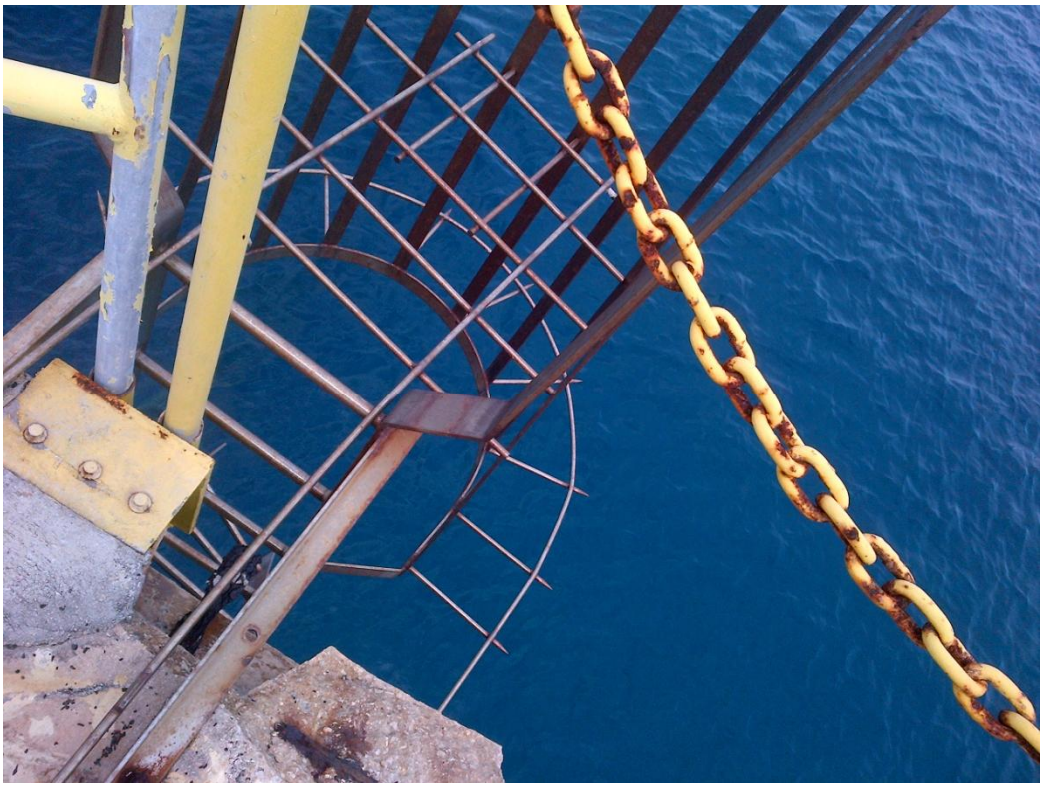


Photo Description: Fire escape from the western breasting dolphin.

Photo Description: Western mooring dolphin.

Photo Description: Shore bollard behind Cementon north of the western mooring dolphin looking northwest from the western breasting dolphin.

Photo Description: On top of the eastern breasting dolphin looking east.

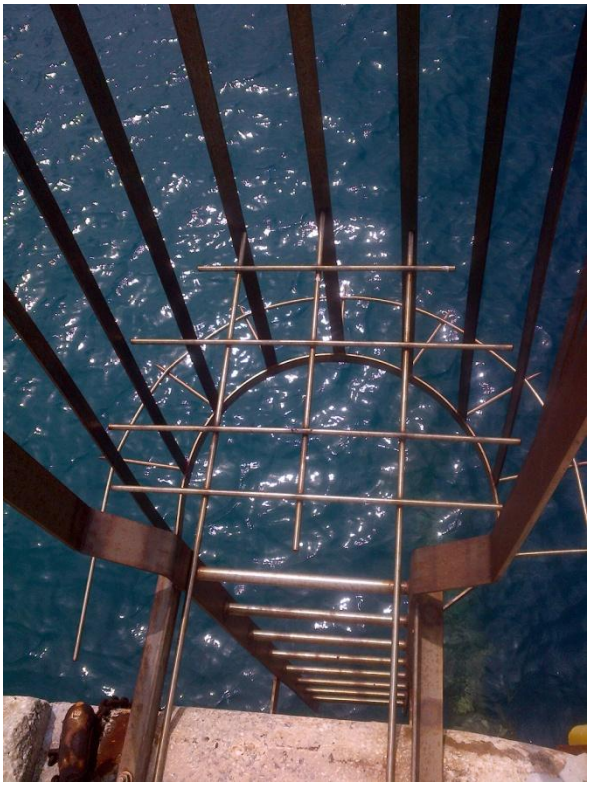


Photo Description: Fire escape from the eastern breasting dolphin.

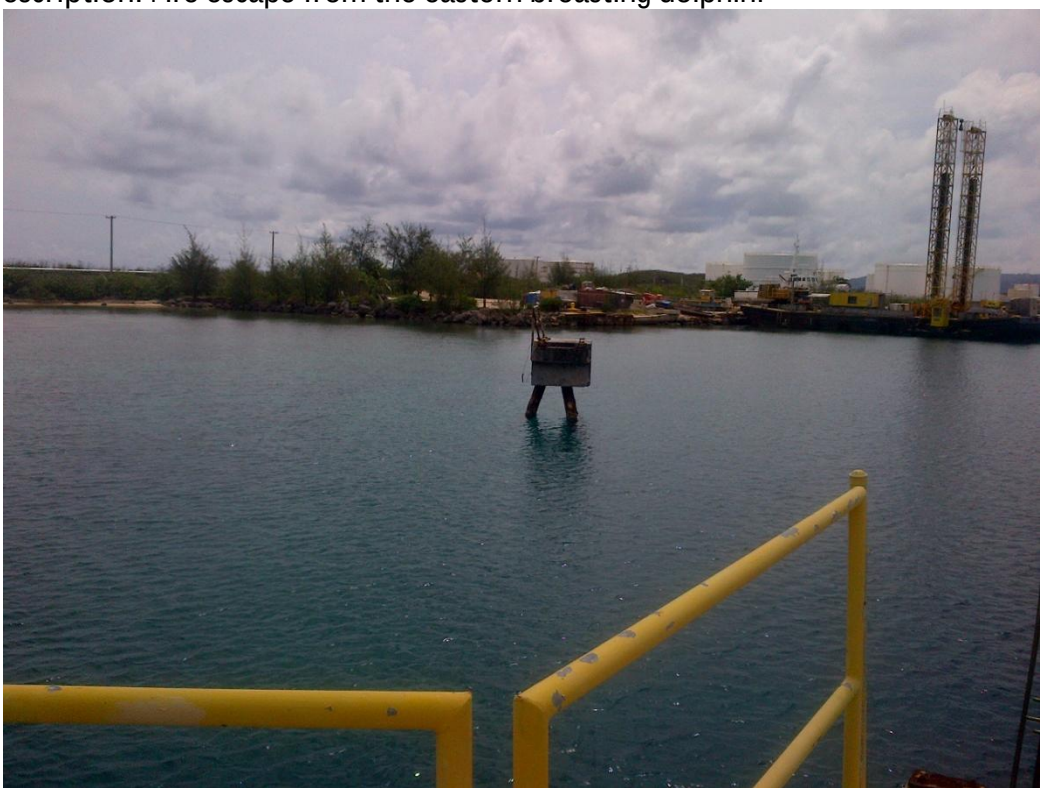


Photo Description: Eastern mooring dolphin.

Photo Description: Main Pier Structure looking northwest from the eastern catwalk.

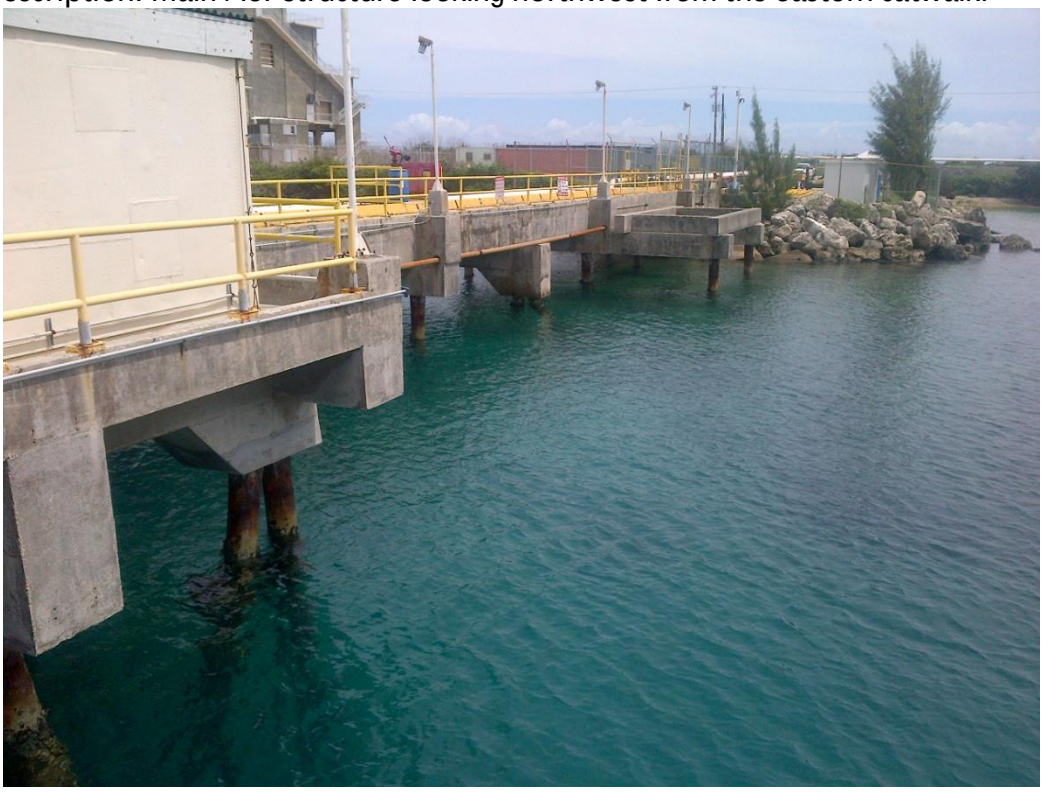


Photo Description: Main pier structure looking northwest from the eastern catwalk.

Photo Description: Cementon pipeline approach to golf pier pipelines looking west.

Photo Description: Pile of old piping near the gate from replacement work. Tenant considers this a PAG asset so they can't dispose of it.

Photograph Gallery 05 – Seaplane Ramp

Photo Description: Seaplane Ramp looking west along concrete cap.

Photo Description: Seaplane Ramp looking east.

Photograph Gallery 06 – Berth F-1 to F-6

Photo Description: Looking towards F-2 from F-3.

Photo Description: F-3 looking northwest.

Photo Description: Looking west towards F-4.

Photo Description: Looking east towards F-5/F-6.

Photograph Gallery 07 – Harbor of Refuge/ Aqua World Marina

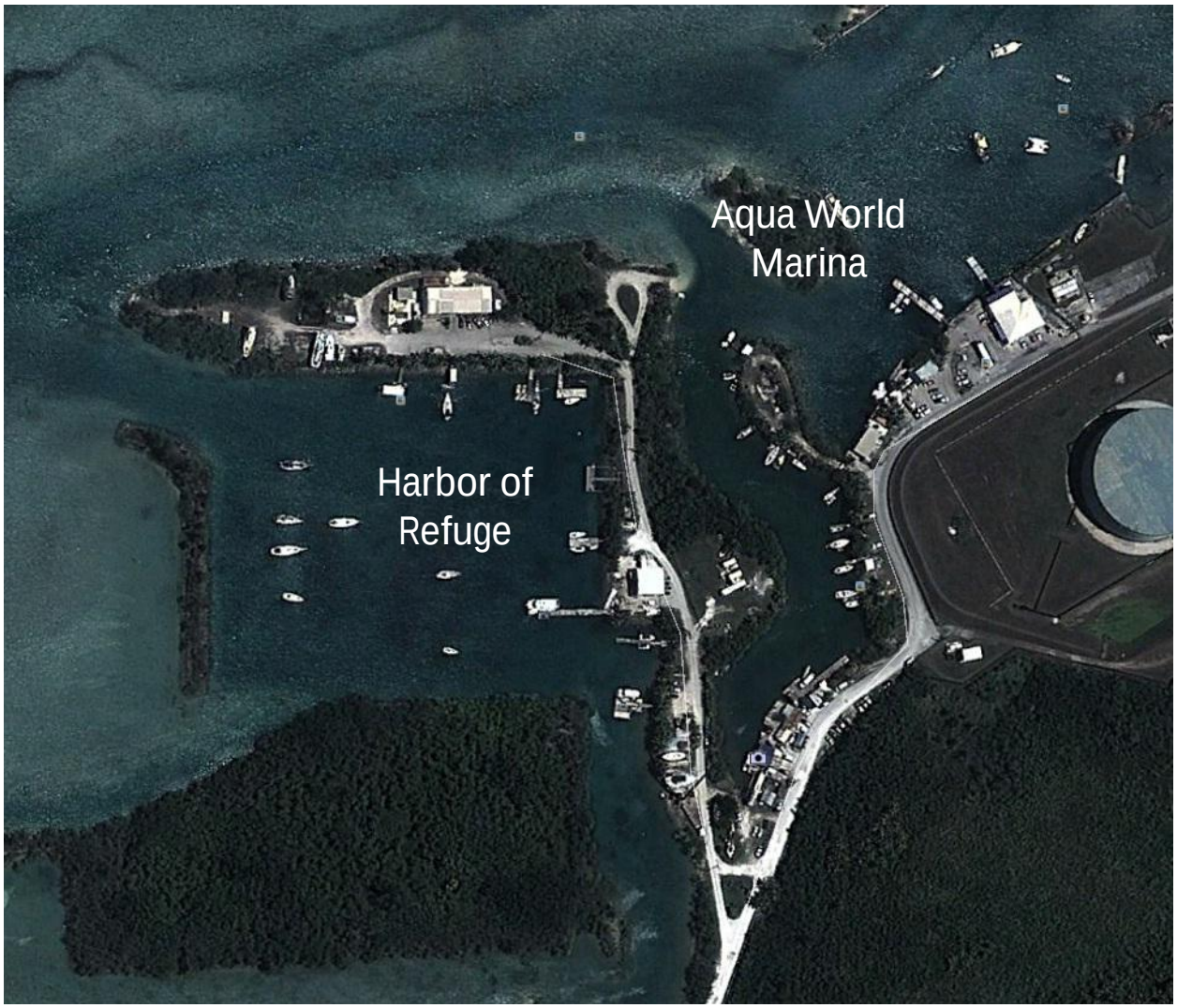

Aqua World
Marina
Harbor of
Refuge

Photo Description: Dock at Aqua World looking northeast towards GPA's Cabras island power plant.

Photo Description: Sink hole forming behind bulkhead near Aqua World on the northern edge of the parking area.

Photo Description: Sink hole forming behind bulkhead near Aqua World on the north edge of parking area.

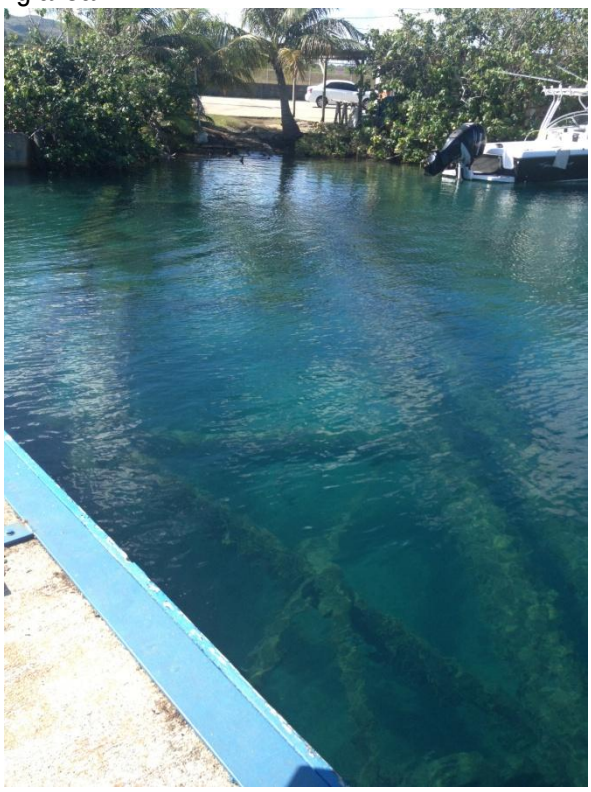


Photo Description: Boat launching rails near Aqua World on the western edge of the parking area.

Photo Description: Dock at Aqua World Marina utilized by a diving charter company.

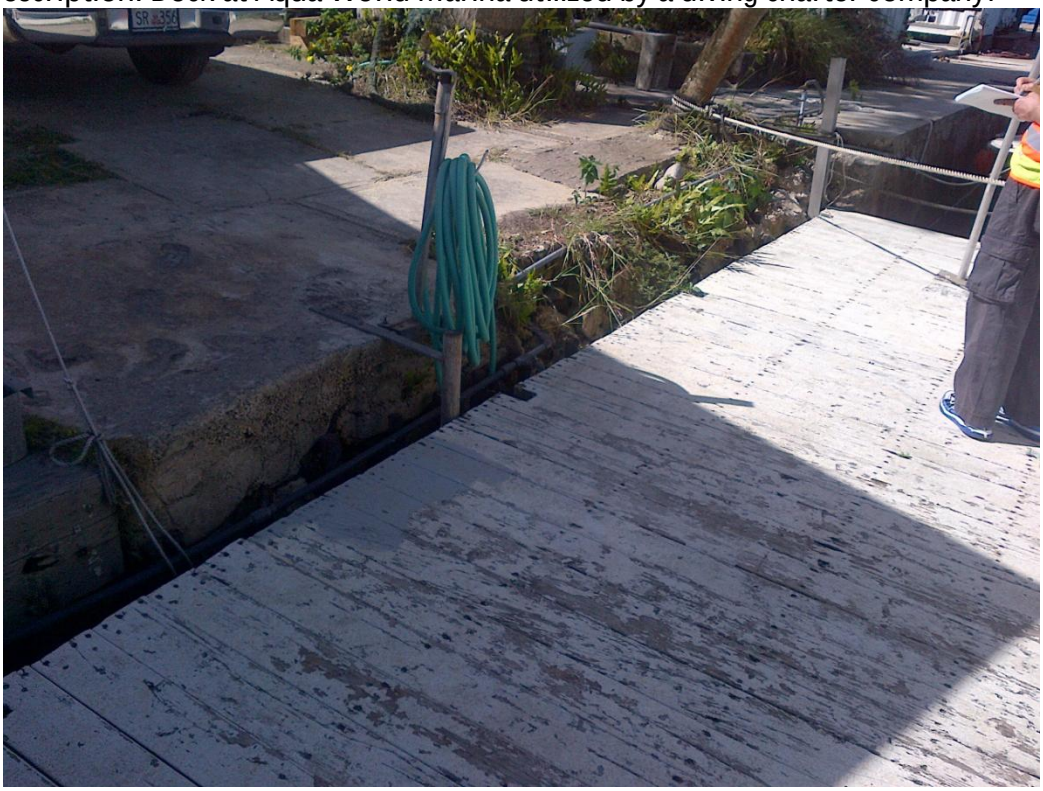


Photo Description: Sheet pile under concrete cap is in poor condition.

Photo Description: Dock at southwest end looking northeast.

Photo Description: Sheetpile concrete in good condition. Sheet pile was not visible.

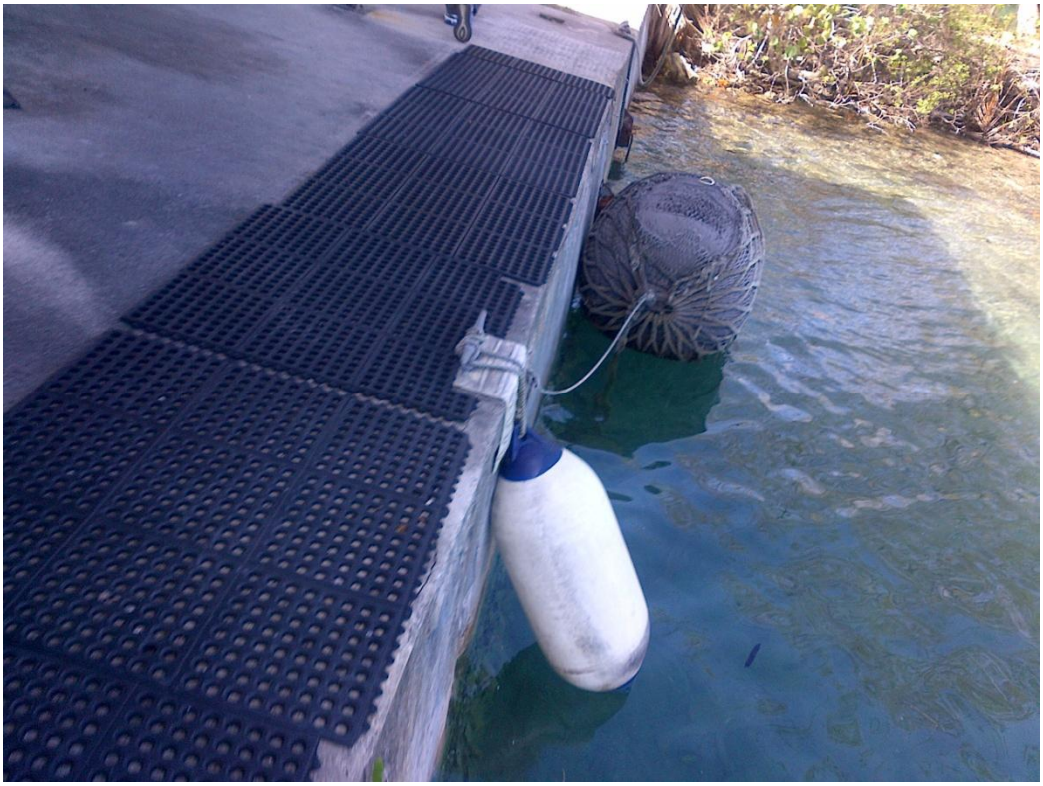


Photo Description: Sheet pile concrete cap in good condition. Sheet pile was not visible.

Photo Description: Photo of above concrete structure at a distance looking east.

Photo Description: Debris noted along the shoreline in the marina area.

Photo Description: Dry docking operations are occurring on the peninsula.

