

# Sustainable Design Guidelines

*AAPA Energy & Environment Seminar*

September 16, 2014



Alliance of the Ports of Canada, the Caribbean, Latin America and the United States

Seaports  
Deliver  
Prosperity

American Association of Port Authorities  
703.684.5700 • [www.aapa-ports.org](http://www.aapa-ports.org)

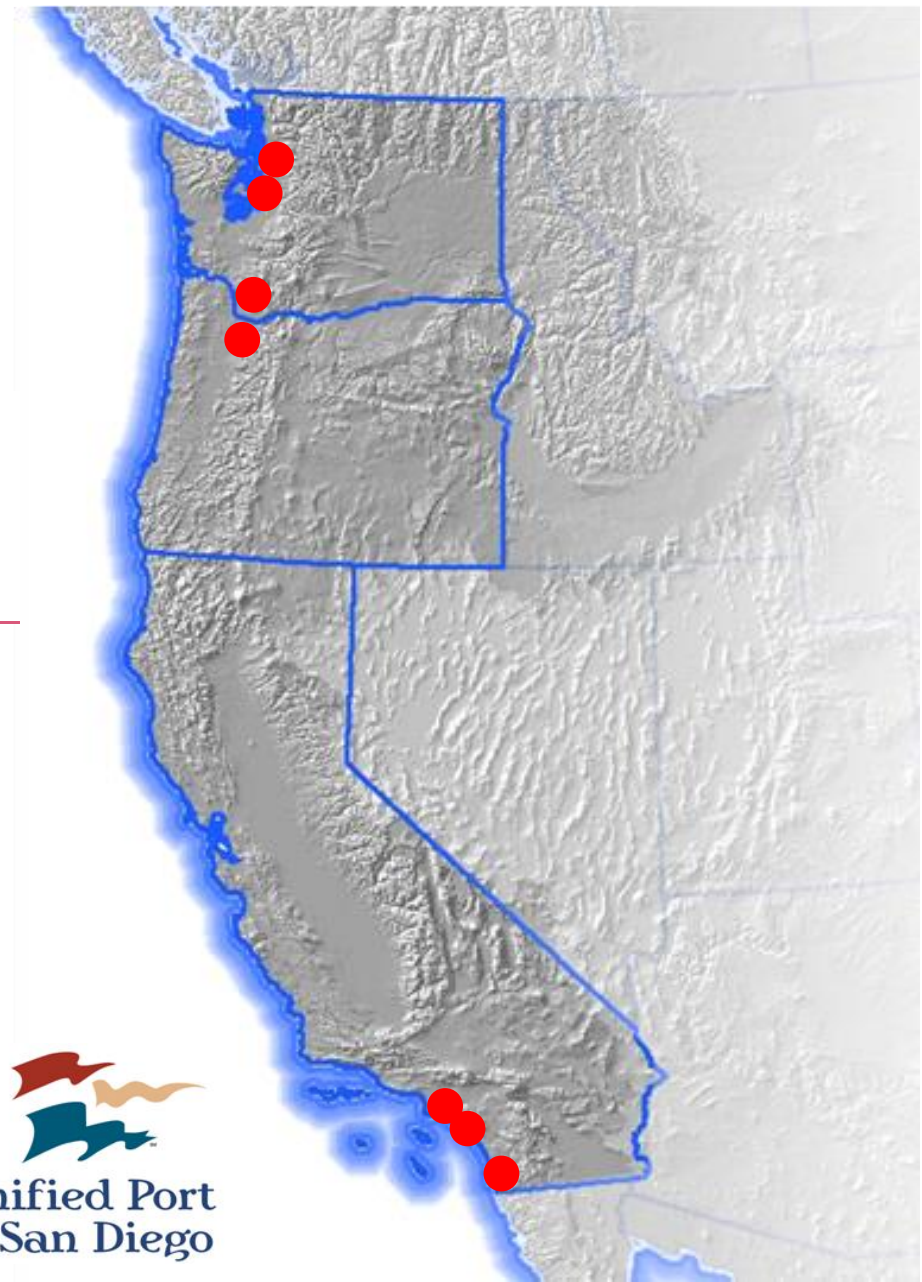
# AAPA Sustainability Resolution

*“AAPA embraces the concept of sustainability as a standard business practice for ports and the Association. For ports, sustainability means business strategies and activities that meet the current and future needs of the enterprise and its stakeholders, while protecting and sustaining human and natural resources.*

*Ports should consider the following principles and implement them as appropriate*

1. Communicate the goals of sustainability across the organization and allocate resource requirements for implementation;
2. Integrate sustainability throughout port activities and in both near-term and long-term planning processes;
3. Build upon and share existing sustainability best practices, keys to success, lessons learned and approaches for implementation;
4. Communicate and engage with internal and external stakeholders to encourage open dialogue, accountability and collaboration;
5. To the extent possible, use appropriate data and metrics as part of the process for implementing sustainability;
6. Evaluate the total life cycle costs of projects and decisions;
7. Recognize that sustainability is a dynamic effort requiring flexibility and continuous improvement.

