

An aerial photograph of an industrial facility, likely a port or refinery. In the foreground, a long wooden wharf extends into a body of water. Several large, cylindrical storage tanks are visible on the land, some with white roofs and others with grey. A large, dark, circular structure, possibly a dome or a large tank, is prominent in the center. The background shows more industrial structures and a road with vehicles. The overall scene is a detailed view of a complex industrial site.

# IMTT Wharf Modification Project Prevention First 2014

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Oct. 7, 2014

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Prevention First 2014

# Presentation Outline



## Project Overview

- **Project Overview**
  - Background
  - Goals and Features

## Permitting

- **Permitting**
  - Requirements & Challenges
  - Approach & Strategy

## Design

## Construction

## Commissioning

- **Design/Construction/Commissioning**
  - Basis
  - Key Issues
  - Solutions
  - Lessons Learned

## Lessons Learned

- **Key Lessons Learned**

## Questions and Answers

- **Questions and Answers**





- **MOTEMS Compliance (initial Audit 2010)**
  - **Insufficient Seismic Capacity**
  - **Deficient Fender System**
  - **Lack of Redundant Fire Water Supply**
- **Opportunity for Improvement**
  - **Extended Operational Life of the Marine Terminal**
  - **Elimination of Timber Maintenance Issues**
  - **Improve Operational Safety**
  - **Improved Environmental Protection**