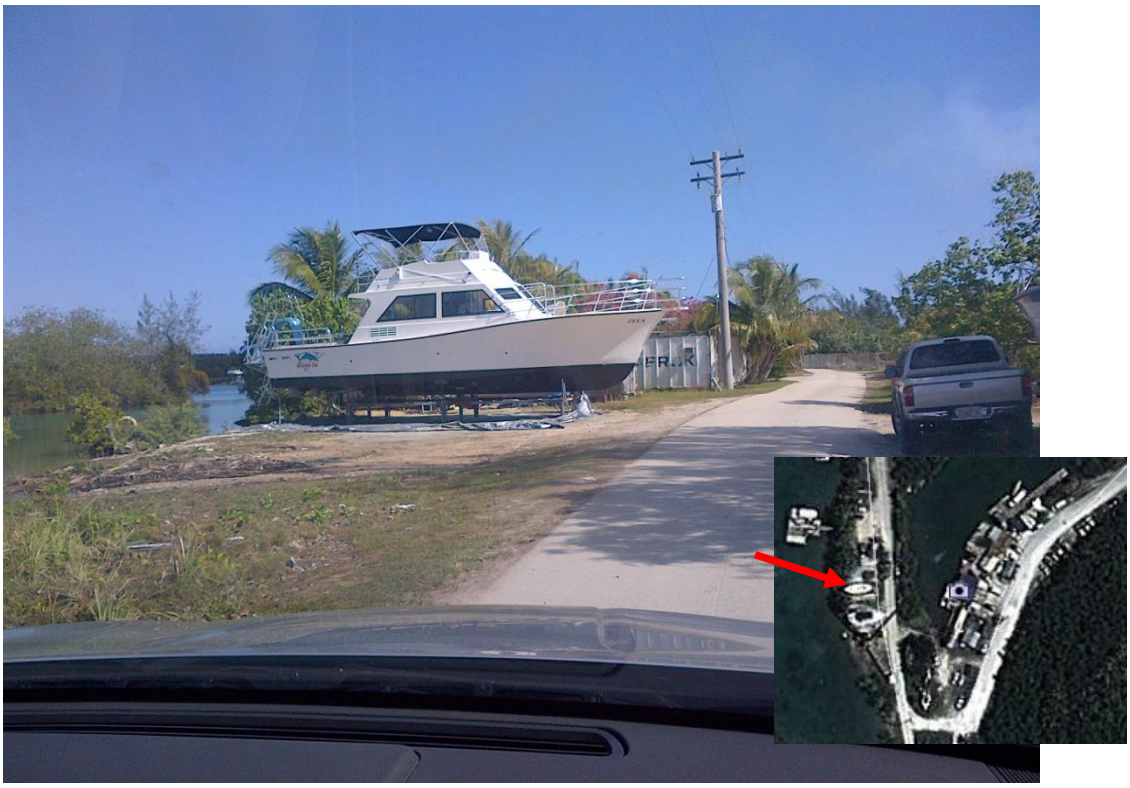


Photo Description: Dry docking operations are occurring on the peninsula.

Photo Description: Unimproved boat launching area for smaller vessels was found on the peninsula.

Photo Description: Derelict vessels are located on the peninsula. Above is an example.

Photo Description: Derelict vessels are located in the waters of the Aqua World marina. Above is an example.

Photo Description: Tristar's Valve pit on the end of the peninsula.

Photo Description: Make shift restroom in old freezer container behind warehouse on peninsula.

Photo Description: Harbor of Refuge looking west towards Main Terminal of the Port.

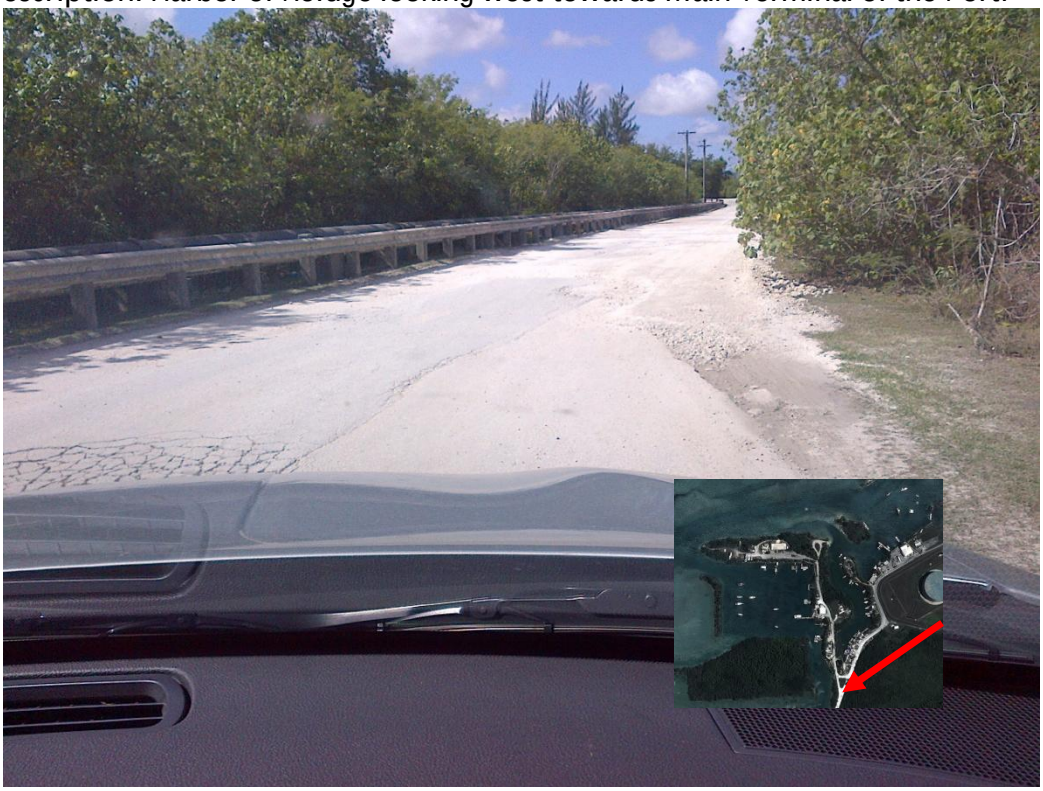
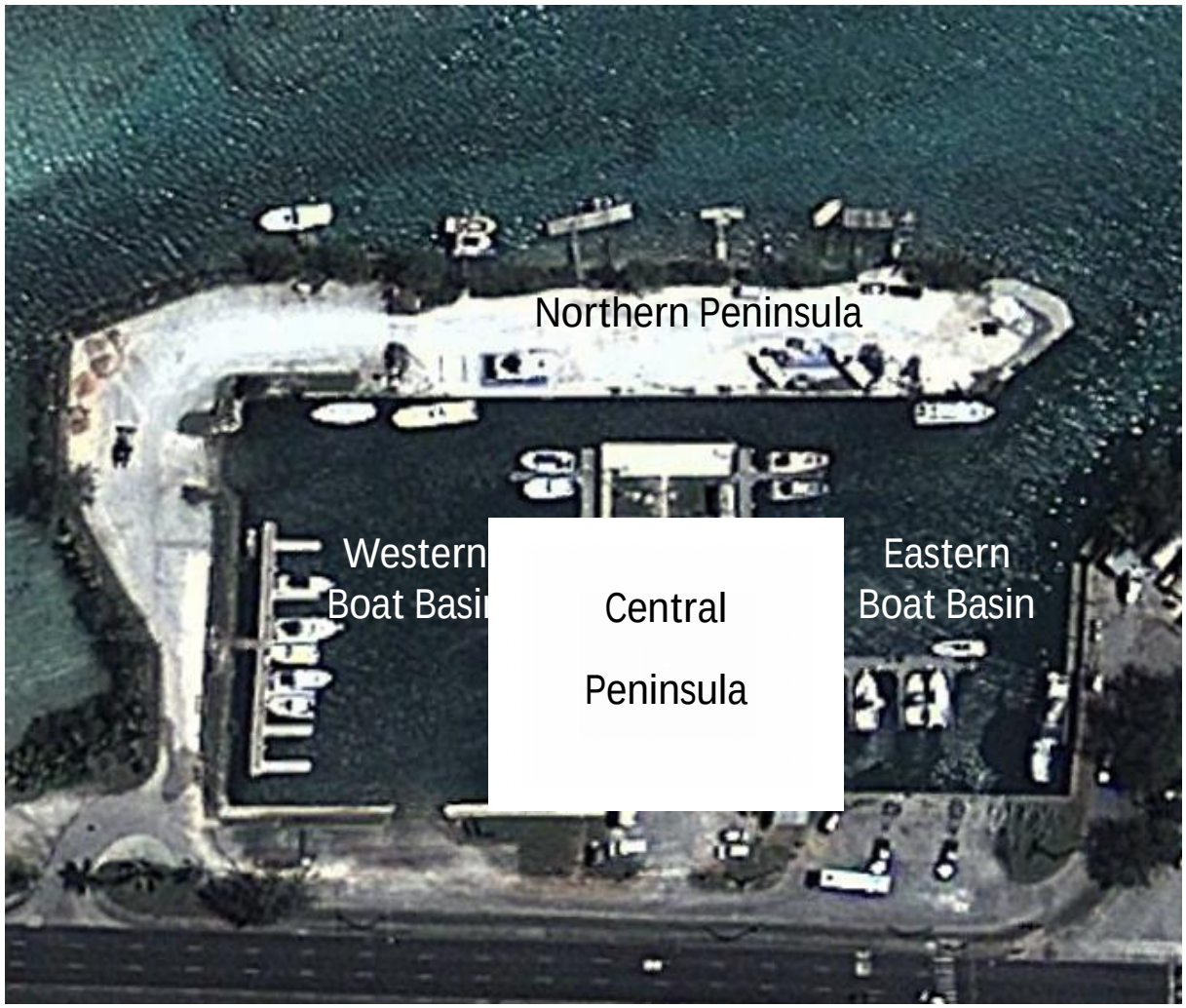


Photo Description: Looking South on unimproved road passing from Route 18 to the Harbor of Refuge/ Aqua World marina areas.

Photograph Gallery 08 – Gregorio D. Perez Marina


Northern Peninsula
Western
Boat Basi
Central
Peninsula
Eastern
Boat Basin

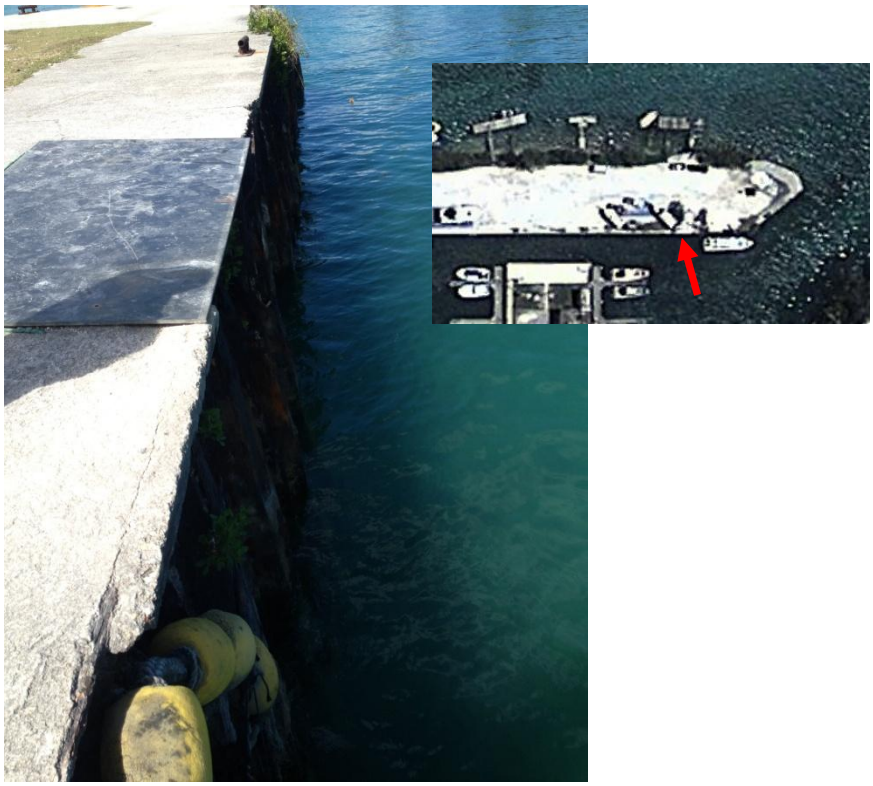


Photo Description: Sheetpile wall along the northern edge of the marina boat basin.

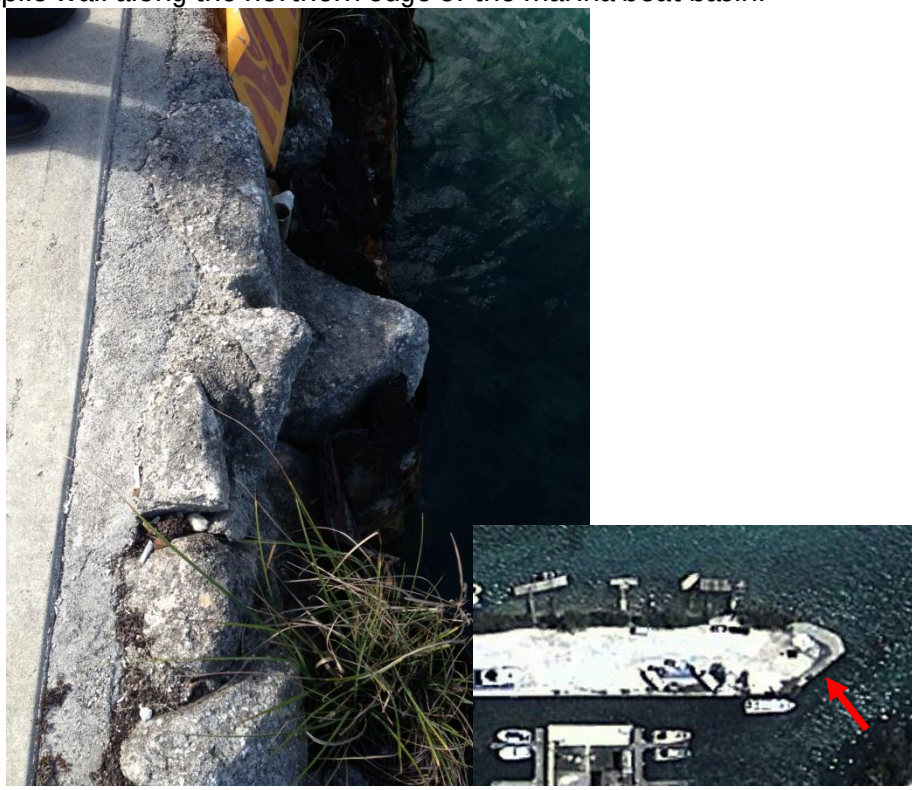


Photo Description: Sheetpile wall along entrance to the marina.

Photo Description: Sheetpile wall along entrance to the marina.

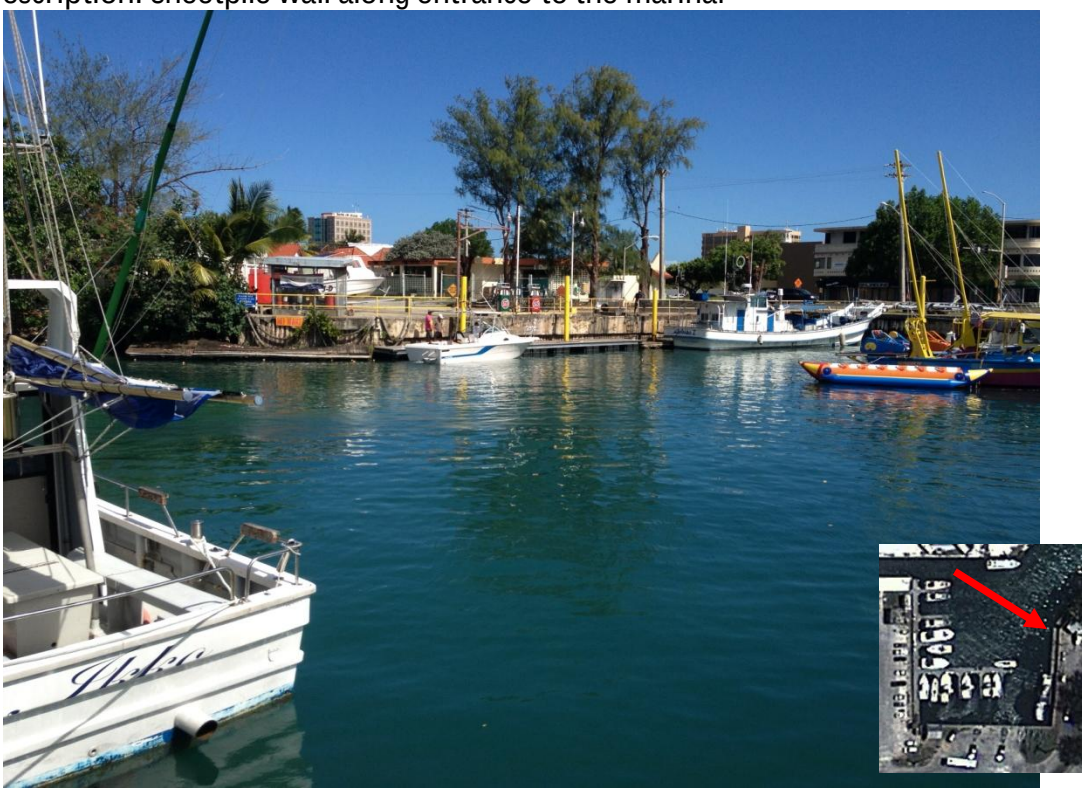


Photo Description: Looking southeast towards fueling dock from the north peninsula across the eastern basin of the marina.

Photo Description: Looking south across the eastern basin from the north peninsula.

Photo Description: Looking southwest from the north peninsula to the central peninsula of the marina.

Photo Description: Boat dock/ float on northern edge of north peninsula of the marina looking east towards Paseo Park.

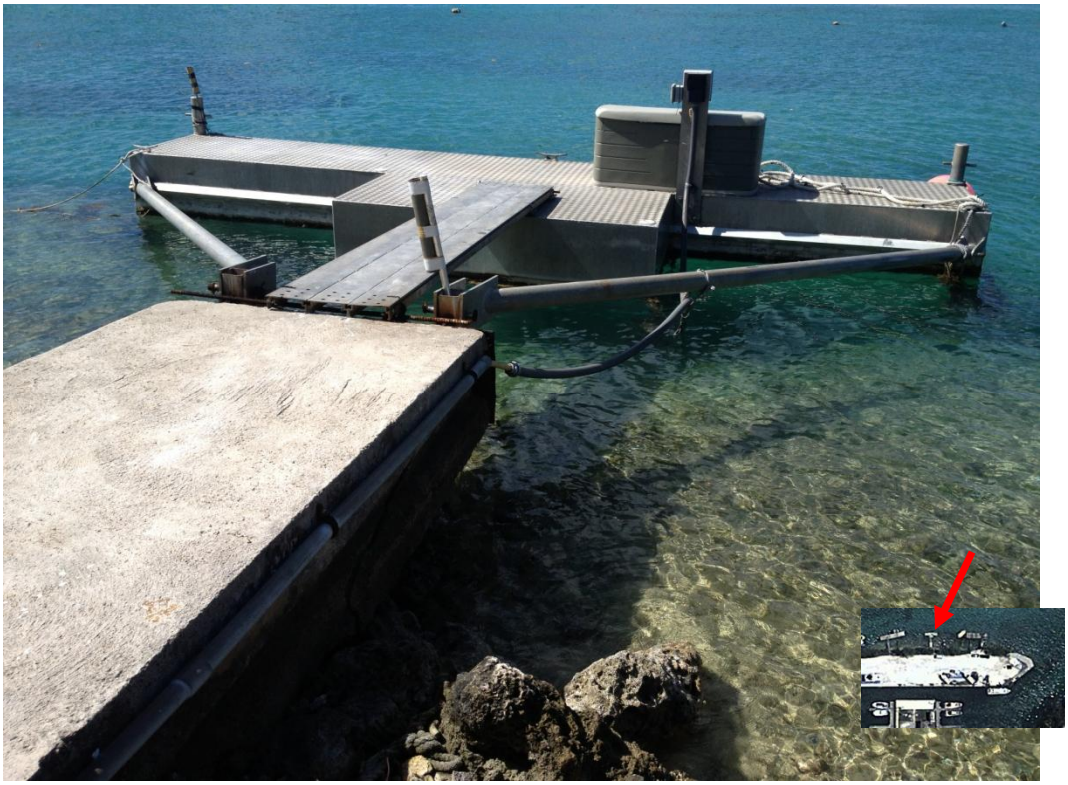


Photo Description: Boat dock/ float on northern edge of north peninsula of the marina.

Photo Description: Boat dock/ float on northern edge of north peninsula of the marina looking west.

Photo Description: Boat dock/ float on northern edge of north peninsula of the marina looking north.

Photo Description: West boat ramp located on the northwest corner of the western basin looking east.

Photo Description: Western boat dock/ float on western edge of west basin of the marina looking southeast.

Photo Description: Southern wall of the west basin looking southeast. Southern boat ramp is centered in this wall.

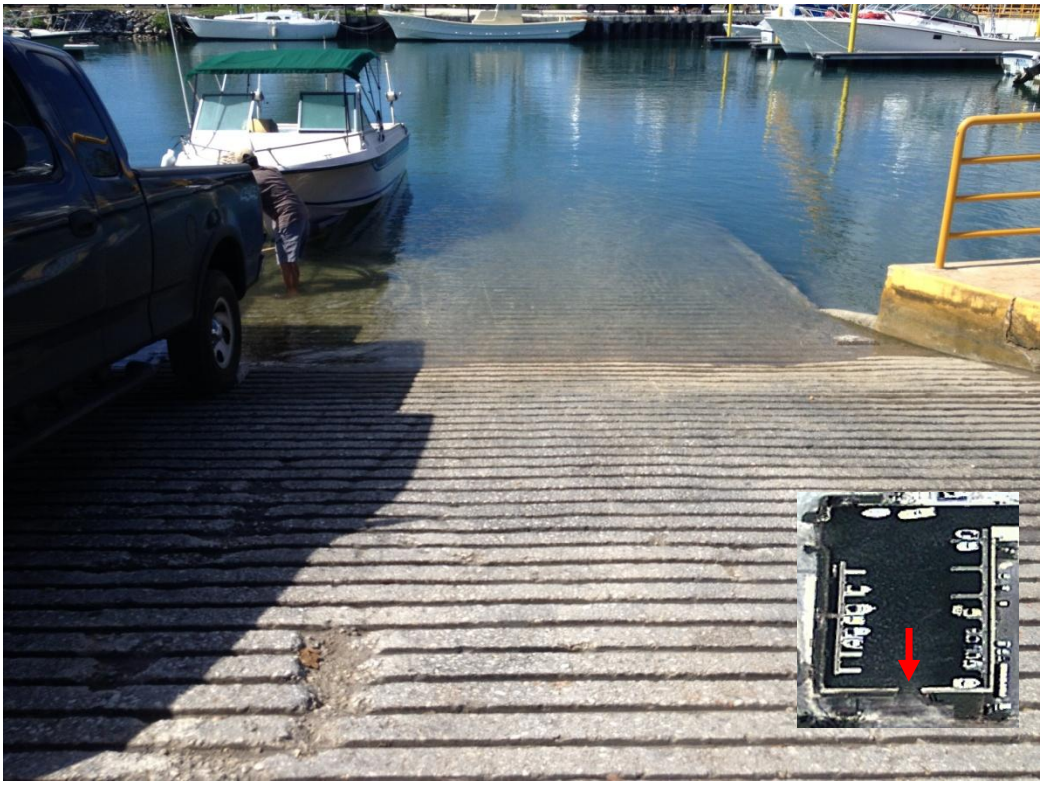


Photo Description: Southern boat ramp in the west basin of the marina looking north.

Photo Description: Eastern boat dock/ float in the western basin looking north.

Photo Description: Northern sheetpile wall of west basin of the marina as seen from the center peninsula looking northwest.