# Joint West Coast Port Technical Committee



# Joint West Coast Port Technical Committee

By Ports for Ports – non competitive

Want to use best available practices.

Which practices make the best investments?

How do ports know that they have considered all possible options?








# Ten Year Strategic Plan



## 10 Targets in 10 Years

DRAFT

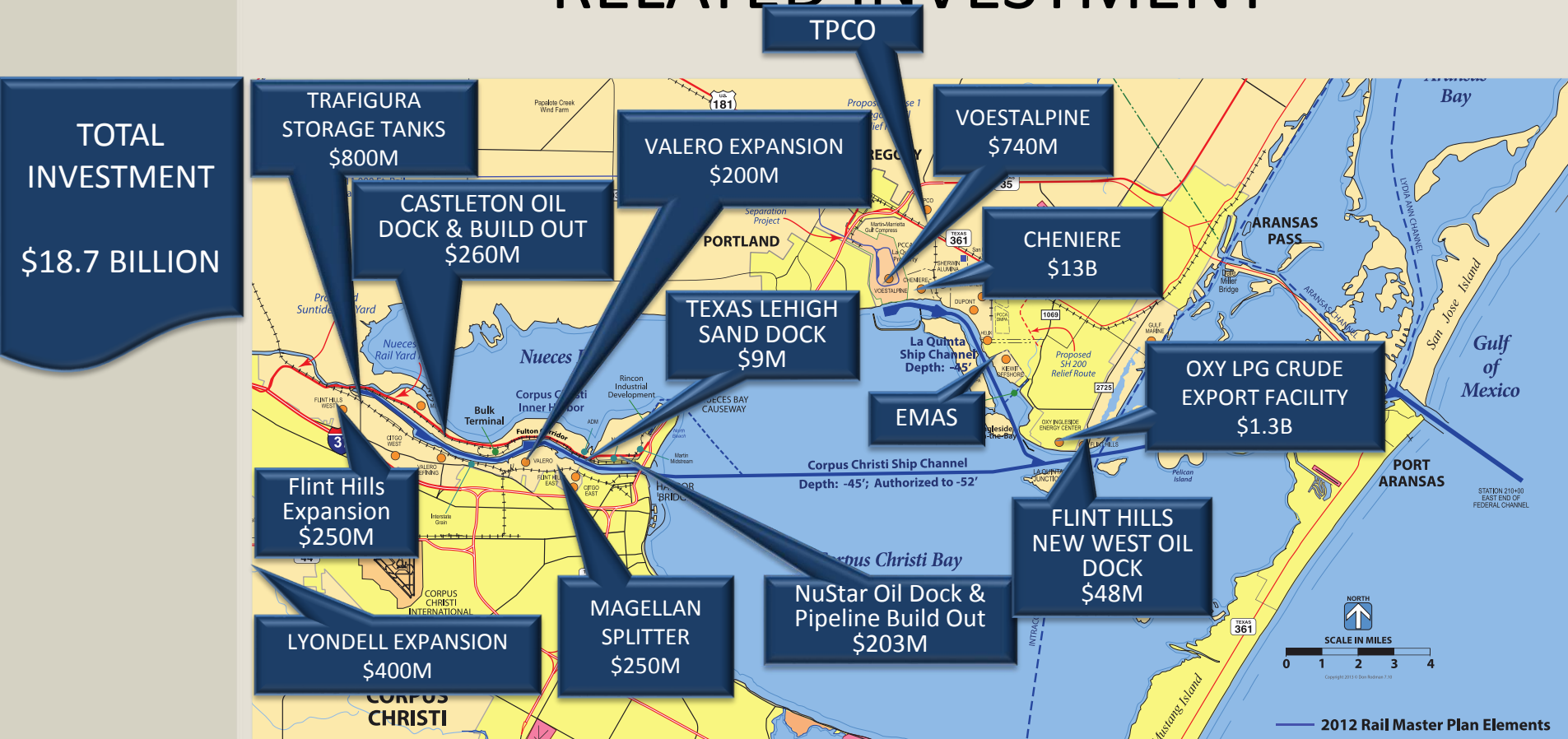


-  Double container volume to 3 million TEU
-  Double dry bulk throughput to 12 million metric tons
-  Increase breakbulk volume by 30% to 200,000 short tons
-  Increase automobile import volume by 20% to 200,000 units
-  Improve the Port's operating margin by 30%

-  Increase net income by 50% **6**
-  Increase return on assets by 35% **7**
-  Clean up an additional 200 acres of port-owned, contaminated property to industrial standards **8**
-  Reduce diesel pollutants attributed to cargo operations by 85% from 2005 baseline **9**
-  Increase port-related direct jobs by 4,700 and port-related indirect jobs by 2,000 **10**