# Project Overview



## Contractor



## Design Team



## Permitting Agent



## Owner Oversight / MOTEMS TOLs



## Initial MOTEMS Audit Work

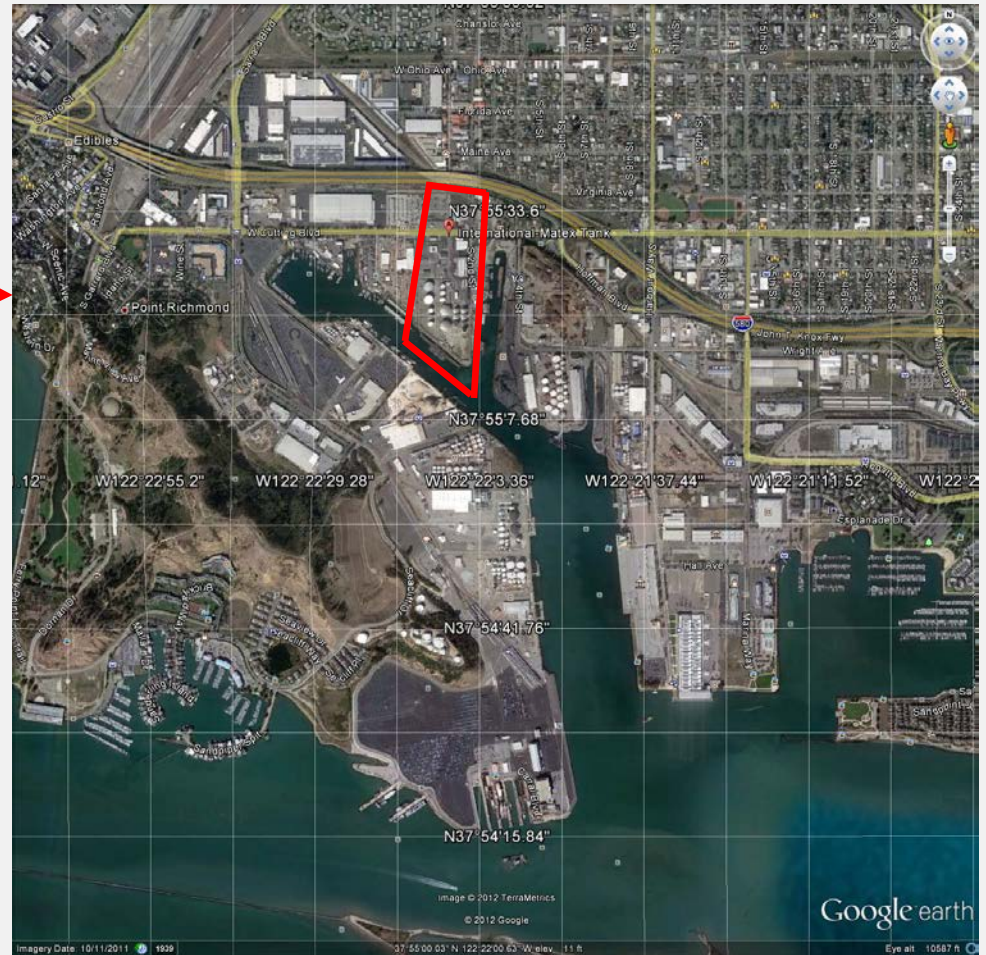
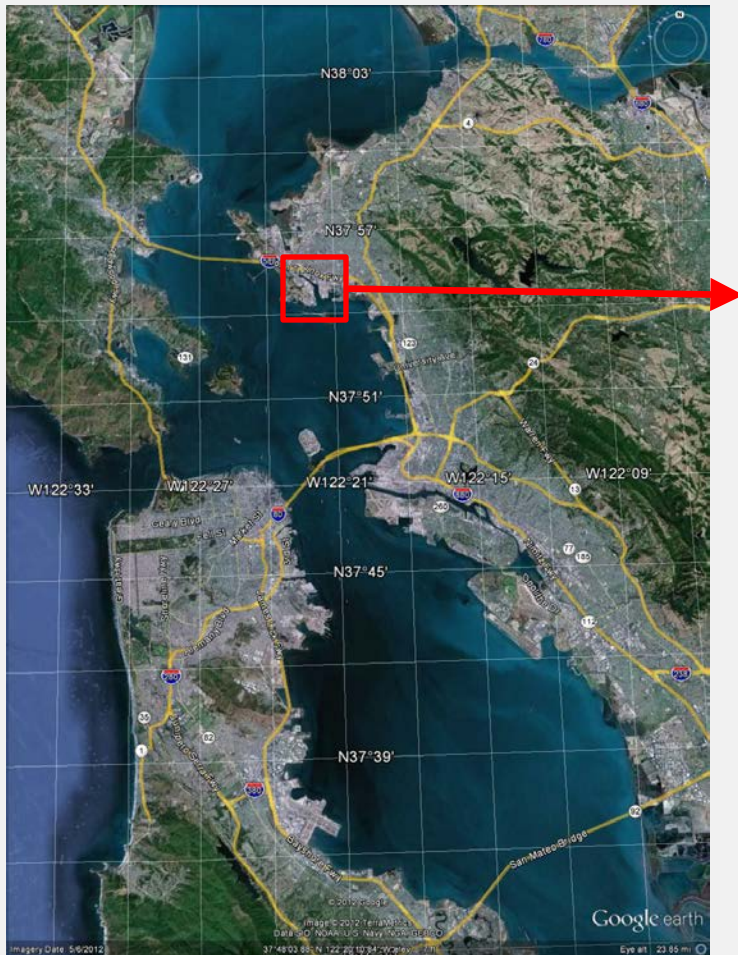




# Project Overview



## Project Location



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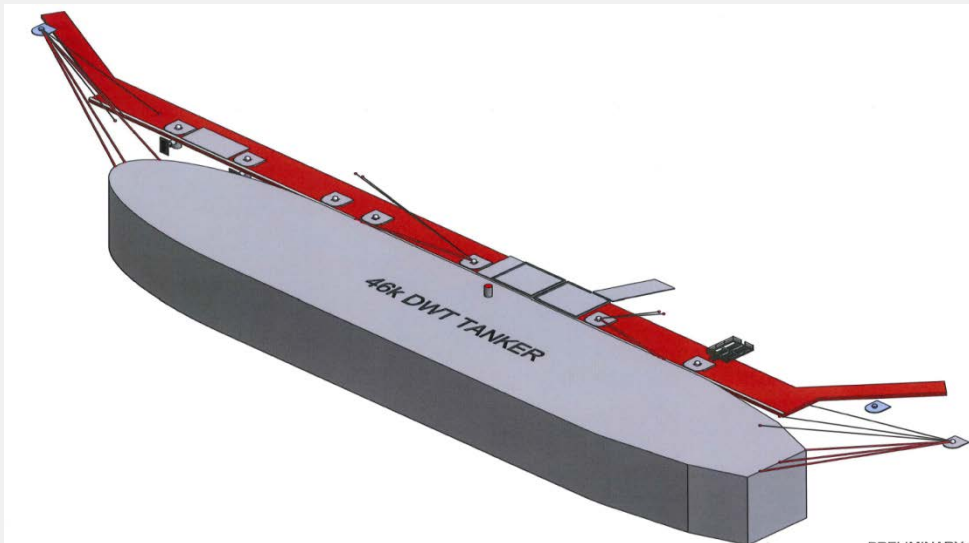