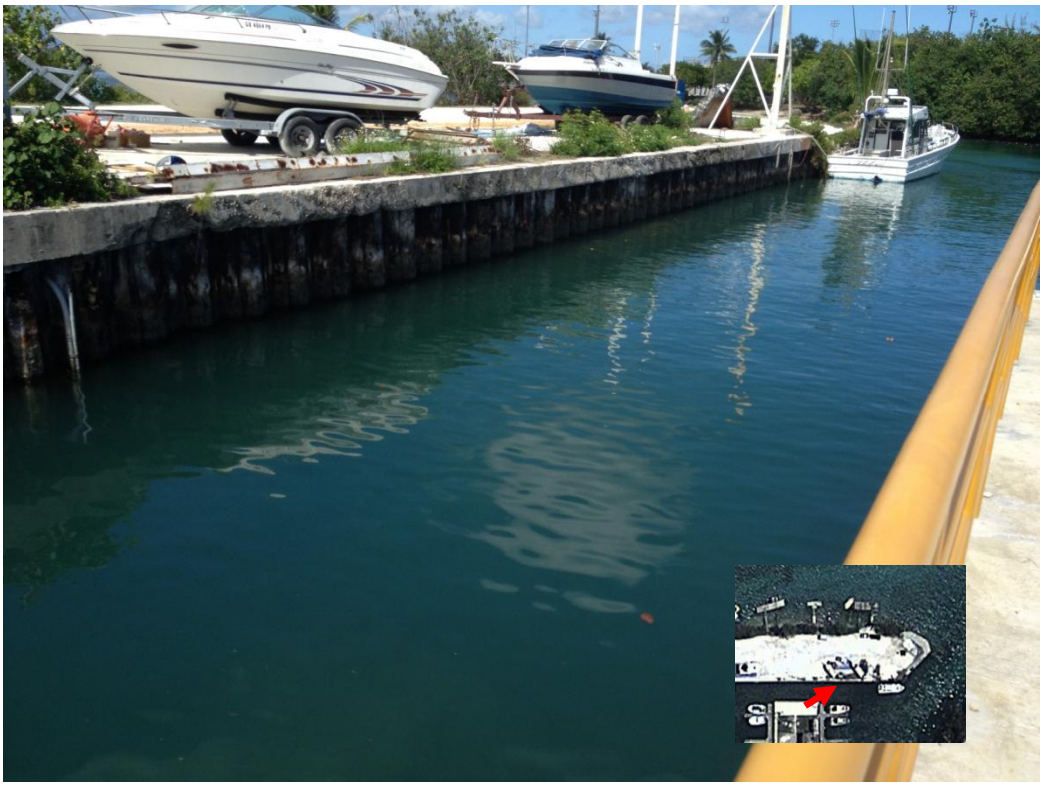


Photo Description: Northern sheetpile wall of the boat basin looking northeast from the center peninsula.

Photo Description: End of Phase 1 sheetpile replacement. Phase 2 is currently underway.

Photo Description: East side of central peninsula looking south. Sheetpile and concrete cap are currently being replaced around southern end of eastern basin.

Photo Description: Waste pumpout station located near fuel pumps on eastern side of east basin of the marina.

Photo Description: Fueling dock/ float on the eastern wall of the east basin of the marina looking east. Fuel pumps are not operated by PAG.

Photo Description: Containment perimeter around Fuel Island should be addressed by the operator.

Photograph Gallery 09 – Agat Marina

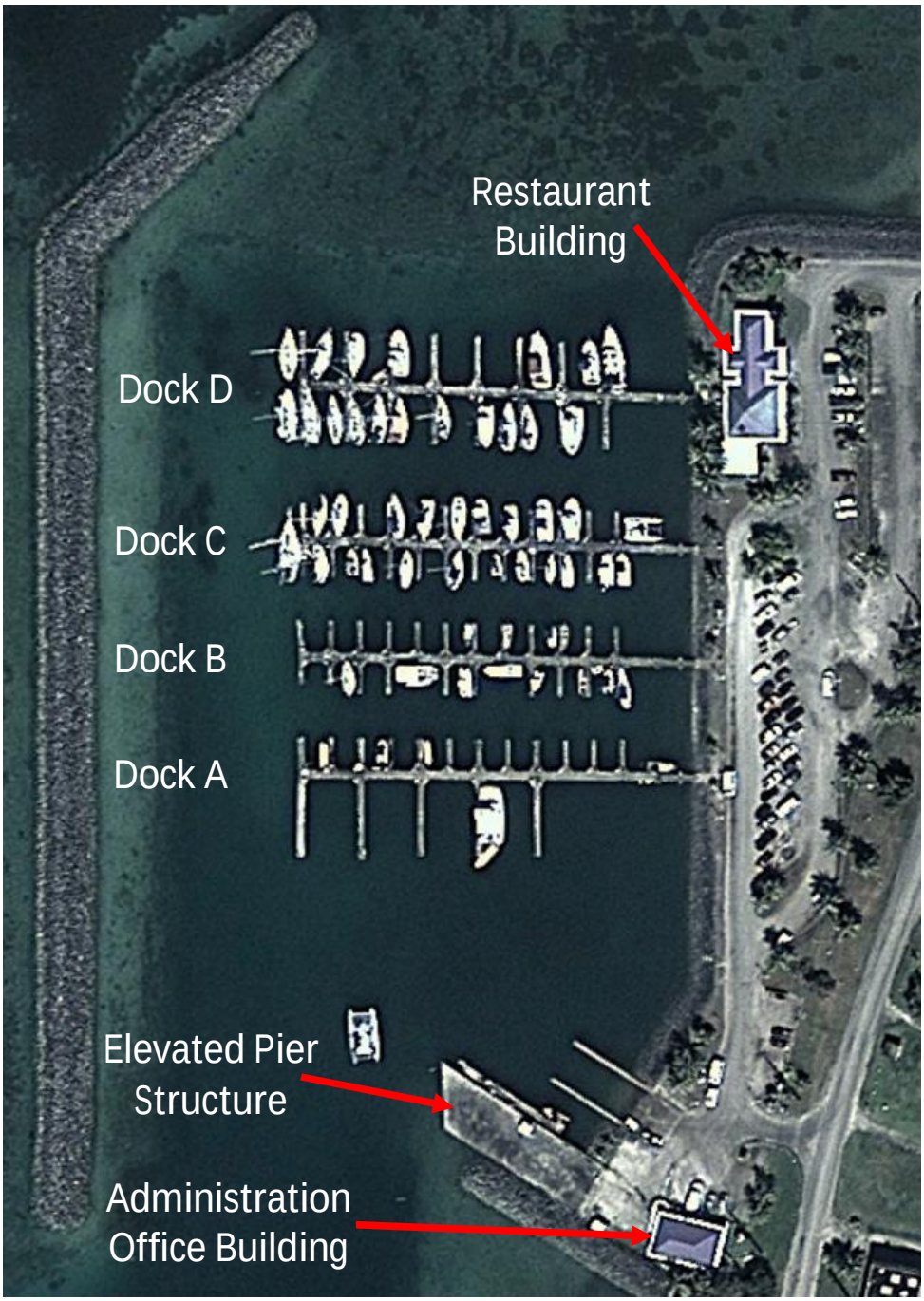

Restaurant Building
Dock D
Dock C
Dock B
Dock A
Elevated Pier Structure
Administration Office Building

Photo Description: From shoreline looking southwest towards elevate pier and boat ramp.

Photo Description: Boat ramp located near elevated pier looking west.

Photo Description: Dock/ floats adjacent to the elevated pier from shoreline looking west.

Photo Description: Gate on top of elevated pier blocking vehicular access.

Photo Description: Marina as looking north from on top of elevated pier.

Photo Description: Looking south along finger off of main dock A.

Photo Description: Looking north along riprap slope along east side of marina.

Photo Description: From shoreline looking west onto Dock D.

Photo Description: Looking north at the riprap shoreline at the northern edge of the marina.

Photo Description: West side of the Restaurant Building looking east.

Photo Description: Southern end of western wall of restaurant building has spalling along the drip line.

Photo Description: Agat Marina Administration Building looking southeast.

Photo Description: On top of elevated pier looking west.

Photo Description: Southern side of the elevated pier looking west towards the marina breakwater.

Photo Description: Boat dock/ float located on north side of elevated pier looking east. Stairway is of wood construction and in very poor condition.

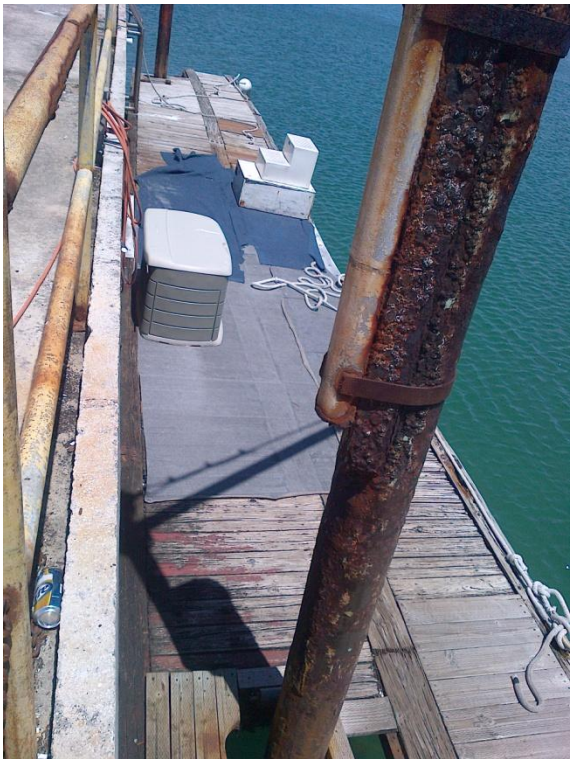


Photo Description: Boat dock/ float located on the north side of the elevated pier looking west.

Photo Description: Pumpout station on elevated pier.

Photo Description: South edge of elevated pier looking west towards marina breakwater.

Photograph Gallery 10 – Tank Farm A

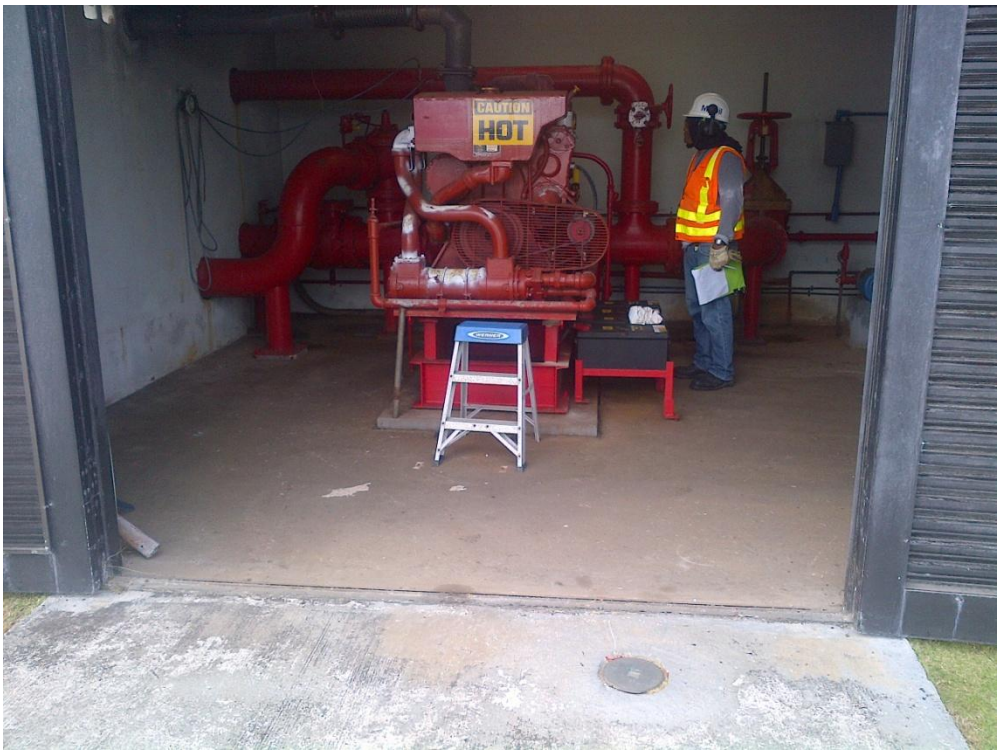


Photo Description: Freshwater fire pump on southern border of Tank Farm A looking north.

Photo Description: Freshwater fire pump on southern border of Tank Farm A looking northwest.

Photo Description: Freshwater fire pump piping on the east half of the building looking northwest.

Photo Description: Freshwater fire pump piping.

Photo Description: Freshwater jockey pump in the fire pump building. The jockey pump was not working during the assessment.

Photo Description: Diesel fire pump control panel in eastern wall of pump building.

Photo Description: Diesel fire pump battery chargers/ maintainers on the eastern wall of the pump building.

Photo Description: Freshwater fire pump piping in the west half of the pump building.

Photo Description: East of the fire pump building on southern border of Tank Farm A looking north.

Photo Description: Abandoned pipelines that connected Tank Farm A to Golf Pier along the eastern perimeter fence looking southwest towards the 'wye' from golf pier.

Photo Description: Abandoned pipelines that connected Tank Farm A to Golf Pier along the eastern perimeter fence looking north.

Photo Description: Western ramp into the tank farm looking northeast. Tank 8 is on the right of the frame with Tank 6 visible behind it. Tank 4 is in the middle and 3 to the left.

Photo Description: North side of tank 8 looking southeast. The ladder appears to be in good shape with slight rusting. The stairway needs cleaned and repainted. The fill height indicator is missing from this tank.

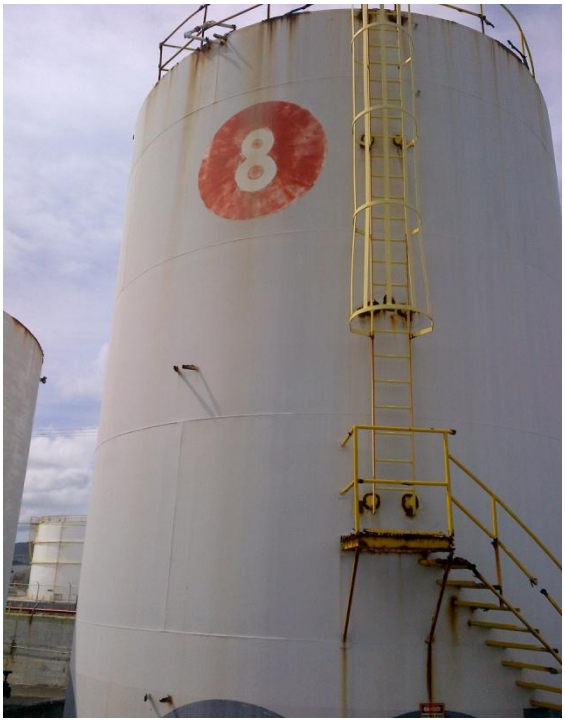


Photo Description: Closer look at tank 8 looking south from western ramp. Tank is used for storage of freshwater for the fire pump.

Photo Description: Tank 7 looking southeast from western ramp. The ladder and fill height indicator are both missing. Tank is out of service.

Photo Description: Tank 6 looking east from western ramp. The stairway is unusable in its current state. Tank is out of service.

Photo Description: Rust has penetrated the floor of tank 6. The flakes were coming out from under the tank wall.

Photo Description: Access flange on tank 6 on the eastern side of the tank looking west.

Photo Description: Oil water separator east of tank 6 looking north towards tank 4. Directly south is the fire pump house.

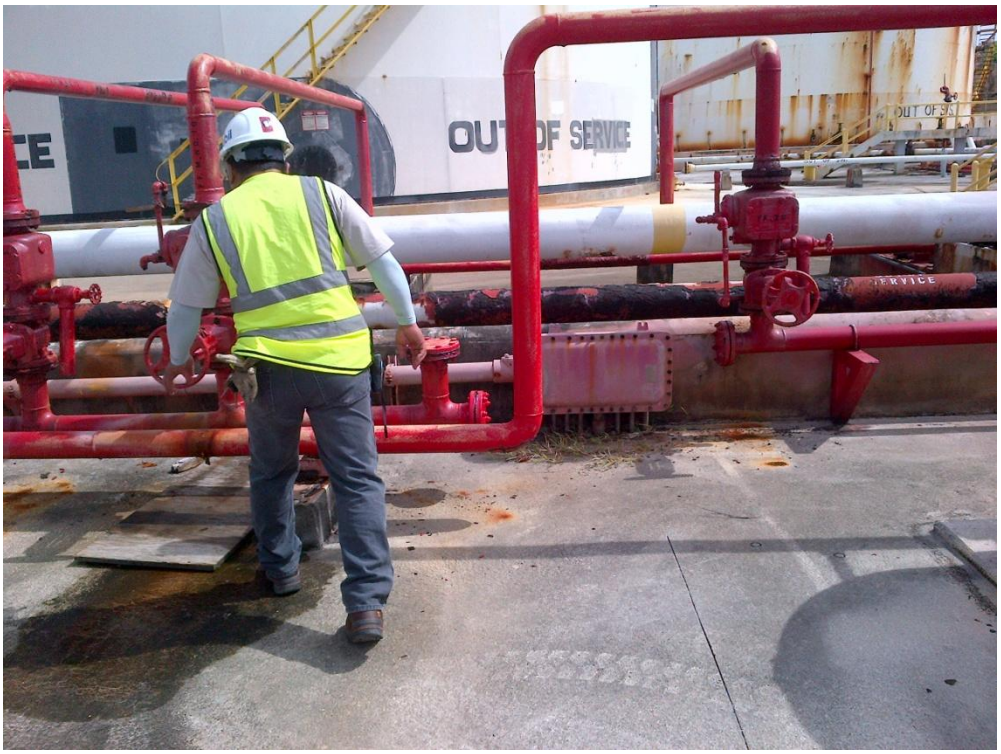


Photo Description: Fire piping lines north of the oil water separator looking north towards tank 4. The fire piping appears to be in good condition and is being maintained.

Photo Description: Abandoned pipelines in the center of the tank farm. The piping is in very poor condition for what is remaining. A fair amount of the piping has been removed on the north end of the site.

Photo Description: Looking southwest at tank 6. Fire supply line coming from the pump building from the left of the picture. Tank 6 has been disconnected and is not in service.

Photo Description: Abandoned pipelines running through the center of the yard. Looking northeast towards tank 1.

Photo Description: Site location where tank 5 was before being removed. The containment perimeter is in good condition.

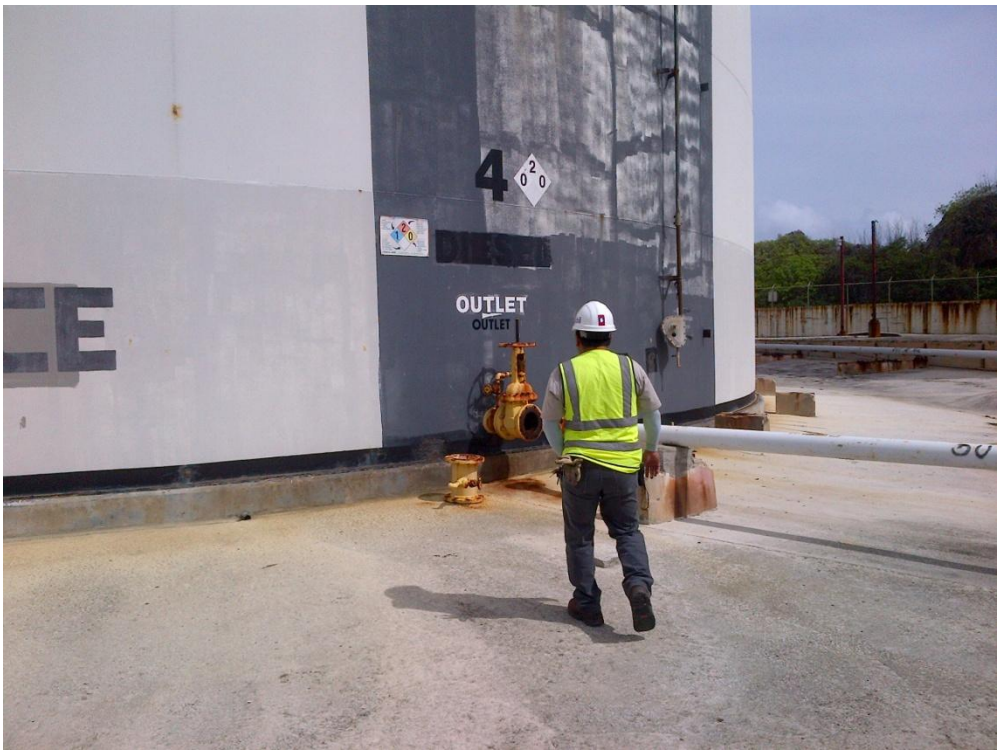


Photo Description: Tank 4 looking from the center of the site to the northwest. The tank has been disconnected and is not in service.

Photo Description: Tank 4 looking from the center of the site to the west. Stairway is in poor condition.

Photo Description: Tank 4 fill indicator. The tanks have been out of service so it is unknown if this works.

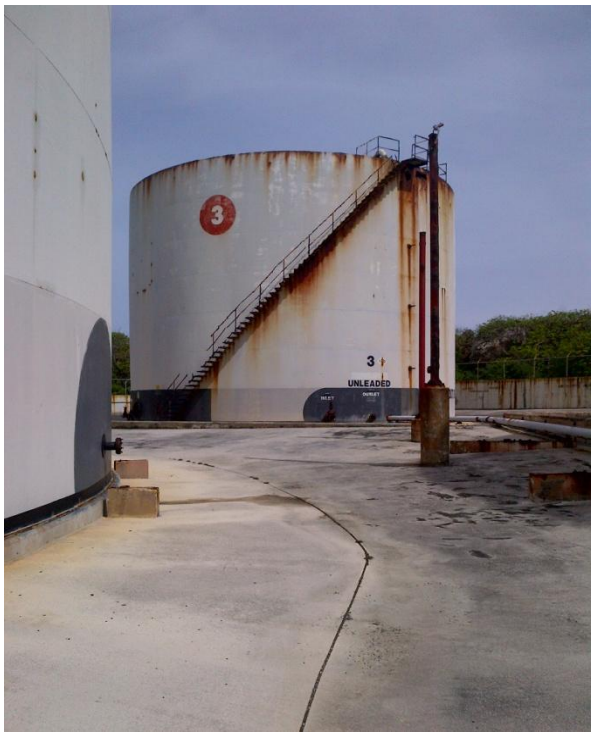


Photo Description: Tank 3 looking from next to tank 4 northwest. The tank has been disconnected and is not in service. The stairway is unusable.

Photo Description: Tank 3 stairway looking northwest.

Photo Description: Tank 3 stairway looking west.

Photo Description: Tank 3 inlet valve on the eastern side of the tank.

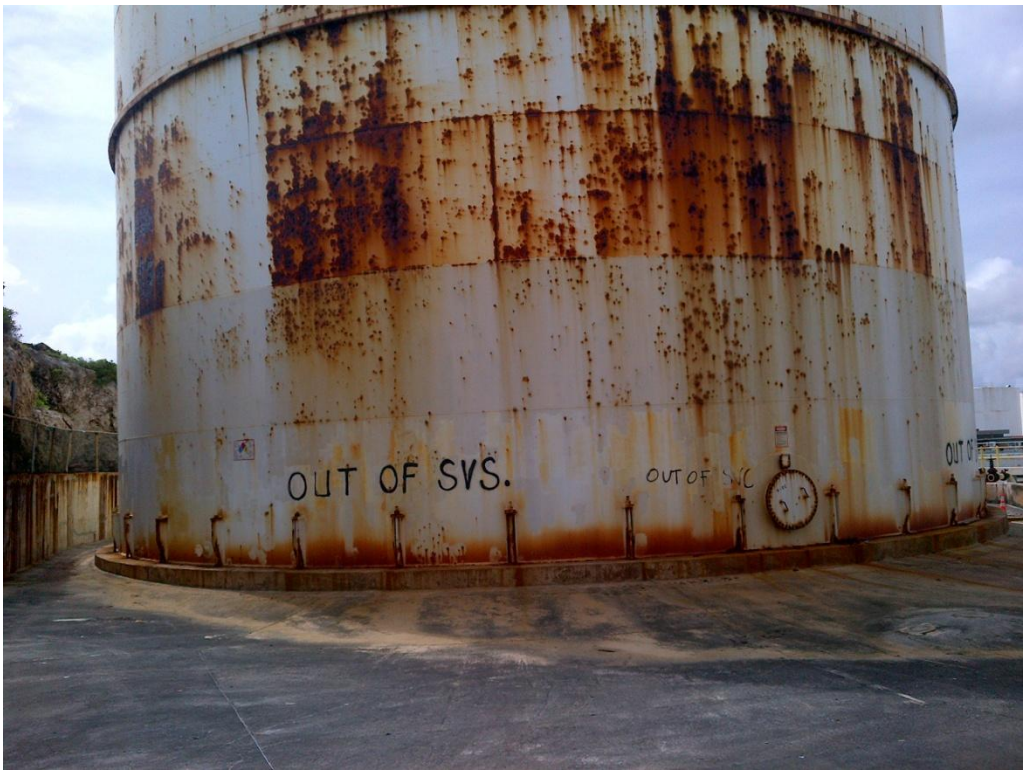


Photo Description: Tank 2 looking east. The tank has been disconnected and is out of service.