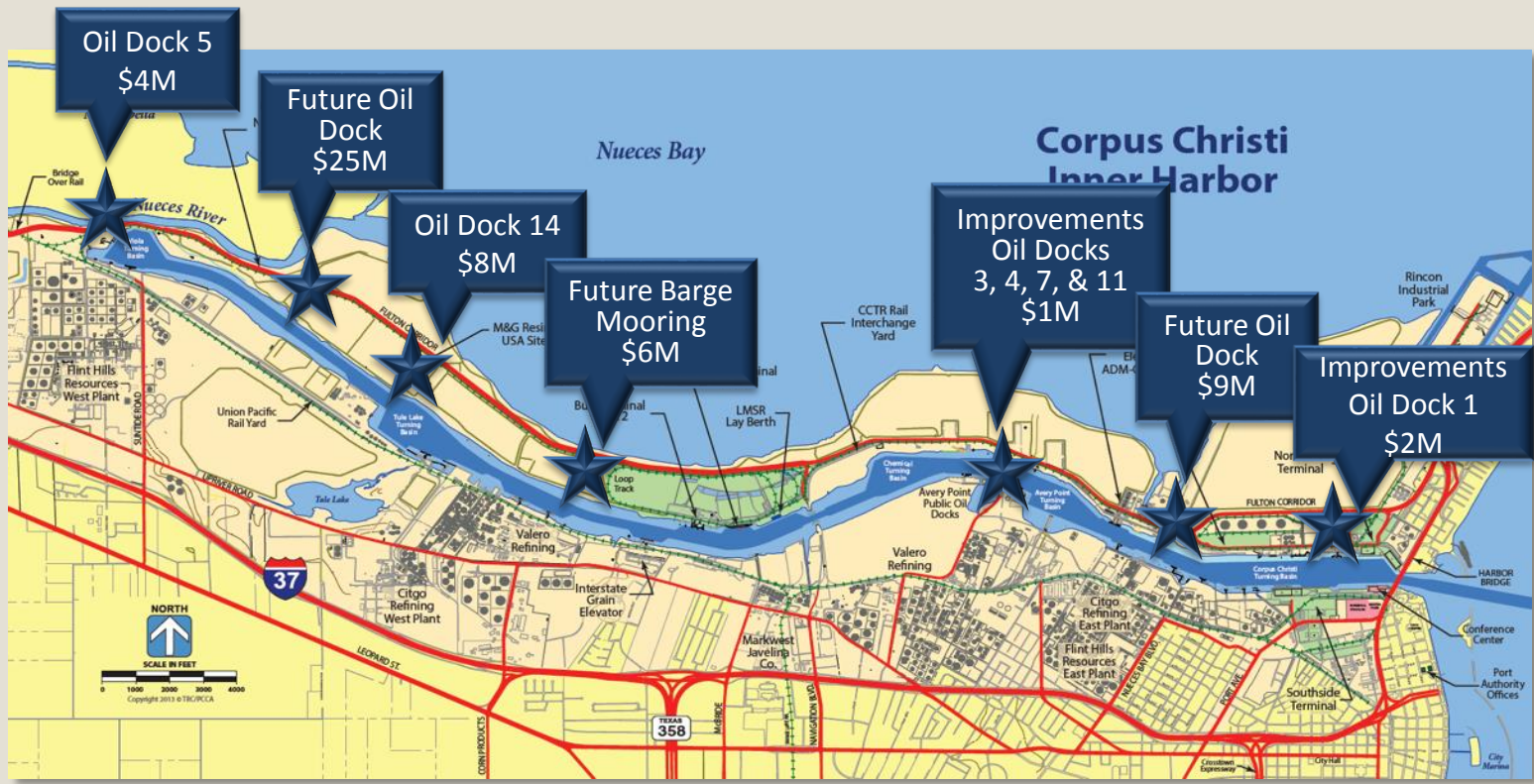
# WHAT NOW?

## CUSTOMERS' NEW EAGLE FORD RELATED INVESTMENT



# WHAT NOW?

## PORT'S NEW EAGLE FORD RELATED INVESTMENT



# Achieve Green Port Policy Goals

- Air – Reduce air emissions
- Water – Improve water quality
- Wildlife – Protect, maintain, restore habitat
- Soil/Sediment – Remove, treat, beneficial reuse
- Sustainability – Implement sustainable practices
- Community Engagement – Educate and inform





# Programs Stemming from: **The Port's Green Port Policy**

- Clean Air Action Plan (CAAP)
  - Clean Trucks Program/Pier Pass (Marine Terminals)
  - Technology Advancement Program (TAP)
- Water Resources Action Plan (WRAP)
- The Green Flag Program
- The Green Ship Incentive Program
- Sustainability Guidelines for Design and Construction
- Multi-Media Environmental Management Programs (Soil, Sediment, Storm Water, Hazardous Materials)