## Project Goals

- Compliance with MOTEMS – California Building Code Chapter 31
- Significant safety improvements
- Limit downtime during construction
- 50-year design Life

## Project Features

- Demolition of 20,000 sf of existing timber wharf
- Construction of approximately 10,000 sf of new structures and pipelines





# Project Overview



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# Project Overview



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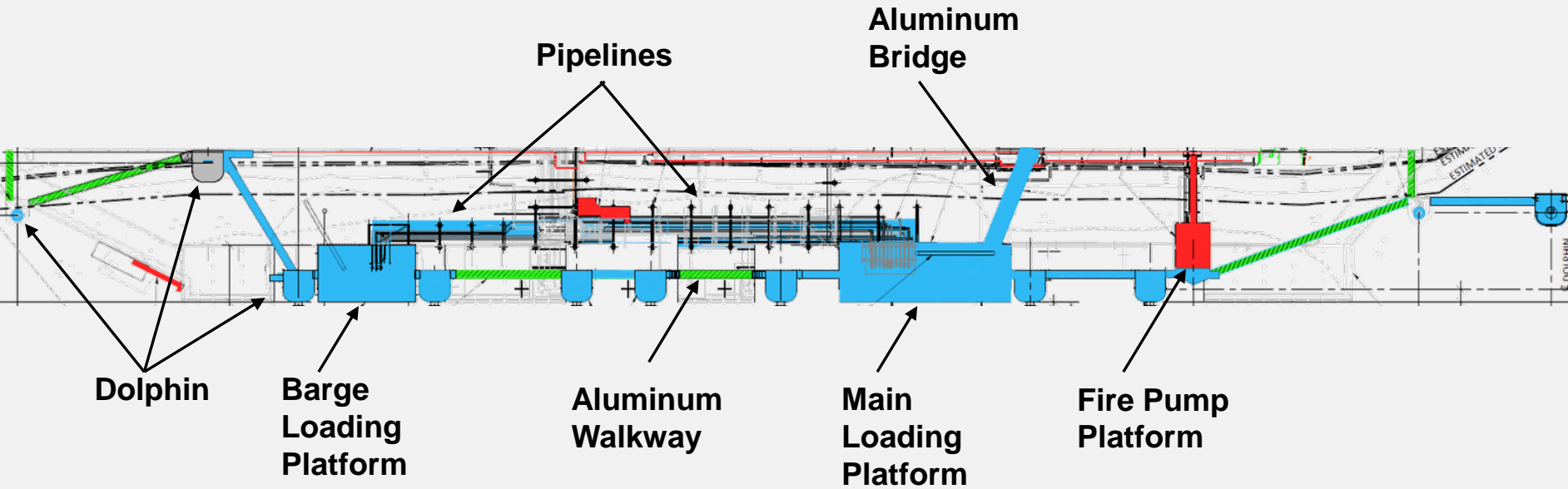
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# Project Overview