Photo Description: Tank 2 anchor bolts on the north side of the tank.

Photo Description: Tank 2 stairway on the south side of the tank looking west. Tank 4 is in the left edge of the picture.

Photo Description: Spalling on the northern retaining/ containment wall.

Photo Description: Western wall of Tank 1 looking east.

Photo Description: Tank 1 southern wall and stairway looking east. The tank is disconnected and out of service.

Photo Description: Tank 1 stairway on the southern wall looking west towards tank 4.

Photo Description: Tank 1 access cover on the northeast side.

Photo Description: Tank 1 cleaning label.

Photo Description: Drum storage on the northeast corner of the site looking east.

Photo Description: Pump shelter located south of the drum storage looking east. Old valves and components are stored here. The loading rack is to the right of the photo.

Photo Description: Loading rack structure located south of the pump shelter looking east. The piping has been removed from the structure.

Photo Description: Closer photo of the loading rack looking northeast.

Photo Description: East end of the loading rack structure looking north.

Photo Description: Underground piping that connects the loading rack to the pipelines in the site.

Photo Description: North side of the Tank Farm A administration building looking south.

Photo Description: Generator building west of the administration building looking southwest.

Photograph Gallery 11 – Container Yard

Photo Description: Sinkholes along the southern fence south of the container terminal gate administration building looking west.

Photo Description: Sinkhole along pavement edge.

Photo Description: Sinkhole along pavement edge.

Photo Description: Sinkholes along the southern fence south of the container terminal gate administration building looking east.

Photo Description: Container yard pavement surface in the 1990 yard expansion. Spalling of the concrete was observed.

Photo Description: Concrete bulkhead corner at the end of F-6 looking northwest.

Photo Description: Derelict vessels along the shoreline looking from the end of F-6 to the east.

Photo Description: Asphalt paving in the central portion of the yard looking east. The gantry spur rail is centrally located in the photo.

Photo Description: Security fencing along the bluff where the old seaman's club was located.

Photo Description: F-3 Fuel bunker west of Warehouse 1 looking north.

Photograph Gallery 12 – Terminal Buildings

Photo Description: Gate Administration Building and canopy looking east.

Photo Description: Gate Administration Building looking north.

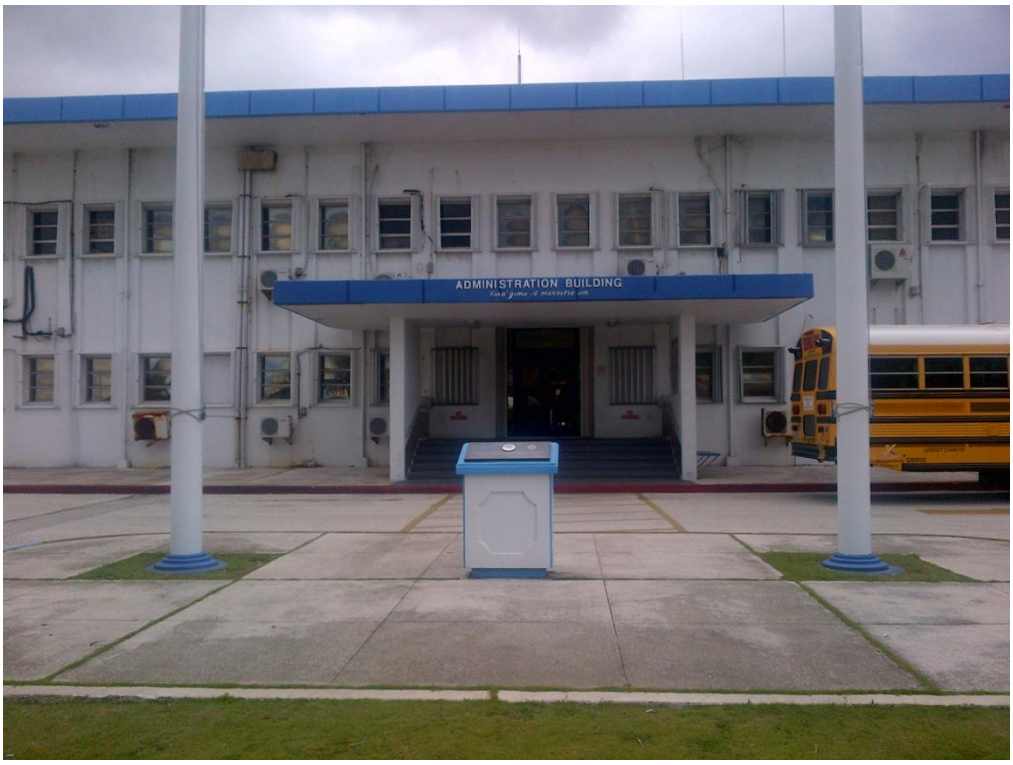


Photo Description: Port Administration Building looking south.

Photo Description: Administration Building Annex looking southwest.

Photo Description: CFS Building stripped and ready for renovations by the MarAd Program looking northwest.

Photo Description: Interior of CFS building looking west.

Photo Description: EQMR Building looking north.

Photo Description: Tire shop area within EQMR facing east.

Photo Description: Welding shop area within EQMR facing north.

Photo Description: Steel frame within EQMR Building facing north. The frame should be disconnected from the building columns for seismic considerations as the current situation would impose additional stress to the existing structure.

Photo Description: CMU Wall within Warehouse 1.

Photo Description: Bay 2 of Warehouse 1 looking south.

Photo Description: Welding Shed looking northwest.

Photograph Gallery 13 – Miscellaneous Structures

Photo Description: Port Police building looking south.

Photo Description: Port Police building looking northwest.

Photo Description: LC1 Generator building looking southeast. Generator is being removed and relocated to LC4.

Photo Description: LC1 Switchgear building looking west.

Photo Description: LC 4 looking north.

Photo Description: LC 3 looking southwest.

Photograph Gallery 14 – Site Utilities

Photo Description: Trench drains on the eastern portion of the yard.

Photo Description: Trench drains on the eastern portion of the yard. The grates and ledges are failing under the loading from the heavy equipment in the container yard.

Photo Description: Existing light pole on the waterfront looking north near the crane mechanics area.

Photo Description: Existing light pole on the waterfront looking east near Berth F-5 area.

Photo Description: Container yard lights installed in 2012 in the eastern portion of the yard looking southeast.

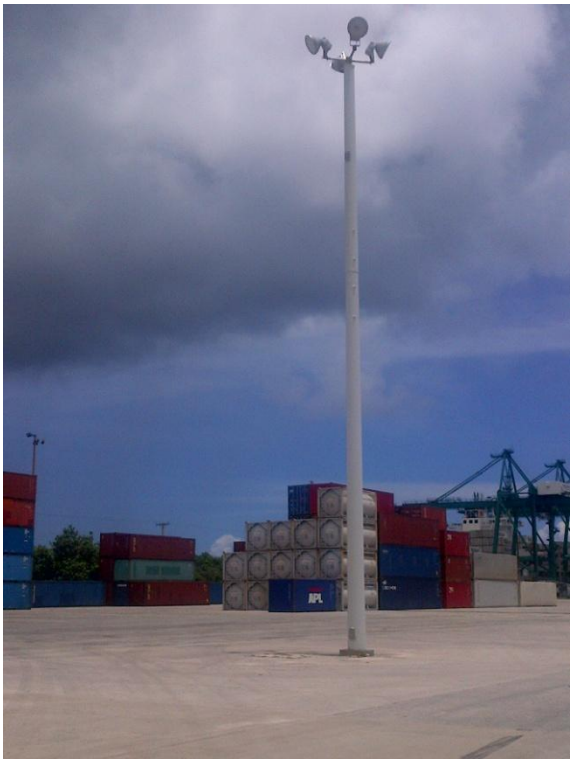


Photo Description: Container yard lights installed in 2012 in the eastern portion of the yard looking southwest.

Photograph Gallery 15 – Others

Photo Description: Western area of outhouse beach utilized by a dive operator looking east.

Photo Description: Access ramp on the east end of outhouse beach looking east.

Photo Description: Bollard on southeast portion of outhouse beach looking southeast.

Photo Description: Shoreline adjacent to dive operator on eastern end of outhouse beach looking east.

Photo Description: Southern shoreline of outhouse beach looking east towards golf pier.

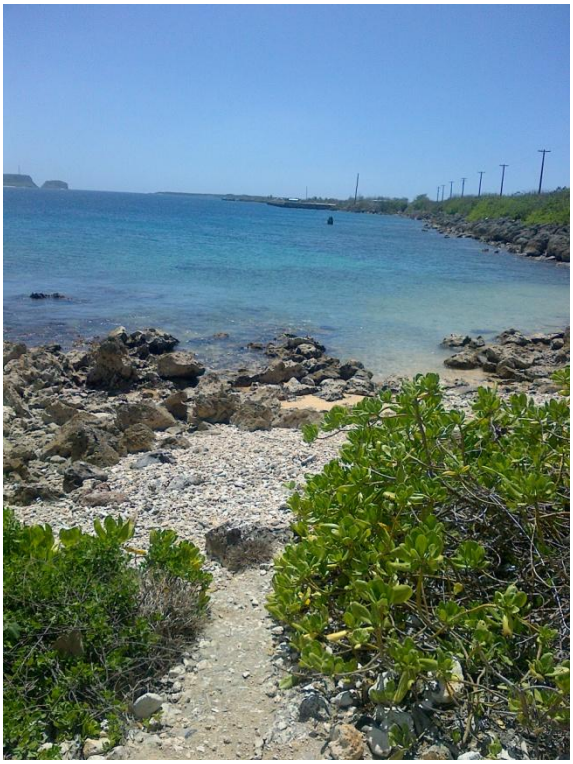


Photo Description: Entry point on the western end of outhouse beach looking west.

Photo Description: Entry gates at port beach looking northwest.

Photo Description: Restroom facility in the upper area looking east from north of the gate.

Photo Description: Restroom facility on the upper area looking southeast.

Photo Description: Access road in the upper area to the lower area waterfront looking northwest from north of the gate.

Photo Description: Stairway and rock walls between the upper area and lower area. The stairway is located north of the gate. The photo is taken looking south towards the gate.

Photo Description: Lower area looking east from the base of the stairway.

Photo Description: Canopy located in the lower area. Stairway is located south of where the photo is taken. The photo is looking northwest towards the commercial port terminal.

Photo Description: Canopy in the lower area looking southeast near the shoreline.

Photo Description: Northern shoreline of the lower area looking west.

Photo Description: Northern shoreline of the lower area looking east.

APPENDIX 2-4: TABULATION OF LEASE AGREEMENTS

Company Name	Location	Term of Lease	Type of Lease	From	To	Sq. Ft.
Administration Bldg.						
Ambyth Shipping & Trading	Rm 222	month - month	Office Space	5/1/2009	Present	502
American Bureau of Shipping	Rm 223B	month - month	Office Space	5/1/2009	Present	192
Cabras Marine Corp.	Rm 111	month - month	Office Space	5/1/2009	Present	980
	Rm110	month - month	Office Space	5/1/2009	Present	366.25
COAM Trading Co. LTD	Rm 219	month - month	Office Space	7/11/2011	Present	216
CTSI Logistic	Rm 108/109	month - month	Office Space	12/1/2009	Present	557
Inchcape shipping Service	Rm 116	month - month	Office Space	7/22/2010	Present	846.25
Marianas Steamship	Rm 116A	month - month	Office Space	6/20/2011	Present	378.75
Matson Navigation	Rm 215	month - month	Office Space	5/1/2009	Present	2755
	Rm 103/104	month - month	Office Space	5/1/2009	Present	435
Family Beach						
Apra Dive & Marine sports	Parcel 2	month - month	Open Space	5/1/2009	Present	2050
Apra Dive & Marine Sports	Parcel 2	month - month	Open Space	5/1/2009	Present	400
Auto Marine	Dogleg Pier	month - month	Open Space	4/1/2012	Present	980
Charles Marine Sports Club	Family Beach	month - month	Open Space	5/1/2009	Present	2700
Gently Blue	Outhse Beach	month - month	Open Space	11/1/2011	Present	16
Guam Dolphin Marine Sports Club	Family Beach	month - month	Open Space	5/1/2009	Present	4757
Guam Tropical Dive	Outhse Beach	month - month	Open Space	12/1/2011	Present	16
Paradise Aqua	Echo Pier	month - month	Open Space	5/1/2009	Present	720
Scuba Co. dba	Outhse	month -	Open Space	5/1/2009	Present	6000

Scuba Marine Sports	Beach	month				
P.S.V. Corporation	Rte 11 FB	month - month	Open Space	2/14/2013	Present	3141.5
Seaplane Ramp						
Guam Response Services	Seaplane Ramp	month - month	Open Space	5/1/2009	Present	640
Smithbridge Guam Inc.	Seaplane Ramp	month - month	Open Space	3/18/2011	Present	9040
Harbor of Refuge Rt. 18						
Atlantis Guam	Adjacent to HOR	month - month	Open Space	5/9/2009	Present	4000
		month - month	Open Space	5/9/2009	Present	1200
Joseph L. Cruz	HOR	month - month	Open Space	10/1/2009	Present	468
Guam Response Service	HOR	month - month	Whse Space	2/25/2010	Present	2751.5
			Office space			1248.5
Margarita Charters	HOR	month - month	Whse Space	11/15/2009	Present	300
M.A.Y. (Guam) dba Marina	HOR	month - month	Open Space	1/1/2012	Present	160
Little Ocean Guam)						
Aqua World	Adjacent to HOR			1/1/1985	Present	1.5 acres
Salt Shaker Yacht Charter	HOR	month - month	Open Space	5/1/2009	Present	458
Skoocumchuck Charters	HOR	month - month	Open Space	5/1/2009	Present	320
Tasi Tours	HOR	month - month	Open Space	5/1/2009	Present	790
	HOR	month - month	Open Space	5/1/2009	Present	200
Jonathan Watson	HOR					160
Warehouse I						
Lotus Pacifica Trading Inc.	Bay 13	month - month	Whse Space	8/1/2012	Present	1100
Lotus Pacifica Trading Inc.	Bay 13	month - month	Office Space	8/1/2012	Present	316.25

Sanko Bussan Guam	Bay 11	month - month	Whse Space	9/1/2012	Present	3600
Sanko Bussan Guam	Bay 12	month - month	Office Space	9/1/2012	Present	900
Sanko Bussan Guam	Bay 11	month - month	Open Space	9/1/2012	Present	126
Renolith Resources	Bay 13	month - month	Office Space	5/1/2012	Present	200
Tyco Electronics Subsea Com. LLC	Bay 5/6	month - month	Whse Space	5/1/2009	Present	7200
	Bay 7/8	month - month	Whse Space	3/1/2011	Present	7200
Tidewater Distributors Inc.	Bay 13	month - month	Whse Space	5/1/2010	Present	3280
Tidewater Distributors Inc.	Bay 12	month - month	Whse Space	5/1/2010	Present	1920
Tidewater Distributors Inc.	Bay 12	month - month	Office Space	5/1/2010	Present	320
Tidewater Distributors Inc.	Bay 12	month - month	Open Space	5/1/2010	Present	160
Tidewater Distributors Inc.	Bay 12	month - month	Under Eave	3/1/2010	Present	320
Truckers Parking						
CTSI Logistic	Truckers Lot	month - month	Open Space	4/1/2011	Present	4000
DGX Ocean & Air Freight	Truckers Lot	month - month	Open Space	10/1/2009	Present	700
Guam Transport & Warehouse Inc.	Truckers Lot	month - month	Open Space	5/1/2009	Present	1000
Heavy Equipment Rental Options	Truckers Lot	month - month	Open Space	5/1/2009	Present	1200
Isla Trucking Services	Truckers Lot	month - month	Open Space	3/19/2012	Present	1000
Management Agreement						
Cabras Marine Corp.	Old Casamar	10 yrs		8/1/2011	3/31/2020	
Cementon Micronesia	Adjn. to Golf Pier	20 yrs		12/1/2009	12/1/2029	78,336
Hanson Pemante Cement	GEDA	10 yrs		2/12/2011	2/12/2021	1.65 acres
Mobil Oil Guam Inc.	GEDA Lot 1	10 yrs		3/20/2010	3/20/2020	248,873
	GEDA Lot	10 yrs		3/4/2011	3/4/2021	82,799

	3B					
South Pacific Petroleum	GEDA Lot 3A	20 yrs		11/30/2000	10/31/2020	140,002
	Lot 2	20 yrs		11/30/2000	10/31/2020	217,800
	Lot 2A	20 yrs		11/30/2000	10/31/2020	47,916
IP&E Holdings LLC	F3	25 yrs		5/20/2010	Pending	7000 s/m
Tristar Agility	Dogleg Pipeline	3-5 yrs		11/6/2006	Pending	5,500
	GEDA Pumpline	3-5 yrs		11/6/2006	Pending	20,257
	Main Pipeline	3-5 yrs		11/6/2006	Pending	324,198
	F1 Fingertip	3-5 yrs		11/6/2006	Pending	78,651
Marianas Yacht Club	Parcel 1	Yearly		12/29/1988	Present	4000 s/m
Open Space						
KVOG Broadcasting LLC	Adjn. to Port Beach	month - month	Communication	10/21/2010	Present	600
Unitek Environmental	Adjn. to Truckers	month - month	Hazardous Waste	5/1/2009	Present	600
Brand Inc.	Parcel 1	month - month	Hazardous Waste	9/24/2007	Present	
Concessionaire						
Jan Z's dba Sunbay Corp.	Agat Marina	month - month	Concession	4/10/2006	Present	1,839
	Agat Marina	month - month	Concession	4/10/2006	Present	600
AR Sunriser Canteen	Across Adm. Bldg.	month - month	Concession	5/1/2009	Present	1,184
F3						
Norton Lilly	F3	month - month	Open Space	4/27/2010	Present	460
Communication						
KVOG Broadcasting	P-1, Rt 18	month - month	Communication	10/21/2010	Present	
Sanko Bussam Guam	Whse I	month - month	Communication	9/1/2012	Present	

Dry Dock						
Bruce and Diane Fredrick	HOR - Adj. to GRS	Short Term	Open Space	7/1/2010	Present	520
Tom Roberts	HOR - Adj. to GRS	Short Term	Open Space	9/22/2011	Present	240
SS Neptune LLC	HOR - Adj. to GRS	Short Term	Open Space	7/1/2010	Present	689
Arsenio Santiago	HOR - Adj. to GRS	Short Term	Open Space	10/17/2010	Present	420
Jonathan Watson	HOR - Adj. to GRS	Short Term	Open Space	1/1/2012	Present	468
Dione & Jerry Young	HOR - Adj. to GRS	Short Term	Open Space	1/1/2012	Present	750

APPENDIX 3-1: CARGO FORECAST BREAKDOWN

Container Forecast Breakdown – Organic Growth (Low) Scenario

Year	Total Actual Containers	Total Forecast Containers	Local Actual Containers	Local Forecast Containers	Transship Actual Containers	Transship Forecast Containers
2001	80,633		80,633			
2002	78,321		78,321			
2003	82,311		82,311			
2004	80,266		80,266			
2005	83,867		83,867			
2006	84,321		60,378		23,943	
2007	99,620		67,766		31,854	
2008	99,908		68,946		30,962	
2009	94,073		64,966		29,107	
2010	96,952		66,279		30,673	
2011	96,065		65,854		30,211	
2012	92,747		63,858		28,889	
2013		93,767		64,560		29,207
2014		94,799		65,271		29,528
2015		95,841		65,989		29,853
2016		96,896		66,714		30,181
2017		97,962		67,448		30,513
2018		99,039		68,190		30,849
2019		100,129		68,940		31,188
2020		101,030		69,561		31,469
2021		101,939		70,187		31,752
2022		102,856		70,819		32,038
2023		103,782		71,456		32,326
2024		104,716		72,099		32,617
2025		105,659		72,748		32,911
2026		106,610		73,403		33,207
2027		107,569		74,063		33,506
2028		108,537		74,730		33,807
2029		109,514		75,402		34,112
2030		110,500		76,081		34,419
2031		111,494		76,766		34,728
2032		112,498		77,457		35,041
2033		113,510		78,154		35,356
CAGR (2013 – 2033)		0.96%				

Container Forecast Breakdown – Current Build-up (Mid) Scenario

Year	Total Actual Containers	Total Forecast Containers	Local Actual Containers	Local Forecast Containers	Transship Actual Containers	Transship Forecast Containers
2001	80,633		80,633			
2002	78,321		78,321			
2003	82,311		82,311			
2004	80,266		80,266			
2005	83,867		83,867			
2006	84,321		60,378		23,943	
2007	99,620		67,766		31,854	
2008	99,908		68,946		30,962	
2009	94,073		64,966		29,107	
2010	96,952		66,279		30,673	
2011	96,065		65,854		30,211	
2012	92,747		63,858		28,889	
2013		93,767		64,560		29,207
2014		94,799		65,271		29,528
2015		95,841		65,989		29,853
2016		98,696		68,514		30,181
2017		113,082		82,568		30,513
2018		122,739		91,890		30,849
2019		129,829		98,640		31,188
2020		136,130		104,661		31,469
2021		148,049		116,297		31,752
2022		154,906		122,869		32,038
2023		151,482		119,156		32,326
2024		119,416		86,799		32,617
2025		120,359		87,448		32,911
2026		121,310		88,103		33,207
2027		122,269		88,763		33,506
2028		123,237		89,430		33,807
2029		124,214		90,102		34,112
2030		125,200		90,781		34,419
2031		126,194		91,466		34,728
2032		127,198		92,157		35,041
2033		128,210		92,854		35,356
CAGR (2013 – 2033)		1.58%				

Container Forecast Breakdown – Full Build-up (High) Scenario

Year	Total Actual Containers	Total Forecast Containers	Local Actual Containers	Local Forecast Containers	Transship Actual Containers	Transship Forecast Containers
2001	80,633		80,633			
2002	78,321		78,321			
2003	82,311		82,311			
2004	80,266		80,266			
2005	83,867		83,867			
2006	84,321		60,378		23,943	
2007	99,620		67,766		31,854	
2008	99,908		68,946		30,962	
2009	94,073		64,966		29,107	
2010	96,952		66,279		30,673	
2011	96,065		65,854		30,211	
2012	92,747		63,858		28,889	
2013		93,767		64,560		29,207
2014		94,799		65,271		29,528
2015		95,841		65,989		29,853
2016		99,896		69,714		30,181
2017		123,162		92,648		30,513
2018		138,539		107,690		30,849
2019		149,629		118,440		31,188
2020		159,530		128,061		31,469
2021		178,789		147,037		31,752
2022		189,606		157,569		32,038
2023		183,282		150,956		32,326
2024		129,216		96,599		32,617
2025		130,159		97,248		32,911
2026		131,110		97,903		33,207
2027		132,069		98,563		33,506
2028		133,037		99,230		33,807
2029		134,014		99,902		34,112
2030		135,000		100,581		34,419
2031		135,994		101,266		34,728
2032		136,998		101,957		35,041
2033		138,010		102,654		35,356
CAGR (2013 – 2033)		1.95%				

Breakbulk Forecast Breakdown (in Tons)