# General Checklist Focus Areas

- Air,
- Public outreach,
- Water,
- Natural resources,
- Economic considerations,
- Economic growth,
- Transport,
- Site development,
- Safety & security,
- Waste,
- Energy,
- Materials,
- Maintenance and monitoring/reporting

# Sort by Project Area

Project Area: **Land Development**  
 Focus Area: **Safety & Security** [Add New Strategy](#) [Go to Start Page](#) [Summary Reports](#)

Focus Area	Strategy	Implemented ?	Why Not Implemented/ Why Not Applicable?	Supporting Details	Resources for Additional Information	Strategy Weight	Economic	Environmental	Social
<b>Strategies Required by Regulation</b> <i>Ports, please enter sustainability strategies here which are required by Port or local regulations.</i>									
<b>Strategies Under Consideration</b> <i>Project Managers, please select additional sustainability strategies that you have considered for your project.</i>									
Air	Consider using harbor craft with Tier 3 engines or cleaner.								
Air	Consider reducing the speed of ships and barges delivering construction-related materials (12 knots for ocean-going vessels).								
Air	Consider requiring construction-related ships, barges, and marine equipment to use low sulfur or ultra low sulfur fuels where appropriate.	Yes				3	X		
Air	Trucks hauling material such as debris or fill material should be fully covered while operating off Port	Yes				4			X
Air	Minimize idling of construction equipment and on-road trucks used during construction .	Yes				5		X	
Air	Consider using on-road trucks with a gross vehicle weight rating (GVWR) of at least 19,500 lbs that comply with USEPA 2007 on-road engine standards for PM10 and NOx.	No							
Air	Consider using earth movers and import haulers with a gross vehicle weight rating (GVWR) of at least 19,500 lbs that comply with USEPA 2004 on-road emission standards for PM10 and NOx.	Not Applicable							

# Summary Report

[Go To Start Page](#)

Select Project Area

Select Focus Area(s)

Go To List of Criteria Implemented

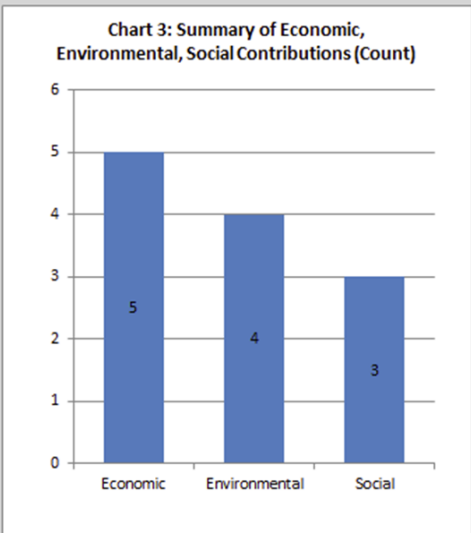
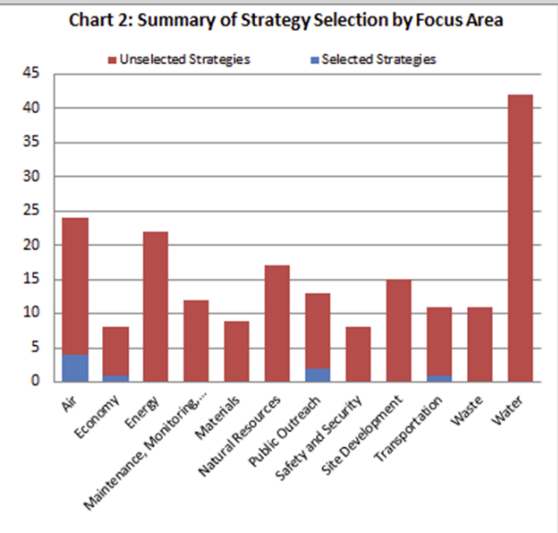
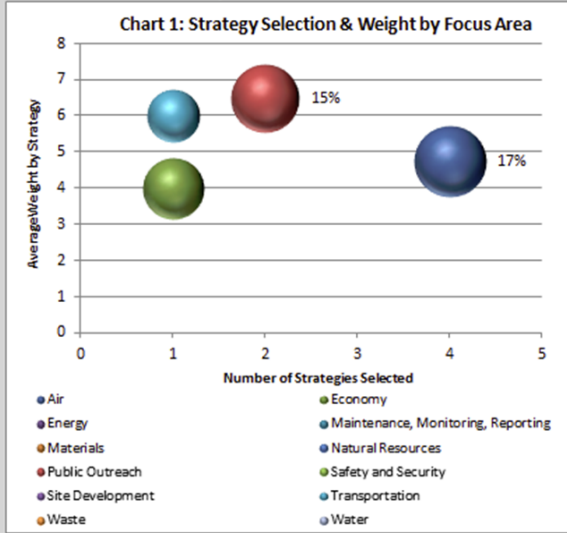
Print Selected Criteria