## New Components



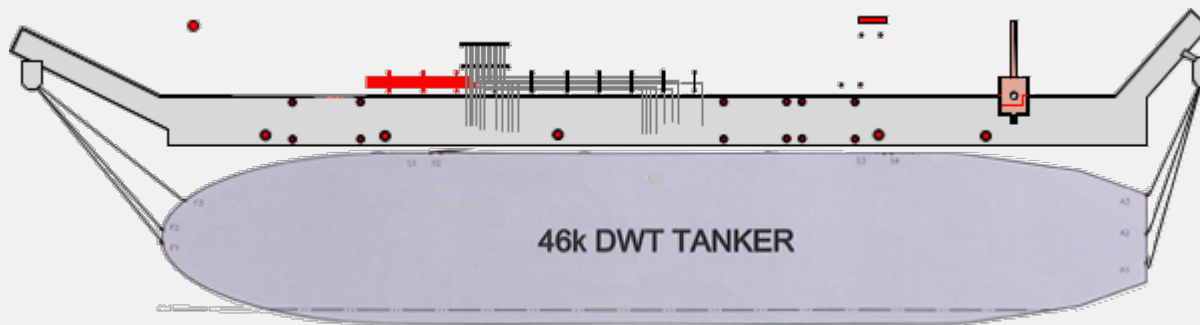
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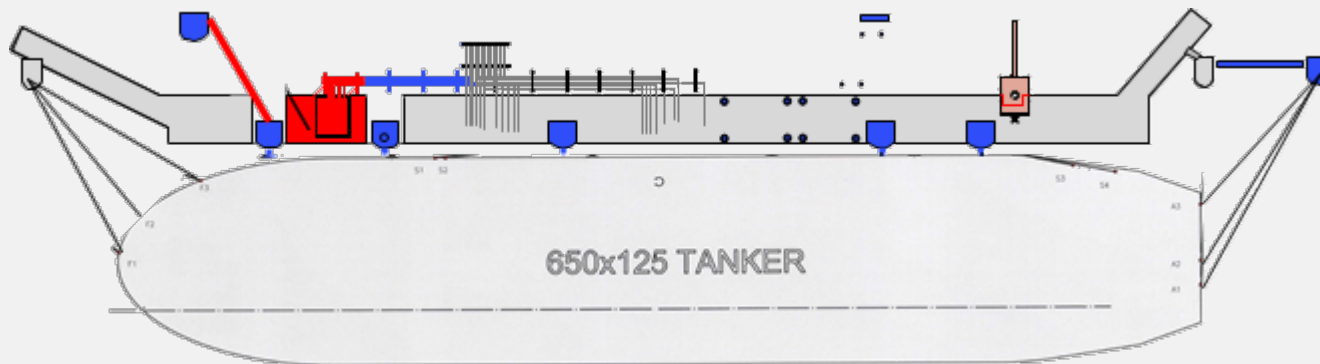
# Project Overview



## Construction - Operational Phasing



**Install piling, landside footings, some pipelines**



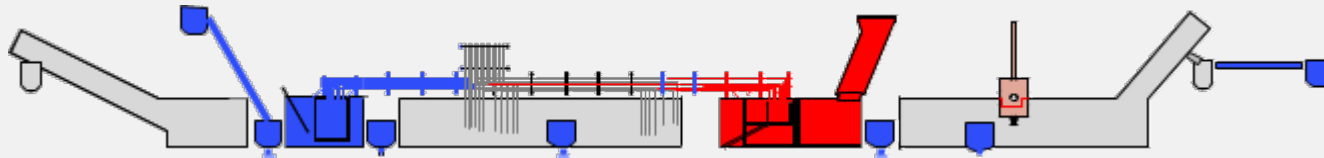
**Install barge platform, some dolphin platforms, some walkways**