Year	Total Actual Breakbulk	Organic (Low) Growth Breakbulk Forecast	Current (Mid) Build-up Breakbulk Forecast	Full (High) Build-up Breakbulk Forecast
2001	112,551			
2002	97,984			
2003	116,789			
2004	132,788			
2005	111,327			
2006	123,037			
2007	141,098			
2008	126,521			
2009	125,192			
2010	186,523			
2011	125,987			
2012	167,673			
2013		170,000	170,000	170,000
2014		172,000	172,000	172,000
2015		174,000	174,000	174,000
2016		176,000	178,100	179,500
2017		178,000	199,000	213,000
2018		180,000	213,000	235,000
2019		182,000	233,000	267,000
2020		184,000	250,000	294,000
2021		186,000	252,900	297,500
2022		188,000	248,000	288,000
2023		190,000	200,800	208,000
2024		192,000	202,800	210,000
2025		194,000	204,800	212,000
2026		196,000	206,800	214,000
2027		198,000	208,800	216,000
2028		200,000	210,800	218,000
2029		202,000	212,800	220,000
2030		204,000	214,800	222,000
2031		206,000	216,800	224,000
2032		208,000	218,800	226,000
2033		210,000	220,800	228,000
CAGR (2013 – 2033)		1.06%	1.32%	1.48%

APPENDIX 5-1: PMP COST SCHEDULE

Sr. No.	Project	Funding Authority	Start Date		Completion Date		Project Cost ($)	Notes	Value (Through Project Life) - $ (Thousands)																					
			Month	Year	Month	Year			2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033
1	CFS Modification	MARAD	June	2013	January	2014	NA	not modeled as PAG expense																					
2	Warehouse # 2, Gas Station and other misc structure demolition	MARAD	November	2014	September	2015	NA	not modeled as PAG expense																					
3	Oil Water Separators on Existing Outfalls	MARAD	March	2014	July	2015	NA	not modeled as PAG expense																					
4	Breakbulk Expansion	MARAD	March	2014	July	2015	NA	not modeled as PAG expense																					
5	Parking Displaced by Breakbulk Expansion	MARAD	March	2014	July	2015	NA	not modeled as PAG expense																					
6	Crane Mechanics Area Demolition	MARAD	March	2014	July	2015	NA	not modeled as PAG expense																					
7	High/Low Mast Lighting, Water System and Fire System Upgrade (First Phase)	MARAD	March	2014	July	2015	NA	not modeled as PAG expense																					
8	Container Gate Area	MARAD	March	2014	July	2015	NA	not modeled as PAG expense																					
9	Container Yard Expansion	MARAD	March	2014	July	2015	NA	not modeled as PAG expense																					
10	Seaman's Club Demolition	MARAD	March	2014	July	2015	NA	not modeled as PAG expense																					
11	Load Center 5	MARAD	March	2014	July	2015	NA	not modeled as PAG expense																					
12	Breakbulk Terminal Gate	MARAD	March	2014	July	2015	NA	not modeled as PAG expense																					
13	Equipment Wash Rack	MARAD	January	2014	December	2014	NA	not modeled as PAG expense																					
14	Financial Management System	PAG	June	2013	December	2020	$ 1,500,000	Assumed addressed by Port cash flow and not the SLE Loan. Phase 1 to upgrade the JD Edward system in 2013. Phase 2 to upgrade to Entreprise 1 in 2020.	500						500	500													
15	Demolition of Gantry 2 and RTGs	PAG		2015		2015	$ 250,000	This is a placeholder figure. Property has been transferred to GSA at no cost			250																		
16	PAG Service Life Extension of F3 - F6	PAG	October	2013	October	2014	$ 7,000,000	Increased due to delay	3500	3500																			
17	Terminal Operating System	PAG	August	2013	August	2018	$ 3,000,000	Modeled as PAG cash flow and can be lowered and extended with 10 year loan	200	600	600	600	600	400															
18	Gate Operating System	PAG	August	2015	August	2018	$ 2,000,000	Modeled as PAG cash flow and can be lowered and extended with 10 year loan			500	500	500	500															
19	Marine and Port Security Operations Center Building	PSGP/DHS	January	2013	January	2014	$ 3,000,000		1500	1500																			
20	Installation of MOV at Golf Pier Fuel Pipelines	PAG	April	2013	September	2013	$ 325,000		325																				
21	Cargo and Vehicle Detection/Screening Machine	PSGP/DHS	November	2013	May	2014	$ 1,525,790		763	763																			
22	SLE: Acquisition of Cargo Handling Equipment	PAG	January	2015	December	2015	$ 1,000,000			1000																			
23	Container Yard Storm Drain Channel Repairs	PAG	January	2014	June	2014	$ 600,000			600																			
24	Inbound/Outbound OCR Portals and Canopies	PAG	August	2015	August	2018	$ 1,000,000	Part of GOS and coincede with GOS schedule			250	250	250	250															
25	Compressors for Admin Building A/C System	PAG	June	2013	Ongoing		$ 47,483	Due to shortage of manpower, Staggered schedule for installation.																					
26	Various Air Conditiong Units and Parts/Supplies	PAG	May	2013	Ongoing- Pending (		$ 24,000	Vendor to schedule installation for Procurement Section																					
27	Harbor Crane Part/Supply - Bearing Unit	PAG	March	2013	April	2013	$ 23,146	Completed	23																				
28	Warehouse # 1, CMU and Column Repairs	PAG	May	2013	November	2013	$ 75,500		76																				
29	Architectural/Engineering Services - IDQ	PAG	March	2014	September	2033			500	500	500	500	500	500	500	500	500	500	500	500	500	500	500	500	500	500	500	500	500
30	Emergency Back-Up Generators	PSGP/DHS	October	2013	March	2014	$ 1,734,303		867	867																			
31	Agat Marina Dock "A" Repairs	PAG	August	2013	February	2014	$ 250,000		125	125																			
32	Electrical Work for Additional 56 Reefer Outlets/Reefer Lights Installation	PAG	September	2013	April	2014	$ 950,000		475	475																			
33	Agat Marina Loading Dock Structural Repair	PAG	March	2014	December	2014	$ 250,000			250																			
34	Port Police Security Upgrade	PAG	January	2014	December	2014	$ 310,000			310																			
35	Renovations to Harbor Refuge	PAG	June	2014	February	2015	$ 3,000,000			1500	1500																		
36	Repair/Upgrade Perimeter Fence	PAG	October	2013	March	2014	$ 150,000		75	75																			
37	Purchase 2 Gantry Cranes	PAG	January	2026	December	2027	$ 24,000,000	$8 M 2012 cost per crane escalated for inflation to years 2026/2027 and years 2028/2029. 2 cranes delivered 2028, 2 cranes delivered 2030																					
38	Purchase 2 Gantry Cranes	PAG	January	2028	December	2029	$ 24,000,000																						
39	Demolish 2 Gantry Cranes	PAG				2028	$ 700,000	Assuming the gantry crane is demolished by moving it back from the berth so as to keep the berth operations running, it will take $350k (as per Tony Simkus) per crane. Demolition time period will range from 25-30 days.																			700		
40	Demolish 2 Gantry Cranes	PAG				2030	$ 700,000																						700
41	Purchase Replacement and Additional Yard Equipment	PAG		2013		2033	$ 3,907,600	Varies from 2013-2033 - this includes all yard fleet. (CIP values as per Tony's spreadsheet). $2M in Year 2014 for Forklifts and other equipment.		2400		300		22		94		82		56		956		922		538		538	
42	Replacement of Administration Building	PAG					$ 4,000,000	Assumes current building downsized...should occur after Min PMP executed																					
43	Replace Hotel Wharf and Access Road	PAG					$ 13,000,000	Might be fundable through ARRA Grant																					
44	Upgrade of Power System for IT Office	PAG	TBD	TBD	TBD	TBD																							
45	Marinas Sewage Pump Station Upgrade	PAG	TBD	TBD	TBD	TBD																							
46	Automatic Transfer Switch for LC2 and LC3	PAG	TBD	TBD	TBD	TBD																							
47	Renovation of High Tower, Low Tower, and Existing Gate Bldg	PAG	TBD	TBD	TBD	TBD		Pends completion of MARAD projects and systems upgrades																					
48	Warehouse 1 Renovation	PAG	TBD	TBD	TBD	TBD		Space utilization should be adjusted per process improvement recommendations																					
49	Progressive Pavement Replacement all terminal yards	PAG	TBD	TBD	TBD	TBD		Should be developed in phases and in concert with utilities replacement																					
50	Progressive Utilities Replacement in existing terminal	PAG	TBD	TBD	TBD	TBD		Should be developed in phases and in concert with pavement replacement																					
51	PAG Soil Stabilization of F4/F6	PAG				Future		Optional Project...assumed deferred indefinitely																					
52	Progressive Fence Replacement	PAG	TBD	TBD	TBD	TBD		Chain link should be replaced by CMU wherever practical																					
									$ 8,929	$ 14,465	$ 3,600	$ 2,150	$ 1,850	$ 1,672	$ 1,000	$ 1,094	$ 500	$ 582	$ 500	$ 556	$ 500	$ 1,456	$ 500	$ 1,422	$ 500	$ 1,038	$ 1,200	$ 1,038	$ 1,200

Notes:
1. Costs are evenly distributed by year.
2. MARAD funded costs not distributed.
3. All costs are in 2013$

= Port Modernization Program Projects
= Sustainability Projects
= To Be Scheduled Projects

Source: Parsons Brinckerhoff analysis

APPENDIX 6-1: TARIFF PETITION FORM

5-Year Tariff Petition

Supporting Schedules and Workpapers

The Guam Public Utilities Commission (PUC), in its Standard Filing Requirements for rate increases, requires any regulated utility seeking rate adjustments to submit to the PUC an application for rate relief as part of its case filing.

Rule 21 requires the application to contain certain schedules and working papers in support of those schedules. A general description of the required schedules are attached to this document and described below.

Schedule A – Revenue Requirement

This schedule contains budget projections for all available historic, current and forecast years. Three revenue scenarios are described: (i) no tariff increases, (ii) the requested 5-year tariff increase of 4.36 percent per year only, and (iii) the requested 5-year tariff increase of 4.36 percent per year and subsequent annual tariff increase of 3.95 percent per year in perpetuity. For all three scenarios, the revenue requirement (i.e. projected expenditures) represents the minimum revenues needed for PAG to comply with its indenture requirements. Both income statement and cash flow projections are provided for the three scenarios.

The annual schedule for replacing fully depreciated port facilities and equipment is estimated to be $3,950,000 per year in 2013 dollars over the next 20 years, and the tariff increase schedule is based on that estimate. The actual spending on facility replacement may vary based on available funds. If port modernization is completed before the end of the forecast period, PAG will petition for a reduction in tariffs commensurate to the amount needed to sustainably maintain the achieved level of service.

Schedule B – Revenues

This schedule provides details deriving each revenue item shown on Schedule A for all available historic, current and forecast years. Two revenue scenarios are described: (i) no tariff increases and (ii) the requested 5-year tariff increase of 4.36 percent per year only.

Schedule C – Operating Expenses

This schedule provides a summary of operating expenses in budget format. PAG's historic unaudited income statements are attached to this application as Working Papers. Operating expenses are disaggregated into General Expenses (excluding labor), Facilities Maintenance and Repair, Equipment Maintenance and Repair and Labor. Labor is further disaggregated into Regular Salaries and Wages, Overtime Salaries and Wages, and Pension and Other Benefits. This

section does not include depreciation and amortization, as Capital Expenditures will be provided for in Schedules E and I and Debt Service will be provided in Schedule D.

Schedule D – Debt Service

Debt Service requirements for PAG's outstanding loans and expected debt service obligations associated with the Port Modernization Plan and additional modernization improvements are included in this schedule. The additional improvements are not yet determined. The improvements will be selected from the Capital Improvement Plan that best serve the modernization needs of PAG and provide the greatest long term benefits.

Schedule E – Internally Funded Construction

This schedule contains a construction schedule associated with improvements that are funded with loans described in Schedule D or on a pay-as-you-go basis with surplus revenues.

Note: Completed Capital Improvement Plan needed to complete this schedule.

Schedule F – Working Capital

This schedule provides the most recent account balances associated with PAG's General Fund. The net cash flow shown in Schedule A is applied to the existing working capital to project future working capital.

Schedule G – Other Cash Flow Items

PAG does not expect any insurance or litigation settlements in the coming years.

Schedule H – Proof of Revenues

PAG's need for the modernization improvements and the proof of necessity for the requested tariff increases are described in detail in the 2013 Master Plan Update. That report is incorporated herein by reference.

Schedule I – Externally Funded Construction

This schedule contains a construction schedule associated with improvements that are funded with Federal grant funds.

Note: Completed Capital Improvement Plan needed to complete this schedule.

Schedule J – Tariff Revisions

This schedule contains a list of the requested tariff adjustments for each of the five tariff forecast years. The tariff rates in each of the forecast years are equal to the tariff in the previous year increased by 4.36 percent.

Schedule A – Income Statement

5-Year Tariff Escalation Assumed to Begin October 1, 2014 Case: Low -- No increase

1	2	3	4	5	6	7	8	9	10	11	12
	Revenues					Expenses					
Fiscal Year	Cargo Revenues[1]	Non-Cargo Revenues[2]	Commercial Revenue[3]	Other Income[4]	Total Annual Revenues[5]	General and Administrative Expenses[6]	Facilities Maintenance and Repairs[7]	Equipment Maintenance and Repairs[8]	Depreciation & Amortization[9]	Total Annual Expenses[10]	Net Surplus/ (Deficit)[11]
2007	$16,571,356	$8,660,680	$3,682,468	$278,747	$29,193,251	$24,511,186			$2,459,083	$26,970,269	$2,222,982
2008	$16,846,476	$9,080,272	$4,393,372	$450,559	$30,770,679	$26,436,603			$2,640,307	$29,076,910	$1,693,769
2009	$15,834,549	$8,912,237	$5,755,915	$1,191,584	$31,694,285	$25,169,006			$2,742,614	$27,911,620	$3,782,665
2010	$17,691,921	$10,720,121	$7,870,846	$3	$36,282,891	$28,375,783			$2,838,464	$31,214,247	$5,068,644
2011	$16,899,590	$10,644,247	$7,915,971	$738,354	$36,198,162	$29,230,689			$3,223,788	$32,454,477	$3,743,686
2012	$16,680,043	$11,182,864	$7,356,319	$111,409	$35,330,635	$29,055,114			$3,916,254	$32,971,368	$2,359,267
2013	$17,971,051	$12,085,869	$7,809,642		$37,866,562	$28,710,173		$758,729	$4,758,040	$34,226,942	$3,639,620
2014	$19,156,231	$12,127,442	$7,937,923		$39,221,596	$29,557,470	$2,329,453	$793,935	$5,820,451	$38,501,309	$720,288
2015	$19,367,426	$12,261,469	$8,025,747		$39,654,642	$30,874,513	$2,411,712	$830,777	$7,178,627	$41,295,629	($1,640,987)
2016	$19,580,847	$12,396,842	$8,114,434		$40,092,124	$32,124,366	$2,496,876	$869,331	$7,636,524	$43,127,097	($3,034,973)
2017	$19,796,519	$12,533,578	$8,203,993		$40,534,091	$34,813,004	$2,585,046	$909,678	$7,319,181	$45,626,909	($5,092,818)
2018	$20,014,466	$12,671,690	$8,294,435		$40,980,591	$36,220,281	$2,676,331	$951,899	$7,230,377	$47,078,888	($6,098,297)
2019	$20,234,713	$12,811,195	$8,385,767		$41,431,675	$39,266,022	$2,770,839	$996,083	$6,694,514	$49,727,458	($8,295,783)
2020	$20,418,423	$12,928,590	$8,462,939		$41,809,951	$40,849,516	$2,868,684	$1,040,309	$8,155,162	$52,913,672	($11,103,721)
2021	$20,603,706	$13,046,938	$8,540,720		$42,191,364	$44,301,062	$2,969,984	$1,086,501	$10,797,809	$59,155,357	($16,963,993)
2022	$20,790,577	$13,166,247	$8,619,117		$42,575,941	$46,083,992	$3,074,862	$1,134,747	$10,846,393	$61,139,993	($18,564,053)
2023	$20,979,051	$13,286,525	$8,698,135		$42,963,711	$49,996,784	$3,183,443	$1,185,136	$10,901,909	$65,267,273	($22,303,562)
2024	$21,169,141	$13,407,782	$8,777,780		$43,354,703	$52,005,521	$3,295,858	$1,237,766	$11,000,354	$67,539,500	($24,184,797)
2025	$21,360,863	$13,530,026	$8,858,056		$43,748,946	$54,096,281	$3,412,243	$1,292,735	$11,095,498	$69,896,757	($26,147,811)
2026	$21,554,231	$13,653,266	$8,938,971		$44,146,469	$56,266,249	$3,532,738	$1,350,148	$11,283,442	$72,432,577	($28,286,109)
2027	$21,749,261	$13,777,511	$9,020,530		$44,547,302	$58,521,572	$3,657,488	$1,410,114	$10,786,167	$74,375,341	($29,828,039)
2028	$21,945,965	$13,902,770	$9,102,738		$44,951,474	$61,778,456	$3,786,643	$1,472,745	$10,617,349	$77,655,193	($32,703,719)
2029	$22,144,361	$14,029,052	$9,185,602		$45,359,015	$64,522,536	$3,920,359	$1,538,161	$10,494,786	$80,475,842	($35,116,827)
2030	$22,344,463	$14,156,367	$9,269,127		$45,769,957	$67,054,795	$4,058,797	$1,606,485	$12,641,625	$85,361,702	($39,591,745)
2031	$22,546,287	$14,284,723	$9,353,319		$46,184,329	$69,686,695	$4,202,123	$1,677,847	$16,464,668	$92,031,333	($45,847,004)
2032	$22,749,847	$14,414,130	$9,438,184		$46,602,162	$72,426,147	$4,350,510	$1,752,382	$16,426,497	$94,955,536	($48,353,374)
2033	$22,955,161	$14,544,598	$9,523,729		$47,023,488	$75,269,435	$4,504,138	$1,830,232	$16,570,201	$98,174,006	($51,150,518)
Total	$421,461,542	$266,930,743	$174,751,245		$863,143,530	$1,015,714,696	$66,088,129	$24,967,012	$209,961,536	$1,316,731,373	($453,587,843)

Footnotes:

[1] Reflects revenue from port operations directly related to cargo based on organic growth with no military buildup.
[2] Non-Cargo revenue includes all revenue not derived from the loading and unloading of freight or leases.
[3] Includes lease revenues, demurrage and administrative fees.
[4] Includes interest income and federal reimbursements.
[5] Summary of columns 2,3,4 and 5.
[6] Includes salary, benefits, insurance and other operating expenditures.
[7] Maintenance and Repair of Port facilities at 1% of total buildings and property.
[8] Maintenance and Repair of Port equipment provided by Sarandipity.
[9] Depreciation and amortization of all PAG assets and loans.
[10] Summary of columns 7, 8, 9 and 10.
[11] Difference between column 6 and column 11.

Schedule A – Income Statement

5-Year Tariff Escalation Assumed to Begin October 1, 2014 Case: Low -- 4.36% only

1	2	3	4	5	6	7	8	9	10	11	12
	Revenues					Expenses					
Fiscal Year	Cargo Revenues[1]	Non-Cargo Revenues[2]	Commercial Revenue[3]	Other Income[4]	Total Annual Revenues[5]	General and Administrative Expenses[6]	Facilities Maintenance and Repairs[7]	Equipment Maintenance and Repairs[8]	Depreciation & Amortization[9]	Total Annual Expenses[10]	Net Surplus/ (Deficit)[11]
2007	$16,571,356	$8,660,680	$3,682,468	$278,747	$29,193,251	$24,511,186			$2,459,083	$26,970,269	$2,222,982
2008	$16,846,476	$9,080,272	$4,393,372	$450,559	$30,770,679	$26,436,603			$2,640,307	$29,076,910	$1,693,769
2009	$15,834,549	$8,912,237	$5,755,915	$1,191,584	$31,694,285	$25,169,006			$2,742,614	$27,911,620	$3,782,665
2010	$17,691,921	$10,720,121	$7,870,846	$3	$36,282,891	$28,375,783			$2,838,464	$31,214,247	$5,068,644
2011	$16,899,590	$10,644,247	$7,915,971	$738,354	$36,198,162	$29,230,689			$3,223,788	$32,454,477	$3,743,686
2012	$16,680,043	$11,182,864	$7,356,319	$111,409	$35,330,635	$29,055,114			$3,916,254	$32,971,368	$2,359,267
2013	$17,971,051	$12,085,869	$7,809,642		$37,866,562	$28,710,173		$758,729	$4,758,040	$34,226,942	$3,639,620
2014	$19,156,231	$12,127,442	$7,937,923		$39,221,596	$29,557,470	$2,329,453	$793,935	$5,820,451	$38,501,309	$720,288
2015	$20,211,846	$12,796,069	$8,375,670		$41,383,585	$30,874,513	$2,411,712	$830,777	$7,178,627	$41,295,629	$87,955
2016	$21,325,520	$13,501,413	$8,837,438		$43,664,371	$32,124,366	$2,496,876	$869,331	$7,636,524	$43,127,097	$537,274
2017	$22,500,442	$14,245,486	$9,324,542		$46,070,470	$34,813,004	$2,585,046	$909,678	$7,319,181	$45,626,909	$443,561
2018	$23,739,977	$15,030,410	$9,838,368		$48,608,755	$36,220,281	$2,676,331	$951,899	$7,230,377	$47,078,888	$1,529,867
2019	$25,047,674	$15,858,423	$10,380,378		$51,286,475	$39,266,022	$2,770,839	$996,083	$6,694,514	$49,727,458	$1,559,017
2020	$25,275,080	$16,003,741	$10,475,905		$51,754,726	$40,849,516	$2,868,684	$1,040,309	$8,155,162	$52,913,672	($1,158,946)
2021	$25,504,434	$16,150,239	$10,572,187		$52,226,860	$44,301,062	$2,969,984	$1,086,501	$10,797,809	$59,155,357	($6,928,497)
2022	$25,735,754	$16,297,926	$10,669,231		$52,702,911	$46,083,992	$3,074,862	$1,134,747	$10,846,393	$61,139,993	($8,437,082)
2023	$25,969,057	$16,446,814	$10,767,044		$53,182,915	$49,996,784	$3,183,443	$1,185,136	$10,901,909	$65,267,273	($12,084,358)
2024	$26,204,362	$16,596,912	$10,865,633		$53,666,907	$52,005,521	$3,295,858	$1,237,766	$11,000,354	$67,539,500	($13,872,593)
2025	$26,441,687	$16,748,233	$10,965,004		$54,154,923	$54,096,281	$3,412,243	$1,292,735	$11,095,498	$69,896,757	($15,741,834)
2026	$26,681,049	$16,900,786	$11,065,165		$54,647,000	$56,266,249	$3,532,738	$1,350,148	$11,283,442	$72,432,577	($17,785,578)
2027	$26,922,467	$17,054,584	$11,166,123		$55,143,173	$58,521,572	$3,657,488	$1,410,114	$10,786,167	$74,375,341	($19,232,168)
2028	$27,165,959	$17,209,636	$11,267,885		$55,643,480	$61,778,456	$3,786,643	$1,472,745	$10,617,349	$77,655,193	($22,011,712)
2029	$27,411,545	$17,365,956	$11,370,458		$56,147,959	$64,522,536	$3,920,359	$1,538,161	$10,494,786	$80,475,842	($24,327,884)
2030	$27,659,242	$17,523,553	$11,473,850		$56,656,645	$67,054,795	$4,058,797	$1,606,485	$12,641,625	$85,361,702	($28,705,056)
2031	$27,909,071	$17,682,439	$11,578,068		$57,169,578	$69,686,695	$4,202,123	$1,677,847	$16,464,668	$92,031,333	($34,861,755)
2032	$28,161,050	$17,842,627	$11,683,119		$57,686,796	$72,426,147	$4,350,510	$1,752,382	$16,426,497	$94,955,536	($37,268,741)
2033	$28,415,198	$18,004,128	$11,789,011		$58,208,336	$75,269,435	$4,504,138	$1,830,232	$16,570,201	$98,174,006	($39,965,669)
Total	$507,437,645	$321,386,816	$210,403,001		$1,039,227,462	$1,015,714,696	$66,088,129	$24,967,012	$209,961,536	$1,316,731,373	($277,503,911)

Footnotes:

[1] Reflects revenue from port operations directly related to cargo based on organic growth with no military buildup.