## SUMMARY REPORT

Summary Charts by Project Area

PROJECT AREA: Land Development

[Link to Chart Descriptions](#)

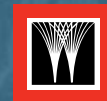


### Summary Tables

Project Area	Focus Area	Summary of Selected Strategies	Percent Selected	Total Weighted Score	Contributions		
					Economic	Environmental	Social
Land Development	Air	4 out of 24 (17%)	17%	19	2	2	1
Land Development	Economy	1 out of 8 (13%)	13%	4	1	0	0
Land Development	Energy	0 out of 22 (0%)	0%	0	0	0	0
Land Development	Maintenance, Monitoring, Reporting	0 out of 12 (0%)	0%	0	0	0	0
Land Development	Materials	0 out of 9 (0%)	0%	0	0	0	0
Land Development	Natural Resources	0 out of 17 (0%)	0%	0	0	0	0
Land Development	Public Outreach	2 out of 13 (15%)	15%	13	1	1	2
Land Development	Safety and Security	0 out of 8 (0%)	0%	0	0	0	0
Land Development	Site Development	15 out of 15 (100%)	100%	15	5	4	3

# Sustainability and PANYNJ Objective

- “To reduce adverse environmental impacts of the design, construction, operation and maintenance and occupancy or leasing of new or substantially renovated buildings and facilities, reconstruction projects, and programs.”

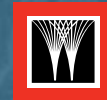


**WorleyParsons**

resources & energy

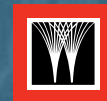
# Sustainability and PANYNJ Process

- 4 Step Process
  - Step 1: Determine Project Type
  - Step 2: Generating a Project Credit Checklist
  - Step 3: Project Achievement
  - Step 4: Credit Documentation
- Sustainability Infrastructure Guidelines
  - Details PANYNJ's goals
  - Details credit requirements
  - Download from PA website:  
<http://www.panynj.gov/about/building-transportation-greening.html>



# Sustainability and PANYNJ Sustainable Design Credit Categories

- Site
- Water
- Energy
- Material
- Construction
- Maintenance and Operation
- Innovation in Design



**WorleyParsons**

resources & energy

# Sustainability and PANYNJ Certification Levels

- Each Project-type has a pre-determined number of credits as identified in the credit checklist
- Three Levels of Achievement
  - Certified
    - *45% of total point allocation*
  - Gold
    - *60% of total point allocation*
  - Platinum
    - *75% of total point allocation*
- All Project types are required to achieve a Certified or greater level





**SUSTAINABLE INFRASTRUCTURE GUIDELINES  
PROJECT CREDIT CHECKLIST FORM - Version 1.0**

**PORT AUTHORITY OF NY & NJ**

**GENERAL PROJECT INFORMATION**

<b>PROJECT NAME:</b>	Cross Harbor Freight Program - Contract No. #2&7
<b>FACILITY:</b>	Port Jersey - Greenville Yard
<b>LE/A or RE:</b>	Yu S. Wong
<b>PHONE NUMBER:</b>	973-792-4541
<b>EMAIL ADDRESS:</b>	<a href="mailto:yuwong@nycportny.nj.gov">yuwong@nycportny.nj.gov</a>
<b>PID #</b>	Enter PID number here
<b>CONTRACT #</b>	NYLNRR-644.2&7
<b>DATE:</b>	8/2/2012
<b>PROJECT ACHIEVEMENT:</b>	Bid

**PROJECT CERTIFICATION SIGNATURES**

By entering the names below as a digital signature, the LEA and Principal Engineer certify that all information in this document is correct and accurate.

LEA (stage 3) or RE (stage 4) digital signature:  
 \_\_\_\_\_  
 Type digital signature here  
 I certify that the information contained in this document is correct and accurate.

Principal digital signature (Stage 3):  
 \_\_\_\_\_  
 Type digital signature here  
 I certify that the information contained in this document is correct and accurate.

**PROJECT TYPE**

**Choose a Project Type or Types**

- Airfield New Construction / Reconstruction
- Airfield Pavement Rehabilitation
- Bridge New Construction / Reconstruction
- Bridge and Tunnel Rehabilitation
- Civil - Work Orders
- Intelligent Transportation System
- Marine Structures - Docks, Wharves, Bulkheads, etc.**
- Parking Lot New Construction / Reconstruction
- Parking Lot Rehabilitation
- Port Site Work
- Roadway New Construction / Reconstruction
- Roadway Pavement Rehabilitation
- Trackwork
- Utility New Construction
- Utility Rehabilitation

**Associated Scopes of Work**

- Landscaping
- Exterior Lighting
- MECH / EL / Fire Suppression System Installation
- Traffic Safety and Public Environment