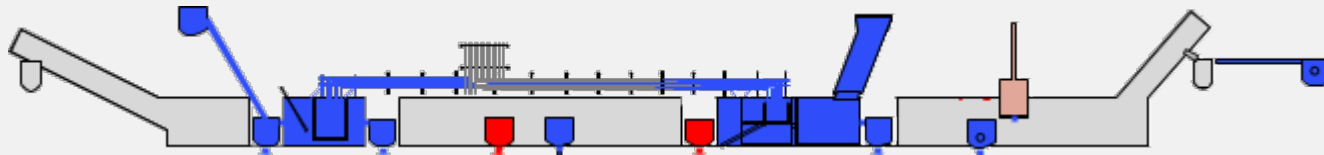
# Project Overview



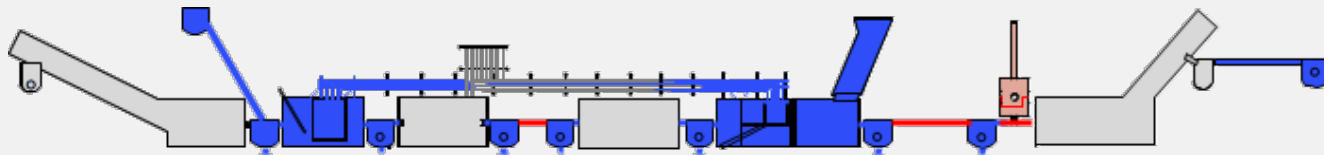
## Construction – Operational Phasing



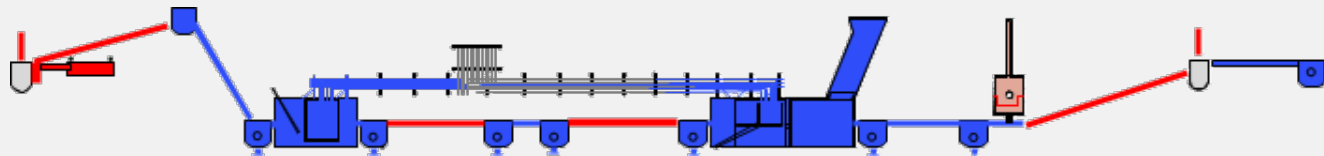
**Install Main platform and more pipelines**



**After Main platform is operational, remove original manifolds, install last dolphins**



**Remove additional portions of original wharf and install additional walkways**

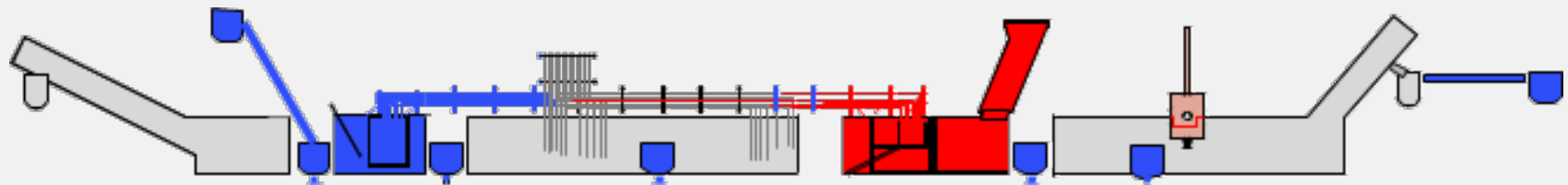
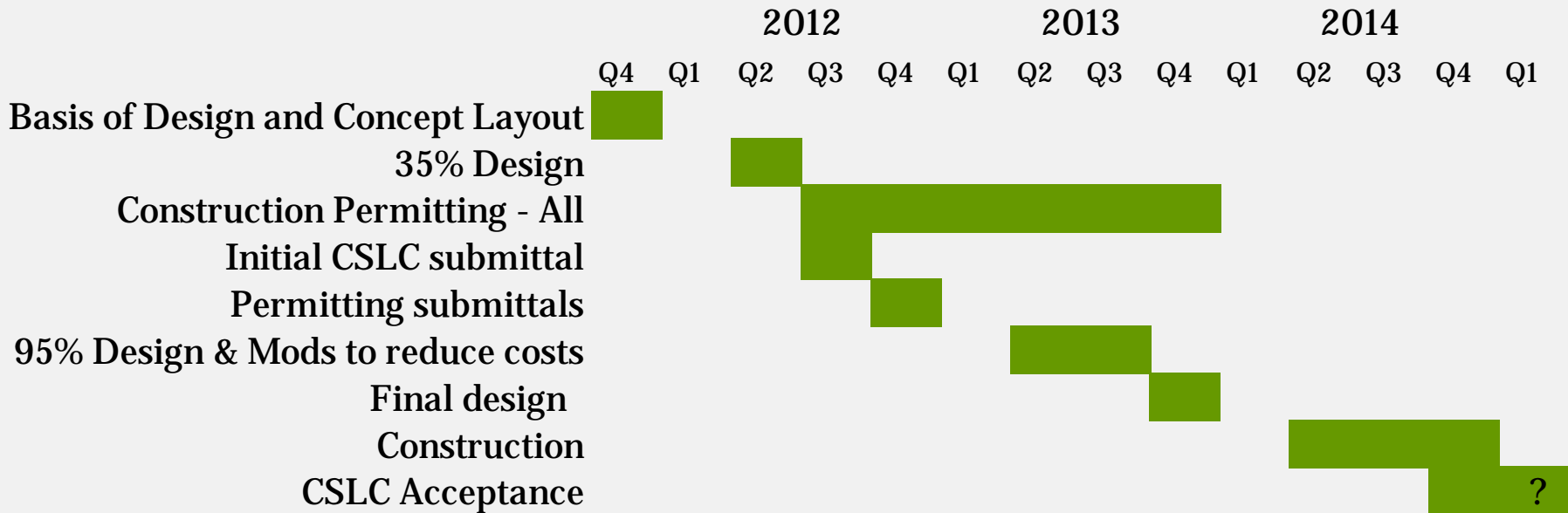