[2] Non-Cargo revenue includes all revenue not derived from the loading and unloading of freight or leases.

[3] Includes lease revenues, demurrage and administrative fees.

[4] Includes interest income and federal reimbursements.

[5] Summary of columns 2,3,4 and 5.

[6] Includes salary, benefits, insurance and other operating expenditures.

[7] Maintenance and Repair of Port facilities at 1% of total buildings and property.

[8] Maintenance and Repair of Port equipment provided by Sarandipity.

[9] Depreciation and amortization of all PAG assets and loans.

[10] Summary of columns 7, 8, 9 and 10.

[11] Difference between column 6 and column 11.

Schedule A – Income Statement

5-Year Tariff Escalation Assumed to Begin October 1, 2014 Case: Low -- 4.36% followed by 3.95%

1	2	3	4	5	6	7	8	9	10	11	12
	Revenues					Expenses					
Fiscal Year	Cargo Revenues[1]	Non-Cargo Revenues[2]	Commercial Revenue[3]	Other Income[4]	Total Annual Revenues[5]	General and Administrative Expenses[6]	Facilities Maintenance and Repairs[7]	Equipment Maintenance and Repairs[8]	Depreciation & Amortization[9]	Total Annual Expenses[10]	Net Surplus/ (Deficit)[11]
2007	$16,571,356	$8,660,680	$3,682,468	$278,747	$29,193,251	$24,511,186			$2,459,083	$26,970,269	$2,222,982
2008	$16,846,476	$9,080,272	$4,393,372	$450,559	$30,770,679	$26,436,603			$2,640,307	$29,076,910	$1,693,769
2009	$15,834,549	$8,912,237	$5,755,915	$1,191,584	$31,694,285	$25,169,006			$2,742,614	$27,911,620	$3,782,665
2010	$17,691,921	$10,720,121	$7,870,846	$3	$36,282,891	$28,375,783			$2,838,464	$31,214,247	$5,068,644
2011	$16,899,590	$10,644,247	$7,915,971	$738,354	$36,198,162	$29,230,689			$3,223,788	$32,454,477	$3,743,686
2012	$16,680,043	$11,182,864	$7,356,319	$111,409	$35,330,635	$29,055,114			$3,916,254	$32,971,368	$2,359,267
2013	$17,971,051	$12,085,869	$7,809,642		$37,866,562	$28,710,173		$758,729	$4,758,040	$34,226,942	$3,639,620
2014	$19,156,231	$12,127,442	$7,937,923		$39,221,596	$29,557,470	$2,329,453	$793,935	$5,820,451	$38,501,309	$720,288
2015	$20,211,846	$12,796,069	$8,375,670		$41,383,585	$30,874,513	$2,411,712	$830,777	$7,178,627	$41,295,629	$87,955
2016	$21,325,520	$13,501,413	$8,837,438		$43,664,371	$32,124,366	$2,496,876	$869,331	$7,636,524	$43,127,097	$537,274
2017	$22,500,442	$14,245,486	$9,324,542		$46,070,470	$34,813,004	$2,585,046	$909,678	$7,319,181	$45,626,909	$443,561
2018	$23,739,977	$15,030,410	$9,838,368		$48,608,755	$36,220,281	$2,676,331	$951,899	$7,230,377	$47,078,888	$1,529,867
2019	$25,047,674	$15,858,423	$10,380,378		$51,286,475	$39,266,022	$2,770,839	$996,083	$6,694,514	$49,727,458	$1,559,017
2020	$26,273,446	$16,635,889	$10,889,703		$53,799,038	$40,849,516	$2,868,684	$1,040,309	$8,155,162	$52,913,672	$885,366
2021	$27,559,078	$17,451,306	$11,423,885		$56,434,269	$44,301,062	$2,969,984	$1,086,501	$10,797,809	$59,155,357	($2,721,088)
2022	$28,907,489	$18,306,521	$11,984,133		$59,198,143	$46,083,992	$3,074,862	$1,134,747	$10,846,393	$61,139,993	($1,941,850)
2023	$30,321,743	$19,203,472	$12,571,713		$62,096,928	$49,996,784	$3,183,443	$1,185,136	$10,901,909	$65,267,273	($3,170,346)
2024	$31,805,049	$20,144,188	$13,187,956		$65,137,192	$52,005,521	$3,295,858	$1,237,766	$11,000,354	$67,539,500	($2,402,308)
2025	$33,360,774	$21,130,800	$13,834,254		$68,325,829	$54,096,281	$3,412,243	$1,292,735	$11,095,498	$69,896,757	($1,570,929)
2026	$34,992,450	$22,165,542	$14,512,070		$71,670,062	$56,266,249	$3,532,738	$1,350,148	$11,283,442	$72,432,577	($762,516)
2027	$36,703,780	$23,250,755	$15,222,934		$75,177,470	$58,521,572	$3,657,488	$1,410,114	$10,786,167	$74,375,341	$802,129
2028	$38,498,649	$24,388,896	$15,968,453		$78,855,998	$61,778,456	$3,786,643	$1,472,745	$10,617,349	$77,655,193	$1,200,805
2029	$40,381,128	$25,582,538	$16,750,312		$82,713,978	$64,522,536	$3,920,359	$1,538,161	$10,494,786	$80,475,842	$2,238,136
2030	$42,355,490	$26,834,382	$17,570,277		$86,760,148	$67,054,795	$4,058,797	$1,606,485	$12,641,625	$85,361,702	$1,398,447
2031	$44,426,214	$28,147,259	$18,430,198		$91,003,671	$69,686,695	$4,202,123	$1,677,847	$16,464,668	$92,031,333	($1,027,662)
2032	$46,597,998	$29,524,137	$19,332,019		$95,454,154	$72,426,147	$4,350,510	$1,752,382	$16,426,497	$94,955,536	$498,618
2033	$48,875,769	$30,968,131	$20,277,774		$100,121,673	$75,269,435	$4,504,138	$1,830,232	$16,570,201	$98,174,006	$1,947,667
Total	$643,040,746	$407,293,058	$266,649,999		$1,316,983,804	$1,015,714,696	$66,088,129	$24,967,012	$209,961,536	$1,316,731,373	$252,431

Footnotes:

[1] Reflects revenue from port operations directly related to cargo based on organic growth with no military buildup.
[2] Non-Cargo revenue includes all revenue not derived from the loading and unloading of freight or leases.
[3] Includes lease revenues, demurrage and administrative fees.
[4] Includes interest income and federal reimbursements.
[5] Summary of columns 2,3,4 and 5.
[6] Includes salary, benefits, insurance and other operating expenditures.
[7] Maintenance and Repair of Port facilities at 1% of total buildings and property.
[8] Maintenance and Repair of Port equipment provided by Sarandipity.
[9] Depreciation and amortization of all PAG assets and loans.
[10] Summary of columns 7, 8, 9 and 10.
[11] Difference between column 6 and column 11.

Schedule A – Cash Flow

5-Year Tariff Escalation Assumed to Begin October 1, 2014 Case: Low -- No increase

1	2	3	4	5	6	7	8	9	10	11	12
	Revenues					Expenses					
Fiscal Year	Cargo Revenues[1]	Non-Cargo Revenues[2]	Commercial Revenue[3]	Other Income[4]	Total Annual Cash In[5]	General and Administrative Expenses[6]	Facilities Maintenance and Repairs[7]	Equipment Maintenance & Repairs[8]	Capital Expenditures & Debt Service[9]	Total Annual Cash Out[10]	Net Cash Flow[11]
2007	$16,571,356	$8,660,680	$3,682,468	$278,747	$29,193,251	$24,511,186				$24,511,186	$4,682,065
2008	$16,846,476	$9,080,272	$4,393,372	$450,559	$30,770,679	$26,436,603				$26,436,603	$4,334,076
2009	$15,834,549	$8,912,237	$5,755,915	$1,191,584	$31,694,285	$25,169,006				$25,169,006	$6,525,279
2010	$17,691,921	$10,720,121	$7,870,846	$3	$36,282,891	$28,375,783				$28,375,783	$7,907,108
2011	$16,899,590	$10,644,247	$7,915,971	$738,354	$36,198,162	$29,230,689			$359,431	$29,590,120	$6,608,042
2012	$16,680,043	$11,182,864	$7,356,319	$111,409	$35,330,635	$29,055,114			$359,431	$29,414,545	$5,916,090
2013	$17,971,051	$12,085,869	$7,809,642		$37,866,562	$28,710,173		$758,729	$359,431	$29,828,333	$8,038,229
2014	$19,156,231	$12,127,442	$7,937,923		$39,221,596	$29,557,470	$2,329,453	$793,935	$5,948,915	$38,629,773	$591,823
2015	$19,367,426	$12,261,469	$8,025,747		$39,654,642	$30,874,513	$2,411,712	$830,777	$6,581,223	$40,698,225	($1,043,582)
2016	$19,580,847	$12,396,842	$8,114,434		$40,092,124	$32,124,366	$2,496,876	$869,331	$7,030,732	$42,521,305	($2,429,181)
2017	$19,796,519	$12,533,578	$8,203,993		$40,534,091	$34,813,004	$2,585,046	$909,678	$7,885,521	$46,193,249	($5,659,158)
2018	$20,014,466	$12,671,690	$8,294,435		$40,980,591	$36,220,281	$2,676,331	$951,899	$9,567,776	$49,416,287	($8,435,696)
2019	$20,234,713	$12,811,195	$8,385,767		$41,431,675	$39,266,022	$2,770,839	$996,083	$6,611,690	$49,644,634	($8,212,958)
2020	$20,418,423	$12,928,590	$8,462,939		$41,809,951	$40,849,516	$2,868,684	$1,040,309	$6,877,463	$51,635,972	($9,826,021)
2021	$20,603,706	$13,046,938	$8,540,720		$42,191,364	$44,301,062	$2,969,984	$1,086,501	$10,195,154	$58,552,702	($16,361,339)
2022	$20,790,577	$13,166,247	$8,619,117		$42,575,941	$46,083,992	$3,074,862	$1,134,747	$10,115,003	$60,408,604	($17,832,663)
2023	$20,979,051	$13,286,525	$8,698,135		$42,963,711	$49,996,784	$3,183,443	$1,185,136	$10,211,623	$64,576,987	($21,613,276)
2024	$21,169,141	$13,407,782	$8,777,780		$43,354,703	$52,005,521	$3,295,858	$1,237,766	$10,464,974	$67,004,120	($23,649,417)
2025	$21,360,863	$13,530,026	$8,858,056		$43,748,946	$54,096,281	$3,412,243	$1,292,735	$10,613,295	$69,414,554	($25,665,608)
2026	$21,554,231	$13,653,266	$8,938,971		$44,146,469	$56,266,249	$3,532,738	$1,350,148	$11,421,399	$72,570,535	($28,424,066)
2027	$21,749,261	$13,777,511	$9,020,530		$44,547,302	$58,521,572	$3,657,488	$1,410,114	$10,684,405	$74,273,578	($29,726,277)
2028	$21,945,965	$13,902,770	$9,102,738		$44,951,474	$61,778,456	$3,786,643	$1,472,745	$11,833,143	$78,870,987	($33,919,514)
2029	$22,144,361	$14,029,052	$9,185,602		$45,359,015	$64,522,536	$3,920,359	$1,538,161	$11,145,889	$81,126,945	($35,767,929)
2030	$22,344,463	$14,156,367	$9,269,127		$45,769,957	$67,054,795	$4,058,797	$1,606,485	$10,897,296	$83,617,373	($37,847,416)
2031	$22,546,287	$14,284,723	$9,353,319		$46,184,329	$69,686,695	$4,202,123	$1,677,847	$15,220,875	$90,787,540	($44,603,211)
2032	$22,749,847	$14,414,130	$9,438,184		$46,602,162	$72,426,147	$4,350,510	$1,752,382	$16,019,377	$94,548,417	($47,946,255)
2033	$22,955,161	$14,544,598	$9,523,729		$47,023,488	$75,269,435	$4,504,138	$1,830,232	$15,751,079	$97,354,883	($50,331,396)
Total	$421,461,542	$266,930,743	$174,751,245		$863,143,530	$1,015,714,696	$66,088,129	$24,967,012	$205,076,832	$1,311,846,669	-$448,703,139

Footnotes:

[1] Reflects revenue from port operations directly related to cargo based on organic growth with no military buildup.

[2] Non-Cargo revenue includes all revenue not derived from the loading and unloading of freight or leases.

[3] Includes lease revenues, demurrage and administrative fees.

[4] Includes interest income and federal reimbursements.

[5] Summary of columns 2,3,4 and 5.

[6] Includes salary, benefits, insurance and other operating expenditures.

[7] Maintenance and Repair of Port facilities at 1% of total buildings and property.

[8] Maintenance and Repair of Port equipment provided by Sarandipity.

[9] Includes all current and projected future PAG capital expenditures and debt service.

[10] Summary of columns 7, 8, 9 and 10.

[11] Difference between column 6 and column 11.

Schedule A – Cash Flow

5-Year Tariff Escalation Assumed to Begin October 1, 2014 Case: Low -- 4.36% only

1	2	3	4	5	6	7	8	9	10	11	12
	Revenues					Expenses					
Fiscal Year	Cargo Revenues[1]	Non-Cargo Revenues[2]	Commercial Revenue[3]	Other Income[4]	Total Annual Cash In[5]	General and Administrative Expenses[6]	Facilities Maintenance and Repairs[7]	Equipment Maintenance & Repairs[8]	Capital Expenditures & Debt Service[9]	Total Annual Cash Out[10]	Net Cash Flow[11]
2007	$16,571,356	$8,660,680	$3,682,468	$278,747	$29,193,251	$24,511,186				$24,511,186	$4,682,065
2008	$16,846,476	$9,080,272	$4,393,372	$450,559	$30,770,679	$26,436,603				$26,436,603	$4,334,076
2009	$15,834,549	$8,912,237	$5,755,915	$1,191,584	$31,694,285	$25,169,006				$25,169,006	$6,525,279
2010	$17,691,921	$10,720,121	$7,870,846	$3	$36,282,891	$28,375,783				$28,375,783	$7,907,108
2011	$16,899,590	$10,644,247	$7,915,971	$738,354	$36,198,162	$29,230,689			$359,431	$29,590,120	$6,608,042
2012	$16,680,043	$11,182,864	$7,356,319	$111,409	$35,330,635	$29,055,114			$359,431	$29,414,545	$5,916,090
2013	$17,971,051	$12,085,869	$7,809,642		$37,866,562	$28,710,173		$758,729	$359,431	$29,828,333	$8,038,229
2014	$19,156,231	$12,127,442	$7,937,923		$39,221,596	$29,557,470	$2,329,453	$793,935	$5,948,915	$38,629,773	$591,823
2015	$20,211,846	$12,796,069	$8,375,670		$41,383,585	$30,874,513	$2,411,712	$830,777	$6,581,223	$40,698,225	$685,360
2016	$21,325,520	$13,501,413	$8,837,438		$43,664,371	$32,124,366	$2,496,876	$869,331	$7,030,732	$42,521,305	$1,143,066
2017	$22,500,442	$14,245,486	$9,324,542		$46,070,470	$34,813,004	$2,585,046	$909,678	$7,885,521	$46,193,249	($122,779)
2018	$23,739,977	$15,030,410	$9,838,368		$48,608,755	$36,220,281	$2,676,331	$951,899	$9,567,776	$49,416,287	($807,532)
2019	$25,047,674	$15,858,423	$10,380,378		$51,286,475	$39,266,022	$2,770,839	$996,083	$6,611,690	$49,644,634	$1,641,841
2020	$25,275,080	$16,003,741	$10,475,905		$51,754,726	$40,849,516	$2,868,684	$1,040,309	$6,877,463	$51,635,972	$118,754
2021	$25,504,434	$16,150,239	$10,572,187		$52,226,860	$44,301,062	$2,969,984	$1,086,501	$10,195,154	$58,552,702	($6,325,842)
2022	$25,735,754	$16,297,926	$10,669,231		$52,702,911	$46,083,992	$3,074,862	$1,134,747	$10,115,003	$60,408,604	($7,705,692)
2023	$25,969,057	$16,446,814	$10,767,044		$53,182,915	$49,996,784	$3,183,443	$1,185,136	$10,211,623	$64,576,987	($11,394,072)
2024	$26,204,362	$16,596,912	$10,865,633		$53,666,907	$52,005,521	$3,295,858	$1,237,766	$10,464,974	$67,004,120	($13,337,213)
2025	$26,441,687	$16,748,233	$10,965,004		$54,154,923	$54,096,281	$3,412,243	$1,292,735	$10,613,295	$69,414,554	($15,259,631)
2026	$26,681,049	$16,900,786	$11,065,165		$54,647,000	$56,266,249	$3,532,738	$1,350,148	$11,421,399	$72,570,535	($17,923,535)
2027	$26,922,467	$17,054,584	$11,166,123		$55,143,173	$58,521,572	$3,657,488	$1,410,114	$10,684,405	$74,273,578	($19,130,405)
2028	$27,165,959	$17,209,636	$11,267,885		$55,643,480	$61,778,456	$3,786,643	$1,472,745	$11,833,143	$78,870,987	($23,227,507)
2029	$27,411,545	$17,365,956	$11,370,458		$56,147,959	$64,522,536	$3,920,359	$1,538,161	$11,145,889	$81,126,945	($24,978,986)
2030	$27,659,242	$17,523,553	$11,473,850		$56,656,645	$67,054,795	$4,058,797	$1,606,485	$10,897,296	$83,617,373	($26,960,727)
2031	$27,909,071	$17,682,439	$11,578,068		$57,169,578	$69,686,695	$4,202,123	$1,677,847	$15,220,875	$90,787,540	($33,617,961)
2032	$28,161,050	$17,842,627	$11,683,119		$57,686,796	$72,426,147	$4,350,510	$1,752,382	$16,019,377	$94,548,417	($36,861,621)
2033	$28,415,198	$18,004,128	$11,789,011		$58,208,336	$75,269,435	$4,504,138	$1,830,232	$15,751,079	$97,354,883	($39,146,547)
Total	$507,437,645	$321,386,816	$210,403,001		$1,039,227,462	$1,015,714,696	$66,088,129	$24,967,012	$205,076,832	$1,311,846,669	-$272,619,207

Footnotes:

[1] Reflects revenue from port operations directly related to cargo based on organic growth with no military buildup.
[2] Non-Cargo revenue includes all revenue not derived from the loading and unloading of freight or leases.
[3] Includes lease revenues, demurrage and administrative fees.
[4] Includes interest income and federal reimbursements.
[5] Summary of columns 2,3,4 and 5.
[6] Includes salary, benefits, insurance and other operating expenditures.
[7] Maintenance and Repair of Port facilities at 1% of total buildings and property.
[8] Maintenance and Repair of Port equipment provided by Sarandipity.
[9] Includes all current and projected future PAG capital expenditures and debt service.
[10] Summary of columns 7, 8, 9 and 10.
[11] Difference between column 6 and column 11.

Schedule A – Cash Flow

5-Year Tariff Escalation Assumed to Begin October 1, 2014 Case: Low -- 4.36% followed by 3.95%

1	2	3	4	5	6	7	8	9	10	11	12
	Revenues					Expenses					
Fiscal Year	Cargo Revenues[1]	Non-Cargo Revenues[2]	Commercial Revenue[3]	Other Income[4]	Total Annual Cash In[5]	General and Administrative Expenses[6]	Facilities Maintenance and Repairs[7]	Equipment Maintenance & Repairs[8]	Capital Expenditures & Debt Service[9]	Total Annual Cash Out[10]	Net Cash Flow[11]
2007	$16,571,356	$8,660,680	$3,682,468	$278,747	$29,193,251	$24,511,186				$24,511,186	$4,682,065
2008	$16,846,476	$9,080,272	$4,393,372	$450,559	$30,770,679	$26,436,603				$26,436,603	$4,334,076
2009	$15,834,549	$8,912,237	$5,755,915	$1,191,584	$31,694,285	$25,169,006				$25,169,006	$6,525,279
2010	$17,691,921	$10,720,121	$7,870,846	$3	$36,282,891	$28,375,783				$28,375,783	$7,907,108
2011	$16,899,590	$10,644,247	$7,915,971	$738,354	$36,198,162	$29,230,689			$359,431	$29,590,120	$6,608,042
2012	$16,680,043	$11,182,864	$7,356,319	$111,409	$35,330,635	$29,055,114			$359,431	$29,414,545	$5,916,090
2013	$17,971,051	$12,085,869	$7,809,642		$37,866,562	$28,710,173		$758,729	$359,431	$29,828,333	$8,038,229
2014	$19,156,231	$12,127,442	$7,937,923		$39,221,596	$29,557,470	$2,329,453	$793,935	$5,948,915	$38,629,773	$591,823
2015	$20,211,846	$12,796,069	$8,375,670		$41,383,585	$30,874,513	$2,411,712	$830,777	$6,581,223	$40,698,225	$685,360
2016	$21,325,520	$13,501,413	$8,837,438		$43,664,371	$32,124,366	$2,496,876	$869,331	$7,030,732	$42,521,305	$1,143,066
2017	$22,500,442	$14,245,486	$9,324,542		$46,070,470	$34,813,004	$2,585,046	$909,678	$7,885,521	$46,193,249	($122,779)
2018	$23,739,977	$15,030,410	$9,838,368		$48,608,755	$36,220,281	$2,676,331	$951,899	$9,567,776	$49,416,287	($807,532)
2019	$25,047,674	$15,858,423	$10,380,378		$51,286,475	$39,266,022	$2,770,839	$996,083	$6,611,690	$49,644,634	$1,641,841
2020	$26,273,446	$16,635,889	$10,889,703		$53,799,038	$40,849,516	$2,868,684	$1,040,309	$6,877,463	$51,635,972	$2,163,065
2021	$27,559,078	$17,451,306	$11,423,885		$56,434,269	$44,301,062	$2,969,984	$1,086,501	$10,195,154	$58,552,702	($2,118,433)
2022	$28,907,489	$18,306,521	$11,984,133		$59,198,143	$46,083,992	$3,074,862	$1,134,747	$10,115,003	$60,408,604	($1,210,460)
2023	$30,321,743	$19,203,472	$12,571,713		$62,096,928	$49,996,784	$3,183,443	$1,185,136	$10,211,623	$64,576,987	($2,480,059)
2024	$31,805,049	$20,144,188	$13,187,956		$65,137,192	$52,005,521	$3,295,858	$1,237,766	$10,464,974	$67,004,120	($1,866,928)
2025	$33,360,774	$21,130,800	$13,834,254		$68,325,829	$54,096,281	$3,412,243	$1,292,735	$10,613,295	$69,414,554	($1,088,726)
2026	$34,992,450	$22,165,542	$14,512,070		$71,670,062	$56,266,249	$3,532,738	$1,350,148	$11,421,399	$72,570,535	($900,473)
2027	$36,703,780	$23,250,755	$15,222,934		$75,177,470	$58,521,572	$3,657,488	$1,410,114	$10,684,405	$74,273,578	$903,891
2028	$38,498,649	$24,388,896	$15,968,453		$78,855,998	$61,778,456	$3,786,643	$1,472,745	$11,833,143	$78,870,987	($14,990)
2029	$40,381,128	$25,582,538	$16,750,312		$82,713,978	$64,522,536	$3,920,359	$1,538,161	$11,145,889	$81,126,945	$1,587,033
2030	$42,355,490	$26,834,382	$17,570,277		$86,760,148	$67,054,795	$4,058,797	$1,606,485	$10,897,296	$83,617,373	$3,142,776
2031	$44,426,214	$28,147,259	$18,430,198		$91,003,671	$69,686,695	$4,202,123	$1,677,847	$15,220,875	$90,787,540	$216,131
2032	$46,597,998	$29,524,137	$19,332,019		$95,454,154	$72,426,147	$4,350,510	$1,752,382	$16,019,377	$94,548,417	$905,738
2033	$48,875,769	$30,968,131	$20,277,774		$100,121,673	$75,269,435	$4,504,138	$1,830,232	$15,751,079	$97,354,883	$2,766,790
Total	$643,040,746	$407,293,058	$266,649,999		$1,316,983,804	$1,015,714,696	$66,088,129	$24,967,012	$205,076,832	$1,311,846,669	$5,137,135

Footnotes:

[1] Reflects revenue from port operations directly related to cargo based on organic growth with no military buildup.