CREDIT NUMBER	POINTS ACHIEVABLE	CREDIT NAME	PURSUING CREDIT?	POINTS ACHIEVED	INCLUDE CREDIT
IS-1		Utilize Integrated Team Approach	<input type="checkbox"/>		<input type="checkbox"/>
IS-2		Prepare a Site Assessment	<input type="checkbox"/>		<input type="checkbox"/>
IS-3		Maximize Use of Previously Developed Land	<input type="checkbox"/>		<input type="checkbox"/>
IS-4		Maximize Use of Known Contaminated Sites	<input type="checkbox"/>		<input type="checkbox"/>
IS-5		Protect the Ecological Health of Wetlands and Floodplains	<input type="checkbox"/>		<input type="checkbox"/>
IS-6		Protect and Maintain Absorbent Landscapes			<input type="checkbox"/>
		15% of absorbant landscape protected and maintained (1 point)	<input type="checkbox"/>		
		30% of absorbant landscape protected and maintained (2 points)	<input type="checkbox"/>		
IS-7		Utilize Pervious Pavements			<input type="checkbox"/>
		25% of total pavement area utilizes pervious pavement (1 point)	<input type="checkbox"/>		
		50% of total pavement area utilizes pervious pavement (2 points)	<input type="checkbox"/>		
		75% of total pavement area utilizes pervious pavement (3 points)	<input type="checkbox"/>		



**SUSTAINABLE INFRASTRUCTURE GUIDELINES  
PROJECT CREDIT DOCUMENTATION FORM**

**PORT AUTHORITY OF NY & NJ**

<b>INSTRUCTIONS</b>	For each credit, provide applicable documentation type (drawing #, specification # or narrative) as indicated in project manual.	<b>GENERAL PROJECT INFORMATION</b>	<b>PROJECT NAME:</b>	Enter project name here
	All documentation is required at the end of Stage 3 and/or 4 as indicated below.		<b>FACILITY:</b>	Enter facility here
			<b>LE/A or RE:</b>	Enter LEA or RE name here
			<b>PHONE:</b>	Enter phone number here
			<b>EMAIL:</b>	Enter email address here
			<b>PID #</b>	Enter PID number here
			<b>CONTRACT #</b>	Enter contract number here
			<b>DATE:</b>	

Credit Number	Credit Title	Document-ation Stage	Contract Drawing Number	Reference Specification Number	Narrative Description
---------------	--------------	----------------------	-------------------------	--------------------------------	-----------------------

**SITE SECTION**

IS-1	UTILIZE AN INTEGRATED TEAM APPROACH	1, 2, & 3			
IS-2	PREPARE A SITE ASSESSMENT	1, 2, & 3			
IS-3	MAXIMIZE USE OF PREVIOUSLY DEVELOPED SITES	3			
IS-4	MAXIMIZE USE OF KNOWN CONTAMINATED SITES	3, 4			
IS-5	PROTECT ECOLOGICAL HEALTH OF WETLAND, FLOODPLAINS & RIPARIAN BUFFERS	3			
IS-6	PROTECT AND MAINTAIN ABSORBENT LANDSCAPES	3			
IS-7	UTILIZE PERVIOUS PAVEMENT	3			
IS-8	UTILIZE APPROPRIATE VEGETATION	3, 4			
IS-9	USE TURFGRASS APPROPRIATELY	3, 4			
IS-10	AMEND AND REUSE EXISTING SOILS	3, 4			
IS-11	BALANCE EARTHWORK	3			
IS-12	COORDINATE UTILITY WORK	3			
IS-13	UTILIZE TRENCHLESS TECHNOLOGY	3			
IS-14	MITIGATE HEAT ISLAND EFFECT	3			
IS-15	MINIMIZE LIGHT POLLUTION	3			



**WorleyParsons**

resources & energy

# Middle Harbor Under Construction



# Project Overview

- Nine-year, \$1.2 billion program combining two aging terminals into one modern and fully automated terminal
- 1<sup>st</sup> POLB project to encompass the full complement of Environmental Mitigation Measures, Commitments and Standards resulting from the Port's Green Port Policy and Final EIR
- Enhancement of sustainable practices for Design and Construction by continual refinement of the Port's standard Specifications for construction contracts

# Key Program Elements

- Design Elements

- LEED buildings
- Energy efficient lighting (LED High Masts)
- Electrification/Automation of cargo handling equipment
- Shore to Ship Power (Cold Ironing/AMP)
- On-Dock Rail
- Automated gate entry
- Alternative fuel drayage vehicles
- Solar power



- Construction Elements

- Recycling of AC/Concrete
- Waste diversion from landfills
- Use of recycled content materials
- Electric powered dredging equipment
- Tier 3 off-road equipment and Tier 2 marine equipment
- Water quality monitoring during dredging
- Strict soil quality standards for import/reuse