**Future: After excessive deterioration, remove remaining wharf and install more walkways**

# Project Overview



## Project Schedule





# Permitting



## Permitting Agencies

Agency	Agency Contact	Agency Main Role	Agency Involvement by Topic				Agency Primary Actions	
			Structural Design	Construction	Environmental	Security	Description	When
City of Richmond	Lina Velasco	Lead	Bldg Dept. Plan Check	Bldg. Dept. Plan Check	Planning Dept to issue CEQA Categorical exemption (Cat Ex)		Bldg. Dept. Plan Check Permit ; Cat Ex Letter	8/31/2013
BCDC/ECRB	Rafael Montes	Engr, environmental, sea level rise, seismic safety	Phase 2A wharf mod; ECRB approved Dec 2012	wharf mod permit compliance construction operations plan	Wharf mod comply SF Bay Plan policies incl. bay fill, climate change covering sea level rise and tsunami, effect on Bay resources, seismic, offsite public access (none required)		nonmaterial amendment to 1987BCDC018.07	31-Aug-13
CSLC	Kendra Oliver	MOTEMS compliance	Review for compliance with the CBC-MOTEMS	Review MOTEMS elements built per drawings	Fire suppression & seismic safety		Letter confirming compliance	
USACE	Gregory Brown	civil, environmental		Construction op. plan; NMFS consultation ESA and EFH	Nationwide Permit #3 (NWP#3)		NWP#3 plus consultation with NMFS	permit issued 08/14/13
SFBRWQCB	Katie Hart	water quality		Construction Work Plan required; NMFS consultation concurrence	Water quality CWA Sec 401 WQC Permit		CWA Sec 401 WQC	8/23/2013
BAAQMD		air quality			Compliance with existing air emissions permit for equipment		IMTT staff verifies compliance with existing permit	8/1/2013
CaDFW	Am Aareeberg	CESA		Unnecessary as actions are ministerial; CEQA CatEx	Informal consultation with BCDC on CESA unnecessary		CADFW letter wharf mod to BCDC unnecessary	N/A
NOAA Fisheries	Gary Stern	ESA Sec 7		Informal consultation with USACE	Biological Assessment required; Informal consultation w/ USACE on ESA includes permit conditions,		letter to USACE re consultation concurrence	issued 08/07/13
NOAA Fisheries	Autumn Cleave	EFH		Essential Fish Habitat (EFH)	Biological Assessment required; informal consultation w/USACE on EFH		letter to USACE re consultation agreement	issued 07/16/13 & 08/07/13
USCG	Captain of the Port			Navigational Safety	Navigational Safety	Confirm Compliance	Letter confirming compliance?	
U.S. EPA Region IX	Dep Director		none	none	Delegated authority to USACE and SFBRWQCB		none	N/A
State Water Resources Board	Bill Orme				Delegated permit authority to SFBRWQCB		see RWQCB WQC target date for issuance	N/A
USFWS	Ryan Olah				USACE NWP# 3 in navigation channel does not require USFWS; defers authority to NMFS for anadromous fish species			N/A

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## Permitting Challenges and Solutions