[2] Non-Cargo revenue includes all revenue not derived from the loading and unloading of freight or leases.

[3] Includes lease revenues, demurrage and administrative fees.

[4] Includes interest income and federal reimbursements.

[5] Summary of columns 2,3,4 and 5.

[6] Includes salary, benefits, insurance and other operating expenditures.

[7] Maintenance and Repair of Port facilities at 1% of total buildings and property.

[8] Maintenance and Repair of Port equipment provided by Sarandipity.

[9] Includes all current and projected future PAG capital expenditures and debt service.

[10] Summary of columns 7, 8, 9 and 10.

[11] Difference between column 6 and column 11.

Schedule B – Revenue Projections

Port Authority of Guam Revenue Projections — FY 2014-33

1	2	3	4	5	6
				Revenues	
Fiscal Year	Containers[1]	Breakbulk Tons[2]	Estimated Revenue Tons[3]	Revenue without 5-Year Tariff Increase[4]	Revenue with 5-Year Tariff Increase[5]
2007	99,620	141,098	2,068,775	$29,193,251	$29,193,251
2008	99,908	126,521	2,059,819	$30,770,679	$30,770,679
2009	94,073	125,192	1,885,903	$31,694,285	$31,694,285
2010	96,952	186,523	1,600,950	$36,282,891	$36,282,891
2011	96,065	125,987	1,498,034	$36,198,162	$36,198,162
2012	92,747	167,673	1,568,468	$35,330,635	$35,330,635
2013	93,767	170,000	1,757,525	$38,677,206	$38,677,206
2014	94,799	172,000	1,690,860	$39,866,375	$39,866,375
2015	95,841	174,000	1,709,568	$40,306,527	$42,063,892
2016	96,896	176,000	1,728,459	$40,751,190	$44,382,161
2017	97,962	178,000	1,747,536	$41,200,415	$46,827,805
2018	99,039	180,000	1,766,801	$41,654,250	$49,407,810
2019	100,129	182,000	1,786,256	$42,112,747	$52,129,544
2020	101,030	184,000	1,802,694	$42,497,198	$52,605,439
2021	101,939	186,000	1,819,262	$42,884,839	$53,085,283
2022	102,856	188,000	1,835,962	$43,275,698	$53,569,110
2023	103,782	190,000	1,852,793	$43,669,805	$54,056,958
2024	104,716	192,000	1,869,758	$44,067,188	$54,548,861
2025	105,659	194,000	1,886,858	$44,467,877	$55,044,857
2026	106,610	196,000	1,904,094	$44,871,903	$55,544,983
2027	107,569	198,000	1,921,467	$45,279,294	$56,049,275
2028	108,537	200,000	1,938,978	$45,690,081	$56,557,771
2029	109,514	202,000	1,956,629	$46,104,296	$57,070,509
2030	110,500	204,000	1,974,420	$46,521,967	$57,587,526
2031	111,494	206,000	1,992,354	$46,943,128	$58,108,863
2032	112,498	208,000	2,010,431	$47,367,809	$58,634,557
2033	113,510	210,000	2,028,653	$47,796,041	$59,164,647
Total	2,084,878	3,820,000	37,223,834	$877,328,628	$1,056,306,224

Footnotes:

[1] Historical and projected container counts, based on 2013 Master Plan Update

[2] Historical and projected breakbulk tons, based on 2013 Master Plan Update

[3] Projected container and breakbulk revenue tons, uses average container weight for FY 2012 and 2013

[4] Projected revenues with no tariff increase

[5] Projected revenues with 5-year tariff increase of 4.38% per year, no increase thereafter

Schedule C – Operating Expenses

Port Authority of Guam Operating Expense Projections — FY 2014-33

1	2	3	4	5	6	7	8
				Labor			
Fiscal Year	General Operating Expenses (Excluding Labor)	Facilities Maintenance and Repairs	Equipment Maintenance and Repairs	Salaries & Wages - Regular	Salaries & Wages - Overtime	Pension and Other Benefits	Total Operating Expenses
2007	$8,611,122			$10,861,454		$5,038,610	$24,511,186
2008	$9,912,259			$11,391,963		$5,132,381	$26,436,603
2009	$8,531,254			$11,219,009		$5,418,743	$25,169,006
2010	$9,671,668			$13,111,083		$5,593,032	$28,375,783
2011	$8,202,580			$14,558,535		$6,469,574	$29,230,689
2012	$7,359,359			$14,972,739		$6,723,016	$29,055,114
2013	$6,874,959		$758,729	$14,521,455	$532,000	$6,781,759	$29,468,902
2014	$6,845,830	$2,329,453	$793,935	$15,102,313	$555,360	$7,053,967	$32,680,858
2015	$7,130,869	$2,411,712	$830,777	$15,858,449	$510,700	$7,374,495	$34,117,002
2016	$7,425,818	$2,496,876	$869,331	$16,492,787	$534,685	$7,671,077	$35,490,573
2017	$7,733,096	$2,585,046	$909,678	$18,077,936	$591,273	$8,410,699	$38,307,728
2018	$8,049,336	$2,676,331	$951,899	$18,801,054	$620,329	$8,749,562	$39,848,511
2019	$8,378,925	$2,770,839	$996,083	$20,608,055	$685,876	$9,593,167	$43,032,944
2020	$8,717,996	$2,868,684	$1,040,309	$21,432,377	$719,473	$9,979,670	$44,758,510
2021	$9,071,530	$2,969,984	$1,086,501	$23,492,279	$795,378	$10,941,876	$48,357,548
2022	$9,435,089	$3,074,862	$1,134,747	$24,431,970	$834,218	$11,382,716	$50,293,601
2023	$9,814,324	$3,183,443	$1,185,136	$26,780,167	$922,096	$12,480,197	$54,365,364
2024	$10,204,146	$3,295,858	$1,237,766	$27,851,374	$966,988	$12,983,012	$56,539,146
2025	$10,607,750	$3,412,243	$1,292,735	$28,965,429	$1,016,078	$13,507,023	$58,801,259
2026	$11,025,613	$3,532,738	$1,350,148	$30,124,046	$1,065,383	$14,051,206	$61,149,136
2027	$11,458,245	$3,657,488	$1,410,114	$31,329,008	$1,117,007	$14,617,313	$63,589,174
2028	$12,819,007	$3,786,643	$1,472,745	$32,582,168	$1,171,055	$15,206,226	$67,037,844
2029	$13,587,043	$3,920,359	$1,538,161	$33,885,455	$1,230,077	$15,819,962	$69,981,056
2030	$14,067,184	$4,058,797	$1,606,485	$35,240,873	$1,289,413	$16,457,325	$72,720,076
2031	$14,564,294	$4,202,123	$1,677,847	$36,650,508	$1,351,527	$17,120,366	$75,566,665
2032	$15,078,978	$4,350,510	$1,752,382	$38,116,529	$1,419,288	$17,811,352	$78,529,039
2033	$15,611,847	$4,504,138	$1,830,232	$39,641,190	$1,487,458	$18,528,941	$81,603,805
Total	$211,626,917	$66,088,129	$24,967,012	$535,463,966	$18,883,662	$249,740,151	$1,106,769,837

Schedule D – Debt Service

Port Authority of Guam Debt Service Projections — FY 2014-33

1	2	3	4	5	6	7	8
	General Fund					Crane Surcharge Subaccount	
Fiscal Year	Yard Equipment Loan (2010)	SLE Loan	Yard Equipment Loan (2014)	GO Bond Series A	GO Bond Series B	POLA Crane Loan Debt Service	Total Debt Service Obligations
2007							
2008							
2009							
2010							
2011	$359,431						$359,431
2012	$359,431						$359,431
2013	$359,431					$912,841	$1,272,272
2014	$359,431					$1,217,121	$1,576,552
2015	$359,431	$1,029,628	$358,270			$1,217,121	$2,964,450
2016	$359,431	$1,029,628	$358,270			$1,217,121	$2,964,450
2017	$359,431	$1,029,628	$358,270			$1,217,121	$2,964,450
2018	$359,431	$1,029,628	$358,270			$1,217,121	$2,964,450
2019	$359,431	$1,029,628	$358,270			$1,217,121	$2,964,450
2020	$359,431	$1,029,628	$358,270			$1,217,121	$2,964,450
2021	$359,431	$1,029,628	$358,270	$3,233,853		$1,217,121	$6,198,303
2022	$359,431	$1,029,628		$3,233,853		$1,217,121	$5,840,033
2023	$359,431	$1,029,628		$3,233,853		$1,217,121	$5,840,033
2024	$359,431	$1,029,628		$3,233,853		$1,217,121	$5,840,033
2025	$359,431	$1,029,628		$3,233,853		$1,217,121	$5,840,033
2026		$1,029,628		$3,233,853		$1,217,121	$5,480,602
2027		$1,029,628		$3,233,853		$1,217,121	$5,480,602
2028		$1,029,628		$3,233,853		$304,280	$4,567,761
2029		$1,029,628		$3,233,853			$4,263,481
2030				$3,233,853			$3,233,853
2031				$3,233,853	$4,609,961		$7,843,814
2032				$3,233,853	$4,609,961		$7,843,814
2033				$3,233,853	$4,609,961		$7,843,814
Total	$4,313,169	$15,444,415	$2,507,890	$42,040,093	$13,829,883	$17,343,981	$95,479,432

Schedule F – Working Capital

Working Capital Projections

1	2	3
Fiscal Year	Annual Cash Flow	Net Working Capital
2012	NA	$11,749,920
2013	$3,280,189	$15,030,109
2014	$591,823	$15,621,933
2015	$685,360	$16,307,293
2016	$1,143,066	$17,450,358
2017	($122,779)	$17,327,579
2018	($807,532)	$16,520,047
2019	$1,641,841	$18,161,888
2020	$2,163,065	$20,324,954
2021	($2,118,433)	$18,206,520
2022	($1,210,460)	$16,996,060
2023	($2,480,059)	$14,516,001
2024	($1,866,928)	$12,649,073
2025	($1,088,726)	$11,560,348
2026	($900,473)	$10,659,875
2027	$903,891	$11,563,766
2028	($14,990)	$11,548,776
2029	$1,587,033	$13,135,810
2030	$3,142,776	$16,278,585
2031	$216,131	$16,494,717
2032	$905,738	$17,400,454
2033	$2,766,790	$20,167,244
Total	$5,137,135	NA

Schedule J – Tariff Revisions

PORT AUTHORITY OF GUAM
TARIFF RATE TABLE

CHARGE DESCRIPTION	2014 Rate	Proposed 2015 Adj.	Proposed 2015 Rate	Proposed 2016 Adj.	Proposed 2016 Rate	Proposed 2017 Adj.	Proposed 2017 Rate	Proposed 2018 Adj.	Proposed 2018 Rate	Proposed 2019 Adj.	Proposed 2019 Rate
STEVEDORE & HANDLING RATE FOR DRY CONTAINERS											
GROUNDED IMPORT/EXPORT/REHANDLE/EMPTY CONTAINER STUFF - HANDLING	137.92	4.36%	143.93	4.36%	150.21	4.36%	156.76	4.36%	163.59	4.36%	170.72
GROUNDED IMPORT/EXPORT/REHANDLE/EMPTY CONTAINER STUFF - STEVEDORE	117.80	4.36%	122.94	4.36%	128.30	4.36%	133.89	4.36%	139.73	4.36%	145.82
TOTAL	**255.72**		**266.87**		**278.51**		**290.65**		**303.32**		**316.54**
STEVEDORE & HANDLING RATE FOR REFRIGERATED CONTAINERS											
GROUNDED IMPORT/EXPORT/REHANDLE/EMPTY CONTAINER STUFF - HANDLING	242.30	4.36%	252.86	4.36%	263.88	4.36%	275.39	4.36%	287.40	4.36%	299.93
GROUNDED IMPORT/EXPORT/REHANDLE/EMPTY CONTAINER STUFF - STEVEDORE	117.80	4.36%	122.94	4.36%	128.30	4.36%	133.89	4.36%	139.73	4.36%	145.82
TOTAL	**360.10**		**375.80**		**392.18**		**409.28**		**427.13**		**445.75**
BREAKBULK & LIFT OFF/ON VEHICLES											
BREAKBULK IMPORT/EXPORT - HANDLING	9.43	4.36%	9.84	4.36%	10.27	4.36%	10.72	4.36%	11.19	4.36%	11.68
BREAKBULK IMPORT/EXPORT - STEVEDORING	15.59	4.36%	16.27	4.36%	16.98	4.36%	17.72	4.36%	18.49	4.36%	19.30
TOTAL	**25.02**		**26.11**		**27.25**		**28.44**		**29.68**		**30.98**
UNITIZED											
UNITIZED CARGO IMPORT/EXPORT - STEVEDORE	6.34	4.36%	6.62	4.36%	6.91	4.36%	7.21	4.36%	7.52	4.36%	7.85
UNITIZED CARGO IMPORT/EXPORT - HANDLING	7.86	4.36%	8.20	4.36%	8.56	4.36%	8.93	4.36%	9.32	4.36%	9.73
TOTAL	**14.20**		**14.82**		**15.47**		**16.14**		**16.84**		**17.58**
RO/RO											
RO/RO IMPORT/EXPORT/TRANSHIPMENT - HANDLING	28.05	4.36%	29.27	4.36%	30.55	4.36%	31.88	4.36%	33.27	4.36%	34.72
RO/RO IMPORT/EXPORT/TRANSHIPMENT - STEVEDORING	11.22	4.36%	11.71	4.36%	12.22	4.36%	12.75	4.36%	13.31	4.36%	13.89
TOTAL	**39.27**		**40.98**		**42.77**		**44.63**		**46.58**		**48.61**
RO/RO VEHICLE (VEHICLE OVER 6,000 LBS)											
RO/RO VEHICLE IMPORT/EXPORT/TRANSHIPMENT - HANDLING	7.86	4.36%	8.20	4.36%	8.56	4.36%	8.93	4.36%	9.32	4.36%	9.73
RO/RO VEHICLE IMPORT/EXPORT/TRANSHIPMENT - STEVEDORE	6.34	4.36%	6.62	4.36%	6.91	4.36%	7.21	4.36%	7.52	4.36%	7.85
TOTAL	**14.20**		**14.82**		**15.47**		**16.14**		**16.84**		**17.58**
DEVANNING/STUFFING AUTO SPECIAL RATE											
DEVANNING	168.29	4.36%	175.63	4.36%	183.29	4.36%	191.28	4.36%	199.62	4.36%	208.32
STUFFING	168.29	4.36%	175.63	4.36%	183.29	4.36%	191.28	4.36%	199.62	4.36%	208.32
HEAVYLIFT											
HEAVYLIFT REGULAR IMPORT/EXPORT/TRANSHIPMENT - HANDLING	2.35	4.36%	2.45	4.36%	2.56	4.36%	2.67	4.36%	2.79	4.36%	2.91
HEAVYLIFT REGULAR IMPORT/EXPORT/TRANSHIPMENT - STEVEDORE	2.35	4.36%	2.45	4.36%	2.56	4.36%	2.67	4.36%	2.79	4.36%	2.91
TOTAL	**4.70**		**4.90**		**5.12**		**5.34**		**5.58**		**5.82**
LONGLENGTH											
LONGLENGTH IMP/EXP > 45'& =< 50'	18.28	4.36%	19.08	4.36%	19.91	4.36%	20.78	4.36%	21.69	4.36%	22.64
LONGLENGTH IMP/EXP > 50'& =< 60'	42.80	4.36%	44.67	4.36%	46.62	4.36%	48.65	4.36%	50.77	4.36%	52.98
LONGLENGTH IMP/EXP > 60'& =< 70'	55.13	4.36%	57.53	4.36%	60.04	4.36%	62.66	4.36%	65.39	4.36%	68.24
OVER 70 FEET, FOR EACH 10 FEET OR FRACTION THEREOF	11.39	4.36%	11.89	4.36%	12.41	4.36%	12.95	4.36%	13.51	4.36%	14.10
TRANSHIPMENT STUFF (20',40'&45') 1ST CARRIER - SCALE											
IMPORT CONT TRANSHIPMENT STUFF LESS THAN 10 CONTAINERS	233.89	4.36%	244.09	4.36%	254.73	4.36%	265.84	4.36%	277.43	4.36%	289.53
IMPORT EMPTY TRANSHIP FR-2ND CARR (20',40'&45')	112.19	4.36%	117.08	4.36%	122.18	4.36%	127.51	4.36%	133.07	4.36%	138.87
IMPORT EMPTY TRANSHIP FR-2ND CARR (20',40'&45') - DOMESTIC	157.07	4.36%	163.92	4.36%	171.07	4.36%	178.53	4.36%	186.31	4.36%	194.43
OVERSTOW CONTAINER (20',40'&45')											
IMPORT/EXPORT OVERSTOW CONTAINER (20',40'&45')	56.10	4.36%	58.55	4.36%	61.10	4.36%	63.76	4.36%	66.54	4.36%	69.44
SHIFTED CONTAINER (20',40'&45')											
IMPORT/EXPORT SHIFT CONTAINER (20',40'&45')	66.94	4.36%	69.86	4.36%	72.91	4.36%	76.09	4.36%	79.41	4.36%	82.87
REHANDLE CONTAINER	77.80	4.36%	81.19	4.36%	84.73	4.36%	88.42	4.36%	92.28	4.36%	96.30
REHANDLE, OVERSTOW, OR SHIFTED HAZMAT CONTAINERS	77.80	4.36%	81.19	4.36%	84.73	4.36%	88.42	4.36%	92.28	4.36%	96.30
REHANDLE, OVERSTOW, OR SHIFTED REEFER CONTAINERS	88.64	4.36%	92.50	4.36%	96.53	4.36%	100.74	4.36%	105.13	4.36%	109.71
SPECIAL RIGGING (20',40'&45')	0		-		-		-		-		-
IMPORT/EXPORT ALL SPECIAL RIGING OF CNTR	39.27	4.36%	40.98	4.36%	42.77	4.36%	44.63	4.36%	46.58	4.36%	48.61
WHARFAGE RATES											
WHARFAGE EMPTY CONT IMPORT <25 (20' CONTAINER)	2.92	4.36%	3.05	4.36%	3.18	4.36%	3.32	4.36%	3.46	4.36%	3.61
WHARFAGE EMPTY CONT IMPORT >25 (40' & 45' CONTAINER)	3.93	4.36%	4.10	4.36%	4.28	4.36%	4.47	4.36%	4.66	4.36%	4.86
WHARFAGE TRANSHIPMENT TUNA	3.93	4.36%	4.10	4.36%	4.28	4.36%	4.47	4.36%	4.66	4.36%	4.86
WHARFAGE BREAKBULK IMPORT	3.93	4.36%	4.10	4.36%	4.28	4.36%	4.47	4.36%	4.66	4.36%	4.86
WHARFAGE BREAKBULK EXPORT/ALL OTHER CARGO	1.96	4.36%	2.05	4.36%	2.14	4.36%	2.23	4.36%	2.33	4.36%	2.43
WHARFAGE EXPORT CONTAINER STUFF (20' CONTAINER)	36.57	4.36%	38.16	0.00%	38.16	0.00%	38.16	0.00%	38.16	0.00%	38.16
WHARFAGE EXPORT CONTAINER STUFF (40' & 45' CONTAINER)	62.27	4.36%	64.98	4.36%	67.81	4.36%	70.77	4.36%	73.86	4.36%	77.08
WHARFAGE IMPORT CONTAINER STUFF (20' CONTAINER)	70.23	4.36%	73.29	4.36%	76.49	4.36%	79.82	4.36%	83.30	4.36%	86.93
WHARFAGE IMPORT CONTAINER STUFF (40' & 45' CONTAINER)	120.61	4.36%	125.87	4.36%	131.36	4.36%	137.09	4.36%	143.07	4.36%	149.31
WHARFAGE RATES-TRANSSHIPMENT OF OTHER CARGO UTILIZING PIPELINES AND /OR HOSES											
BUNKERING/FUEL THROUGHPUT/WASTE OIL											
IMPORT THROUGHPUT	0.52	4.36%	0.54	4.36%	0.56	4.36%	0.58	4.36%	0.61	4.36%	0.64
EXPORT THROUGHPUT	0.25	4.36%	0.26	4.36%	0.27	4.36%	0.28	4.36%	0.29	4.36%	0.30
FROM TRUCK TO VESSEL WHEN SERVICED AT PORT PIERS	0.52	4.36%	0.54	4.36%	0.56	4.36%	0.58	4.36%	0.61	4.36%	0.64
DIRECT TO OR FROM VESSEL THRU PRIVATELY OWNED PIPELINE LOCATED ON PORT PROPERTY	0.46	4.36%	0.48	4.36%	0.50	4.36%	0.52	4.36%	0.54	4.36%	0.56
VESSEL TO VESSEL	0.52	4.36%	0.54	4.36%	0.56	4.36%	0.58	4.36%	0.61	4.36%	0.64
FUEL STORAGE	1.30	4.36%	1.36	4.36%	1.42	4.36%	1.48	4.36%	1.54	4.36%	1.61
BUNKERING	0.69	4.36%	0.72	4.36%	0.75	4.36%	0.78	4.36%	0.81	4.36%	0.85