# The “Nuts and Bolts” of Environmental Compliance During Construction



Develop a Comprehensive Program as a *framework* from which to **Monitor, Track, Verify, and Report Environmental Program Compliance**

# Environmental Compliance Matrix

- Lists of compliance elements in specific categories, e.g. Air Quality, Water Quality, Noise Mitigation...
  - Specific requirements or permit condition
  - Responsible Party
  - Actions required for compliance
  - Implementation and inspection/verification schedule
  - Compliance reporting - documentation
- Ongoing Integration – Program Betterments

***“backbone for verification and documentation”***

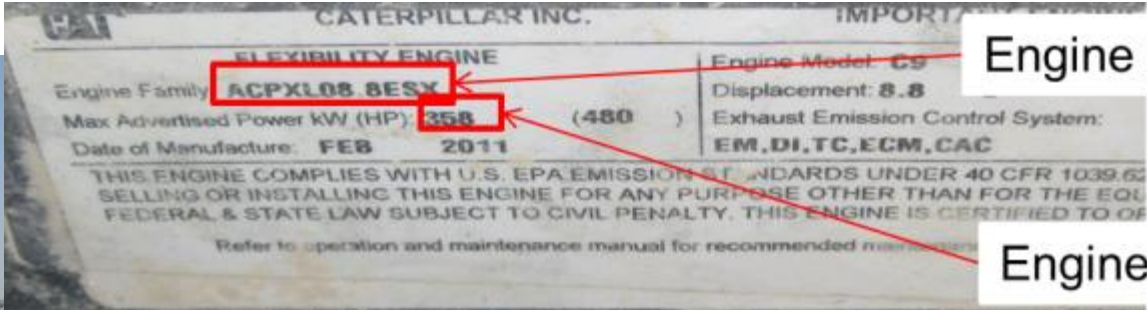
# Compliance Verification and Inspection

- Provide ***real-time*** compliance status for each component of the Program – Critical for Success
- Identify future project work tasks and required environmental compliance elements
- CM Team inspection required to ensure compliance
- Provide structured variance procedures for exceptions



# Example – Landside Equipment Verification

Name	Make Model	Engine Serial Number	Engine Family Name	HP	Model Year	Tier	Date Verified
Loader	CAT 973/C9	B04350	ACPXL08.8 SK	480	2010	IV	11/15/2011



Engine Family

Engine Power

# Constructability Review Process

- Data-Gap Analysis - Comparing compliance elements with construction Specifications
- Translation for implementation
- Evaluate data-gaps and incorporate missing compliance elements into Specifications
- On-going review of Specifications to ensure requirements can be properly implemented by contractor – Reality Check

## Strategic Plan initiative:

- Goal 5: Advance Environmental Stewardship
  - *Strategy: Partner and find innovative solutions to our customers' environmental challenges*
  - Objective: Identify and develop maritime industrial stormwater best management practices
    - ✓ *Task: WPPA/DOE/Ports AKART study to support POT and tenant marine cargo facilities ISGP*



# Partnering – Communication - Outreach

- Incorporate Sustainability throughout the Design, Construction, and Operation Life-Cycle
- Maintain Regulatory Agency and Community Confidence and Creditability
- Enhance Perception/Reality of the Community and Stakeholders
- Build a project in full Environmental Compliance with Mitigation Measures, Environmental Controls and Commitments, and Applicable Regulations
- Verify Program Compliance

# Continuous Program Betterments

- Refined Contract Specifications as Program Progressed
- Modified Biological Monitoring Program to reduce delays
- Implemented Umbrella SWPPP Program to streamline Agency reporting and staff review time
- Developed Oil Sediment Dredging BMPs/Treatment to reduce delays and eliminate upland disposal

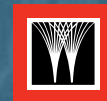


# Real Life Sustainability



# Next Steps

- Review checklists with Leads, get buy in
- Prepare write ups to include in DDR
- Review credits with Port Authority
- Schedule workshop with team members
- Develop Register for tracking progress

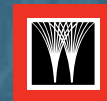


**WorleyParsons**

resources & energy

# How to Incorporate Entire Project Team

- Detailed sustainability write up in each design development report (DDR)
- Workshops on checklists and summary guidance document for each contract
- Register tracking progress
- Review by Sustainability Consultant at various stages of project development