### Challenge

- Uncharted territory
- Schedule
- Agency jurisdiction overlap and dependencies
- EIR or no EIR? New vs. old
- BCDC requires “pubic access” for any new shoreline projects
- Pile driving and fish window

### Solution

- Educate agencies early
- Project Description is key -- define what is proposed early
- 35% design suitable to start filing permits
- Interagency coordination meeting early; ongoing coordination
- Clarify environmental safety benefits, “maintenance” project
- Maintenance project exempts this requirement
- Vibratory hammer





## Lessons Learned

- Permitting consultant critical
- Interagency coordination essential
- Control project scope with permitting agencies
- Agency support of project valuable, e.g., CSLC championing the MOTEMS purpose
- Phasing of project facilitated permitting and shortened overall schedule
- Construction permitting went fairly smooth with above
- CSLC approval process difficult
  - Complicated project (first “new” MOT since mid-1990’s)
  - No clear path forward for approvals



## Design Challenges and Solutions

### Challenge

- No terminal downtime
- Continued use of existing structures, e.g., dolphins

### Solution

- Concept that allows continued use of existing systems
- Prefabrication offsite
- Detailing to facilitate assembly onsite
- Submit and get approval early





## Limit Downtime – Limit Piling





## Limit Downtime – Extensive Prefabrication



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## Limit Downtime – Extensive Prefabrication



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## Limit Downtime – Extensive Prefabrication



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## Limit Downtime – Connection Details that Limit Time Onsite

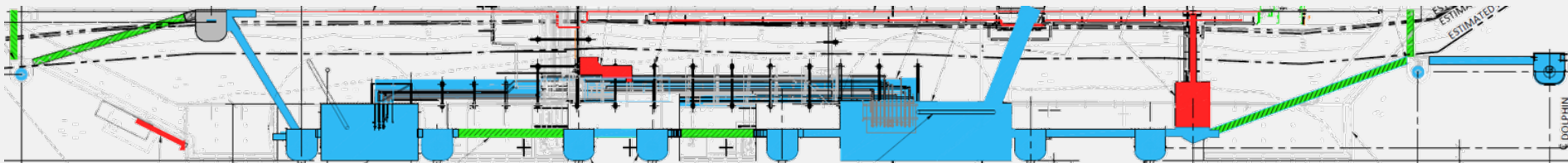






## Lessons Learned

- Start mechanical, electrical, and operational design work as early as practical, many considerations and iterations
- Consider 3D piping and hose layout to help avoid access issues
- Designs for offsite fabrication and onsite assembly worked better than expected
- Consideration of fabrication and pile alignments critical—provide for large tolerances to facilitate construction





## Challenges and Solutions

- No Terminal Downtime
- Vessel Traffic
- Prefabrication offsite
- 12 hour barge operation window / no window for ships
- Communication with ship agent/customer





## Lessons Learned

- Plan for pile driving difficulties including refusal at shallower depth – what is acceptable and other hammer options
- Mechanical and electrical work took longer than expected
- A good local fabricator was critical
- 3D shop drawings were beneficial during fabrication
- Nearby construction yard was extremely valuable







## Challenges and Solutions

### Challenge

- Ops Manual approval required before operations can start
- MOTEMS Initial Audit required before operations can start
- How to get approval of new ops manual?
- How to approve blended ops?
- Training is part of Ops Manual

### Solution

- Submit manual early
- Submit audit in stages
- Lots of dialog with CSLC, both locally and with Long Beach
- Interim TOLs
- Begin training on new systems early in the process



## Lessons Learned

- Early is not early enough! Ops Manual review and approval process takes significant time and effort
- “New” Ops Manual review process more stringent than Amendment review process - Don’t rely on what worked before in the old Ops Manual
- Training can be a challenge to do before all systems installed
- Process for the final “blessing” is unclear – who needs to see what when?
- Make sure all systems are in place and fully operational prior to the final inspection.