CHARGE DESCRIPTION	2014 Rate	Proposed 2015 Adj.	Proposed 2015 Rate	Proposed 2016 Adj.	Proposed 2016 Rate	Proposed 2017 Adj.	Proposed 2017 Rate	Proposed 2018 Adj.	Proposed 2018 Rate	Proposed 2019 Adj.	Proposed 2019 Rate
MARITIME SECURITY FEE											
MARITIME SEC. BUNKERING	0.10	4.36%	0.10	4.36%	0.10	4.36%	0.10	4.36%	0.10	4.36%	0.10
MARITIME SEC. FEE STUFFED IMPORT/EXPORT	0.02	4.36%	0.02	4.36%	0.02	4.36%	0.02	4.36%	0.02	4.36%	0.02
MARITIME SEC. EMPTY CONTAINER	0.53	4.36%	0.55	4.36%	0.57	4.36%	0.59	4.36%	0.62	4.36%	0.65
MARITIME SEC. PASSENGER VESSEL - crew members (one time charge	1.12	4.36%	1.17	4.36%	1.21	4.36%	1.27	4.36%	1.33	4.36%	1.39
MARITIME SEC. FEE RO/RO	1.12	4.36%	1.17	4.36%	1.21	4.36%	1.27	4.36%	1.33	4.36%	1.39
MARITIME SEC. SAND/SCRAP/AGGRE	0.02	4.36%	0.02	4.36%	0.02	4.36%	0.02	4.36%	0.02	4.36%	0.02
MARITIME SEC. VESSEL DOCKAGE											
FACILITY MAINTENANCE CHARGE											
FACILITY MAINTENANCE CHARGE (IMP/EXP/TS IMPORT)	17.13	4.36%	17.88	4.36%	18.54	4.36%	19.63	4.36%	20.17	4.36%	21.07
FACILITY MAINTENANCE CHARGE (IMP/EXP/TS IMPORT)	1.46	4.36%	1.52	4.36%	1.58	4.36%	1.68	4.36%	1.73	4.36%	1.81
DEMURRAGE											
DEMURRAGE- GREATER THAN 20' (40' & 45')	47.11	4.36%	49.16	4.36%	51.30	4.36%	54.54	4.36%	56.07	4.36%	58.51
DEMURRAGE CONTAINER EMPTY	7.86	4.36%	8.20	4.36%	8.56	4.36%	9.03	4.36%	9.32	4.36%	9.73
OUTSIDE WAREHOUSE DEMURRAGE BREAKBULK	11.22	4.36%	11.71	4.36%	12.22	4.36%	12.95	4.36%	13.31	4.36%	13.89
INSIDE WAREHOUSE DEMURRAGE BREAKBULK	16.13	4.36%	17.56	4.36%	18.33	4.36%	19.13	4.36%	19.96	4.36%	20.83
REFRIGERATED CT DEMURRAGE (DAY 1-4)	78.12	4.36%	81.66	4.36%	85.62	4.36%	88.26	4.36%	92.14	4.36%	97.30
DEMURRAGE 20' CONTAINER	23.56	4.36%	24.59	4.36%	25.66	4.36%	26.78	4.36%	27.95	4.36%	29.17
RUBBER TIRED STORAGE	15.56	4.36%	16.24	4.36%	17.05	4.36%	17.79	4.36%	18.57	4.36%	19.38
REISSUE OF EMPTIES											
GROUNDED EMPTY CT DEMURRAGE	56.10	4.36%	58.55	4.36%	61.10	4.36%	63.76	4.36%	66.56	4.36%	69.44
OTHER RATES											
CLAIMS FEE											
BULK SCRAP METAL	14.02	4.36%	14.63	4.36%	15.27	4.36%	15.94	4.36%	16.63	4.36%	17.36
PASSENGER FEE ARRIVAL OR DEPARTURE	3.93	4.36%	4.10	4.36%	4.28	4.36%	4.47	4.36%	4.66	4.36%	4.86
PER TRIP POWER SURCHARGE	59.97	4.36%	62.59	4.36%	65.32	4.36%	68.17	4.36%	71.14	4.36%	74.24
LOOK - LINE HANDLING R/T 8 MEN charged to O/T up to 600 ft LOA	504.38	4.36%	526.39	4.36%	549.36	4.36%	573.33	4.36%	598.35	4.36%	624.46
LOOK - LINE HANDLING R/T 8 MEN charged to O/T over 600 ft LOA	673.15	4.36%	702.50	4.36%	733.13	4.36%	765.09	4.36%	798.45	4.36%	833.26
LOOK - LINE HANDLING S/T 8 MEN charged to S/T up to 600 ft LOA	326.38	4.36%	340.61	4.36%	355.46	4.36%	370.96	4.36%	387.14	4.36%	404.02
LOOK - LINE HANDLING S/T 8 MEN charged to S/T over 600 ft LOA	448.77	4.36%	468.34	4.36%	488.76	4.36%	510.07	4.36%	532.31	4.36%	555.52
Out of Gauge Cargo (OOG)	52.19	4.36%	54.47	4.36%	56.84	4.36%	59.32	4.36%	61.91	4.36%	64.61
Unplug/Plug Refrigerated Containers	7.33	4.36%	8.17	4.36%	8.52	4.36%	8.89	4.36%	9.29	4.36%	9.70
CHASSIS CHANGE	33.35	4.36%	35.12	4.36%	36.65	4.36%	38.25	4.36%	39.92	4.36%	41.66
WATER CONNECT/DISCONNECT HOSE	89.75	4.36%	93.66	4.36%	97.74	4.36%	102.00	4.36%	106.45	4.36%	111.09
WATER CONNECT/DISCONNECT REGULAR	39.27	4.36%	40.98	4.36%	42.77	4.36%	44.63	4.36%	46.58	4.36%	48.61
REGULAR WATER CHARGE	17.12	4.36%	17.87	4.36%	18.65	4.36%	19.46	4.36%	20.31	4.36%	21.20
PORT ENTRY FEE - For vessels of 1,000 gross tons and under - For vessels between 1,001 to 2,000 gross tons - For vessels over 2,000 gross tons $63.72 plus an additional charge per each 2,000 gross tons or fraction thereof in excess of 1,000 gross tons	28.05	4.36%	29.27	4.36%	30.55	4.36%	31.88	4.36%	33.27	4.36%	34.72
	57.91	4.36%	60.43	4.36%	63.07	4.36%	65.82	4.36%	68.69	4.36%	71.69
	42.53	4.36%	44.39	4.36%	46.33	4.36%	48.35	4.36%	50.46	4.36%	52.66
EQUIPMENT RENTAL		4.36%		4.36%		4.36%		4.36%		4.36%	
Battery Charger	17.95	4.36%	18.73	4.36%	19.55	4.36%	20.40	4.36%	21.29	4.36%	22.22
Comparator	29.66	4.36%	30.97	4.36%	32.33	4.36%	33.74	4.36%	35.21	4.36%	36.74
Crane, Gantry, Heavy Lifts	442.13	4.36%	461.30	4.36%	481.41	4.36%	502.40	4.36%	524.30	4.36%	547.16
Flatbed Truck											
Forklift, rated capacity 20,000 lbs but less than	56.10	4.36%	58.55	4.36%	61.10	4.36%	63.76	4.36%	66.54	4.36%	69.44
Forklift, rated capacity 40,000 lbs or greater	69.33	4.36%	65.57	4.36%	68.43	4.36%	71.41	4.36%	74.52	4.36%	77.77
Forklift, rated capacity below 26,000 lbs	33.56	4.36%	35.13	4.36%	36.66	4.36%	38.26	4.36%	39.93	4.36%	41.67
Grove Crane (lifts less than 15 tons)											
Import Vehicles											
Light Plants											
Man lift	53.19	4.36%	54.47	4.36%	56.84	4.36%	59.32	4.36%	61.91	4.36%	64.61
Pick-up Truck, 3/4 ton capacity or less	22.44	4.36%	23.42	4.36%	24.44	4.36%	25.51	4.36%	26.62	4.36%	27.78
Side Lifter	39.27	4.36%	40.98	4.36%	42.75	4.36%	44.63	4.36%	46.58	4.36%	48.61
Top Lifter	67.52	4.36%	70.28	4.36%	73.52	4.36%	76.52	4.36%	79.86	4.36%	83.34
Tractor	38.14	4.36%	39.80	4.36%	41.54	4.36%	43.35	4.36%	45.24	4.36%	47.21
Welding Machine	38.14	4.36%	39.80	4.36%	41.54	4.36%	43.35	4.36%	45.24	4.36%	47.21
DIRECT LABOR											
STRAIGHT TIME											
Account Executive	35.27	4.36%	36.81	4.36%	38.41	4.36%	40.08	4.36%	41.83	4.36%	43.65
Auto Mechanics	44.32	4.36%	46.25	4.36%	48.26	4.36%	50.36	4.36%	52.55	4.36%	54.84
Cargo checkers	44.35	4.36%	46.60	4.36%	48.62	4.36%	50.75	4.36%	52.99	4.36%	55.27
Carpenters	35.15	4.36%	36.58	4.36%	38.13	4.36%	39.83	4.36%	41.57	4.36%	43.38
Clerks	28.47	4.36%	29.71	4.36%	31.01	4.36%	32.36	4.36%	33.77	4.36%	35.24
Crane Mechanic	51.23	4.36%	53.46	4.36%	55.75	4.36%	58.22	4.36%	60.76	4.36%	63.41
Crane Operator	51.23	4.36%	53.46	4.36%	55.75	4.36%	58.22	4.36%	60.76	4.36%	63.41
Diesel Mechanic	56.23	4.36%	58.68	4.36%	61.24	4.36%	63.91	4.36%	66.70	4.36%	69.61
Electrician	46.15	4.36%	48.48	4.36%	50.56	4.36%	52.80	4.36%	55.10	4.36%	57.50
Equipment Operator	47.79	4.36%	49.87	4.36%	52.04	4.36%	54.31	4.36%	56.68	4.36%	59.15
Painters	37.03	4.36%	38.63	4.36%	40.31	4.36%	42.07	4.36%	43.90	4.36%	45.81
Plumbers	41.91	4.36%	43.74	4.36%	45.65	4.36%	47.64	4.36%	49.72	4.36%	51.89
Preventive Maint. Mechanic	44.32	4.36%	46.15	4.36%	48.16	4.36%	50.26	4.36%	52.45	4.36%	54.74
Riggers	40.51	4.36%	42.28	4.36%	44.23	4.36%	46.16	4.36%	48.17	4.36%	50.27
Safety Officers	44.87	4.36%	46.83	4.36%	48.87	4.36%	51.00	4.36%	53.22	4.36%	55.54
Security Guard	28.02	4.36%	29.24	4.36%	30.63	4.36%	31.64	4.36%	33.03	4.36%	34.48
Stevedoring	47.39	4.36%	49.45	4.36%	51.62	4.36%	53.87	4.36%	56.22	4.36%	58.67
Welders	47.87	4.36%	49.96	4.36%	52.14	4.36%	54.41	4.36%	56.78	4.36%	59.26
OVERTIME											
Account Executive	53.90	4.36%	55.71	4.36%	57.61	4.36%	59.13	4.36%	61.75	4.36%	63.49
Auto Mechanics	66.52	4.36%	69.41	4.36%	72.42	4.36%	75.58	4.36%	78.87	4.36%	82.30
Cargo Checkers	66.38	4.36%	68.90	4.36%	72.05	4.36%	76.13	4.36%	79.45	4.36%	82.91
Carpenters	52.58	4.36%	54.87	4.36%	57.26	4.36%	59.76	4.36%	62.37	4.36%	65.09

CHANGE DESCRIPTION	2014 Rate	Proposed 2015 Adj.	Proposed 2015 Rate	Proposed 2016 Adj.	Proposed 2016 Rate	Proposed 2017 Adj.	Proposed 2017 Rate	Proposed 2018 Adj.	Proposed 2018 Rate	Proposed 2019 Adj.	Proposed 2019 Rate
Clerks	42.71	4.36%	44.57	4.36%	46.51	4.36%	48.54	4.36%	50.66	4.36%	52.87
Crane Mechanic	76.84	4.36%	80.19	4.36%	83.69	4.36%	87.34	4.36%	91.15	4.36%	95.13
Crane Operator	76.84	4.36%	80.19	4.36%	83.69	4.36%	87.34	4.36%	91.15	4.36%	95.13
Diesel Mechanic	84.34	4.36%	88.02	4.36%	91.86	4.36%	95.87	4.36%	100.05	4.36%	104.41
Electrician	69.67	4.36%	72.71	4.36%	75.88	4.36%	79.19	4.36%	82.64	4.36%	86.24
Equipment Operator	71.68	4.36%	74.81	4.36%	78.07	4.36%	81.47	4.36%	85.02	4.36%	88.73
Painters	55.51	4.36%	57.95	4.36%	60.48	4.36%	63.12	4.36%	65.87	4.36%	68.74
Plumbers	62.87	4.36%	65.61	4.36%	68.47	4.36%	71.46	4.36%	74.58	4.36%	77.83
Preventive Main. Mechanic	66.52	4.36%	69.43	4.36%	72.45	4.36%	75.58	4.36%	78.87	4.36%	82.30
Riggers	60.93	4.36%	63.59	4.36%	66.36	4.36%	69.25	4.36%	72.27	4.36%	75.42
Safety Officers	67.30	4.36%	70.23	4.36%	73.29	4.36%	76.49	4.36%	79.82	4.36%	83.30
Security Guard	42.02	4.36%	43.85	4.36%	45.75	4.36%	47.76	4.36%	49.84	4.36%	52.01
Stevedoring	71.08	4.36%	74.18	4.36%	77.41	4.36%	80.79	4.36%	84.31	4.36%	87.99
Welders	71.81	4.36%	74.94	4.36%	78.21	4.36%	81.62	4.36%	85.18	4.36%	88.89
O" DIFFERENTIAL											
Account Technician	17.62	4.36%	18.40	4.36%	19.20	4.36%	20.04	4.36%	20.91	4.36%	21.82
Auto Mechanics	22.11	4.36%	23.07	4.36%	24.08	4.36%	25.13	4.36%	26.23	4.36%	27.37
Cargo Checkers	22.53	4.36%	23.50	4.36%	24.52	4.36%	25.58	4.36%	26.69	4.36%	27.84
Carpenters	17.51	4.36%	18.29	4.36%	19.09	4.36%	19.92	4.36%	20.79	4.36%	21.70
Clerks	14.24	4.36%	14.86	4.36%	15.51	4.36%	16.19	4.36%	16.90	4.36%	17.64
Crane Mechanic	25.61	4.36%	26.73	4.36%	27.90	4.36%	29.12	4.36%	30.39	4.36%	31.71
Crane Operator	25.61	4.36%	26.73	4.36%	27.90	4.36%	29.12	4.36%	30.39	4.36%	31.71
Diesel Mechanic	28.11	4.36%	29.34	4.36%	30.62	4.36%	31.96	4.36%	33.35	4.36%	34.80
Electrician	23.22	4.36%	24.23	4.36%	25.29	4.36%	26.26	4.36%	27.14	4.36%	28.31
Equipment Operator	23.89	4.36%	24.93	4.36%	26.02	4.36%	27.15	4.36%	28.33	4.36%	29.57
Painters	18.51	4.36%	19.32	0.00%	19.32	0.00%	19.32	0.00%	19.32	0.00%	19.32
Plumbers	20.96	4.36%	21.87	0.00%	21.87	0.00%	21.87	0.00%	21.87	0.00%	21.87
Preventive Main. Mechanic	22.17	4.36%	23.13	0.00%	23.13	0.00%	23.13	0.00%	23.13	0.00%	23.13
Riggers	20.31	4.36%	21.20	0.00%	21.20	0.00%	21.20	0.00%	21.20	0.00%	21.20
Safety Officers	22.43	4.36%	23.41	0.00%	23.41	0.00%	23.41	0.00%	23.41	0.00%	23.41
Security Guard	14.01	4.36%	14.62	0.00%	14.62	0.00%	14.62	0.00%	14.62	0.00%	14.62
Stevedoring	23.69	4.36%	24.72	0.00%	24.72	0.00%	24.72	0.00%	24.72	0.00%	24.72
Welders	32.93	4.36%	34.37	4.36%	35.86	4.36%	37.42	4.36%	39.04	4.36%	40.74
MID DIFFERENTIAL											
Account Technician	19.51	4.36%	20.36	4.36%	21.25	4.36%	22.17	4.36%	23.14	4.36%	24.15
Auto Mechanics	24.48	4.36%	25.55	4.36%	26.66	4.36%	27.82	4.36%	29.03	4.36%	30.30
Cargo Checkers	24.91	4.36%	25.99	4.36%	27.12	4.36%	28.30	4.36%	29.53	4.36%	30.82
Carpenters	19.37	4.36%	20.21	4.36%	21.09	4.36%	22.01	4.36%	22.97	4.36%	23.97
Clerks	18.95	4.36%	19.82	4.36%	20.68	4.36%	21.58	4.36%	22.52	4.36%	23.50
Crane Mechanic	34.15	4.36%	35.64	4.36%	37.19	4.36%	38.81	4.36%	40.50	4.36%	42.27
Crane Operator	34.15	4.36%	35.64	4.36%	37.19	4.36%	38.81	4.36%	40.50	4.36%	42.27
Diesel Mechanic	37.46	4.36%	39.11	4.36%	40.82	4.36%	42.60	4.36%	44.46	4.36%	46.40
Electrician	30.93	4.36%	32.32	4.36%	33.73	4.36%	35.20	4.36%	36.73	4.36%	38.33
Equipment Operator	31.86	4.36%	33.25	4.36%	34.70	4.36%	36.21	4.36%	37.79	4.36%	39.44
Painters	24.65	4.36%	25.73	4.36%	26.85	4.36%	28.02	4.36%	29.25	4.36%	30.53
Plumbers	27.94	4.36%	29.16	4.36%	30.43	4.36%	31.76	4.36%	33.14	4.36%	34.58
Preventive Main. Mechanic	29.48	4.36%	30.77	4.36%	32.11	4.36%	33.51	4.36%	34.97	4.36%	36.49
Riggers	27.08	4.36%	28.26	4.36%	29.49	4.36%	30.78	4.36%	32.12	4.36%	33.52
Safety Officers	29.92	4.36%	31.22	4.36%	32.58	4.36%	34.00	4.36%	35.48	4.36%	37.03
Security Guard	18.67	4.36%	19.48	4.36%	20.33	4.36%	21.22	4.36%	22.15	4.36%	23.11
Stevedoring	31.66	4.36%	32.98	4.36%	34.42	4.36%	35.92	4.36%	37.49	4.36%	39.13
Welders	31.92	4.36%	33.31	4.36%	34.76	4.36%	36.28	4.36%	37.86	4.36%	39.51
NIGHT DIFFERENTIAL											
Account Technician	2.35	4.36%	2.45	4.36%	2.56	4.36%	2.67	4.36%	2.79	4.36%	2.91
Auto Mechanics	2.94	4.36%	3.07	4.36%	3.20	4.36%	3.34	4.36%	3.49	4.36%	3.64
Cargo Checkers	2.99	4.36%	3.10	4.36%	3.24	4.36%	3.38	4.36%	3.53	4.36%	3.68
Carpenters	2.32	4.36%	2.42	4.36%	2.53	4.36%	2.64	4.36%	2.76	4.36%	2.88
Clerks	1.90	4.36%	1.98	4.36%	2.07	4.36%	2.16	4.36%	2.25	4.36%	2.35
Crane Mechanic	3.41	4.36%	3.56	4.36%	3.72	4.36%	3.88	4.36%	4.05	4.36%	4.23
Crane Operator	3.41	4.36%	3.56	4.36%	3.72	4.36%	3.88	4.36%	4.05	4.36%	4.23
Diesel Mechanic	3.75	4.36%	3.91	4.36%	4.08	4.36%	4.26	4.36%	4.45	4.36%	4.64
Electrician	3.10	4.36%	3.24	4.36%	3.38	4.36%	3.53	4.36%	3.68	4.36%	3.84
Equipment Operator	3.18	4.36%	3.32	4.36%	3.46	4.36%	3.61	4.36%	3.77	4.36%	3.93
Painters	2.46	4.36%	2.57	4.36%	2.68	4.36%	2.80	4.36%	2.92	4.36%	3.05
Plumbers	2.86	4.36%	2.98	4.36%	3.11	4.36%	3.24	4.36%	3.38	4.36%	3.53
Preventive Main. Mechanic	2.94	4.36%	3.07	4.36%	3.20	4.36%	3.34	4.36%	3.49	4.36%	3.64
Riggers	2.70	4.36%	2.82	4.36%	2.94	4.36%	3.07	4.36%	3.20	4.36%	3.34
Safety Officers	3.00	4.36%	3.13	4.36%	3.27	4.36%	3.41	4.36%	3.56	4.36%	3.71
Security Guard	1.87	4.36%	1.95	4.36%	2.04	4.36%	2.13	4.36%	2.22	4.36%	2.31
Stevedoring	3.16	4.36%	3.30	4.36%	3.44	4.36%	3.59	4.36%	3.75	4.36%	3.91
Welders	3.19	4.36%	3.33	4.36%	3.48	4.36%	3.63	4.36%	3.79	4.36%	3.95
PIPELINE EASEMENT LEASE RATES											
a. Within Existing Right of Way		15% of Fair Market Rent		15% of Fair Market Rent		15% of Fair Market Rent		15% of Fair Market Rent		15% of Fair Market Rent	
b. Not Within the Right of Way		50% of Fair Market Rent		50% of Fair Market Rent		50% of Fair Market Rent		50% of Fair Market Rent		50% of Fair Market Rent	
DOCKAGE (Overall Length of Vessel in Feet)											
0 - 100	41.51	4.36%	43.32	4.36%	45.21	4.36%	47.18	4.36%	49.24	4.36%	51.39
100 - 150	61.70	4.36%	64.39	4.36%	67.20	4.36%	70.13	4.36%	73.19	4.36%	76.38
150 - 200	80.78	4.36%	84.30	4.36%	87.98	4.36%	91.82	4.36%	95.82	4.36%	100.00
200 - 250	143.61	4.36%	149.87	4.36%	156.40	4.36%	163.22	4.36%	170.34	4.36%	177.77
250 - 300	210.92	4.36%	220.12	4.36%	229.72	4.36%	239.74	4.36%	250.19	4.36%	261.10
300 - 350	281.66	4.36%	293.88	4.36%	306.69	4.36%	320.08	4.36%	334.01	4.36%	348.57
350 - 375	345.55	4.36%	360.62	4.36%	376.34	4.36%	392.75	4.36%	409.87	4.36%	427.74
375 - 400	384.82	4.36%	401.60	4.36%	419.11	4.36%	437.38	4.36%	456.45	4.36%	476.36
400 - 425	416.23	4.36%	434.38	4.36%	453.33	4.36%	473.09	4.36%	493.66	4.36%	515.20
425 - 450	471.23	4.36%	491.79	4.36%	513.19	4.36%	535.57	4.36%	558.92	4.36%	583.29
450 - 475	512.71	4.36%	535.07	4.36%	558.40	4.36%	582.75	4.36%	608.16	4.36%	634.68
475 - 500	560.95	4.36%	585.42	4.36%	610.94	4.36%	637.58	4.36%	665.38	4.36%	694.53
500 - 525	613.88	4.36%	640.62	4.36%	668.36	4.36%	720.46	4.36%	751.87	4.36%	784.65
525 - 550	682.11	4.36%	711.87	4.36%	742.91	4.36%	775.30	4.36%	809.10	4.36%	844.39

CHARGE DESCRIPTION	2014 Rate	Proposed 2015 Adj.	Proposed 2015 Rate	Proposed 2016 Adj.	Proposed 2016 Rate	Proposed 2017 Adj.	Proposed 2017 Rate	Proposed 2018 Adj.	Proposed 2018 Rate	Proposed 2019 Adj.	Proposed 2019 Rate
550 - 575	743.83	4.36%	776.26	4.36%	810.10	4.36%	845.42	4.36%	882.28	4.36%	920.75
575 - 600	825.73	4.36%	861.73	4.36%	899.30	4.36%	938.5[illegible]	4.36%	979.48	4.36%	1,022.[illegible]3
600 - 625	943.41	4.36%	984.50	4.36%	1,026.38	4.36%	1,071.12	4.36%	1,117.88	4.36%	1,166.57
625 - 650	1,096.12	4.36%	1,144.51	4.36%	1,193.76	4.36%	1,245.83	4.36%	1,300.15	4.36%	1,356.84
650 - 675	1,247.53	4.36%	1,301.57	4.36%	1,358.74	4.36%	1,417.98	4.36%	1,479.80	4.36%	1,544.32
675 - 700	1,403.51	4.36%	1,464.70	4.36%	1,528.36	4.36%	1,595.2[illegible]	4.36%	1,664.75	4.36%	1,737.34
700 - 725	1,691.86	4.36%	1,765.63	4.36%	1,842.51	4.36%	1,922.95	4.36%	2,006.79	4.36%	2,094.29
725 - 750	1,865.75	4.36%	1,947.10	4.36%	2,031.99	4.36%	2,120.63	4.36%	2,213.08	4.36%	2,309.53
750 - 775	2,114.56	4.36%	2,206.69	4.36%	2,302.51	4.36%	2,402.13	4.36%	2,506.86	4.36%	2,615.87
775 - 800	2,370.67	4.36%	2,473.98	4.36%	2,581.34	4.36%	2,693.47	4.36%	2,811.00	4.36%	2,933.50
800 - 850	2,724.01	4.36%	2,842.79	4.36%	2,966.74	4.36%	3,096.09	4.36%	3,231.06	4.36%	3,371.96
850 - 900	3,300.99	4.36%	3,336.19	4.36%	3377.19	4.36%	3,524.54	4.36%	3,678.21	4.36%	3,838.58
900+ (is addition to 850 900 rate)	3.82	4.36%	3.99	4.36%	4.16	4.36%	4.34	4.36%	4.53	4.36%	4.73