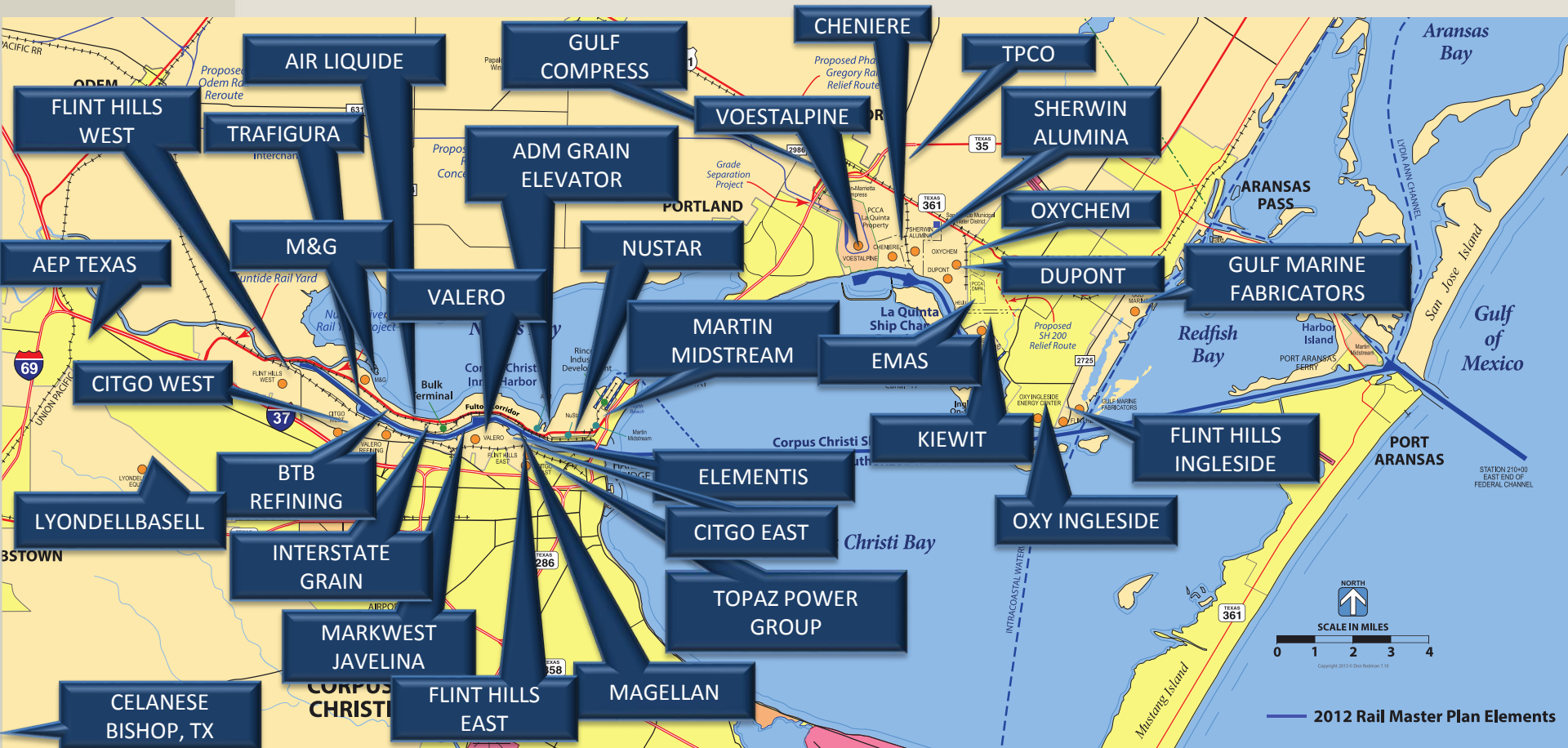






# BALANCING GROWTH

## BALANCING EXPLOSIVE GROWTH WITH CLEAN AIR AND CLEAN WATER



# Sustainable Practices



The Port of Tacoma is committed to doing business in a way that engages our community, protects the environment and demonstrates social and economic responsibility.

Our priorities include:

- Jobs outreach program
- Skilled trades development
- Small and emerging business program
- Sustainability practices
- Student exposure to the maritime industry
- Employee engagement with the community

## Sustainability practices

We focus on reducing the impacts of Port operations by integrating sustainable practices that balance natural resource efficiencies with economic benefits.

Sustainable practices involve the design, construction, operation and remediation actions that significantly reduce resource consumption and environmental impacts through: site planning, reuse/recycling, energy efficiency, water conservation, waste reduction, pollution prevention and "green" materials purchasing.

### Program components

The program will consist of:

- Developing a total cost of ownership (TCO) approach with short- and long-term analysis.
- Performing comprehensive internal sustainability audits of department operations.
- Identifying energy and water efficiency opportunities.
- Developing strategies and key performance indicators (KPIs) for targeted projects.
- Analyzing costs, savings and their associated returns on investment for projects/initiatives.
- Developing a port-wide framework for annual performance reporting.
- Establishing formal evaluation and feedback mechanisms.



### Objectives

- Increase staff knowledge and behavior
- Decrease greenhouse gases by 10% from 2005 baseline

### Contact

Jason Jordan, Environmental Programs Director  
253-830-5321  
[jjordan@portoftacoma.com](mailto:jjordan@portoftacoma.com)