## Lessons Learned – Six Key Lessons

- Permitting assistance and support essential to success
- Project team corporation was critical to keep project on track
- Understanding and agreement with CSLC on process for approvals and commissioning (dialog)
- Keep customers and employees informed on project status and goals
- Be prepared to deal with changes throughout the project (flexibility)
- There will be a project completion but it will never be “done”



# New Main Platform

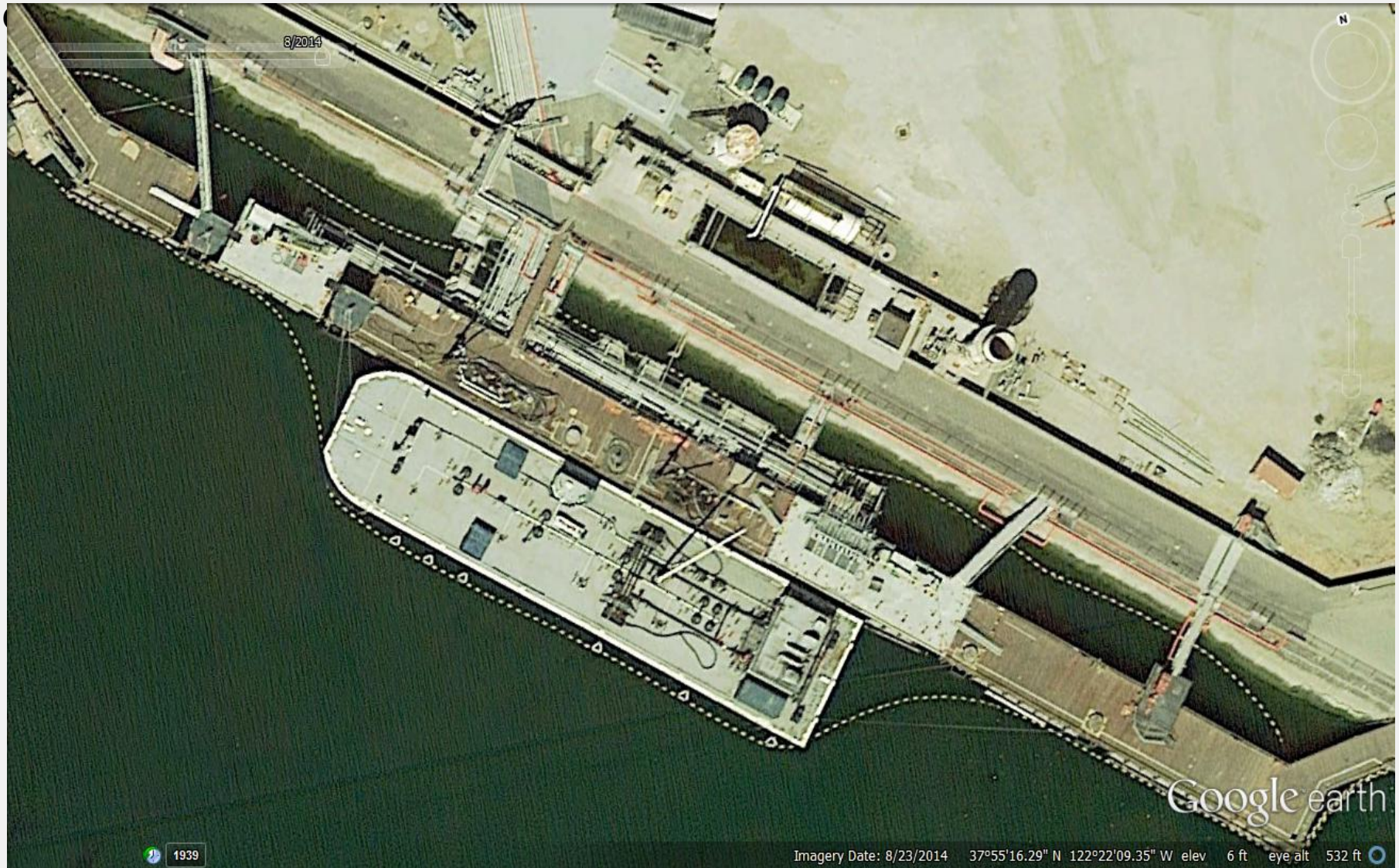


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# Questions and Answers



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## Additional Slides