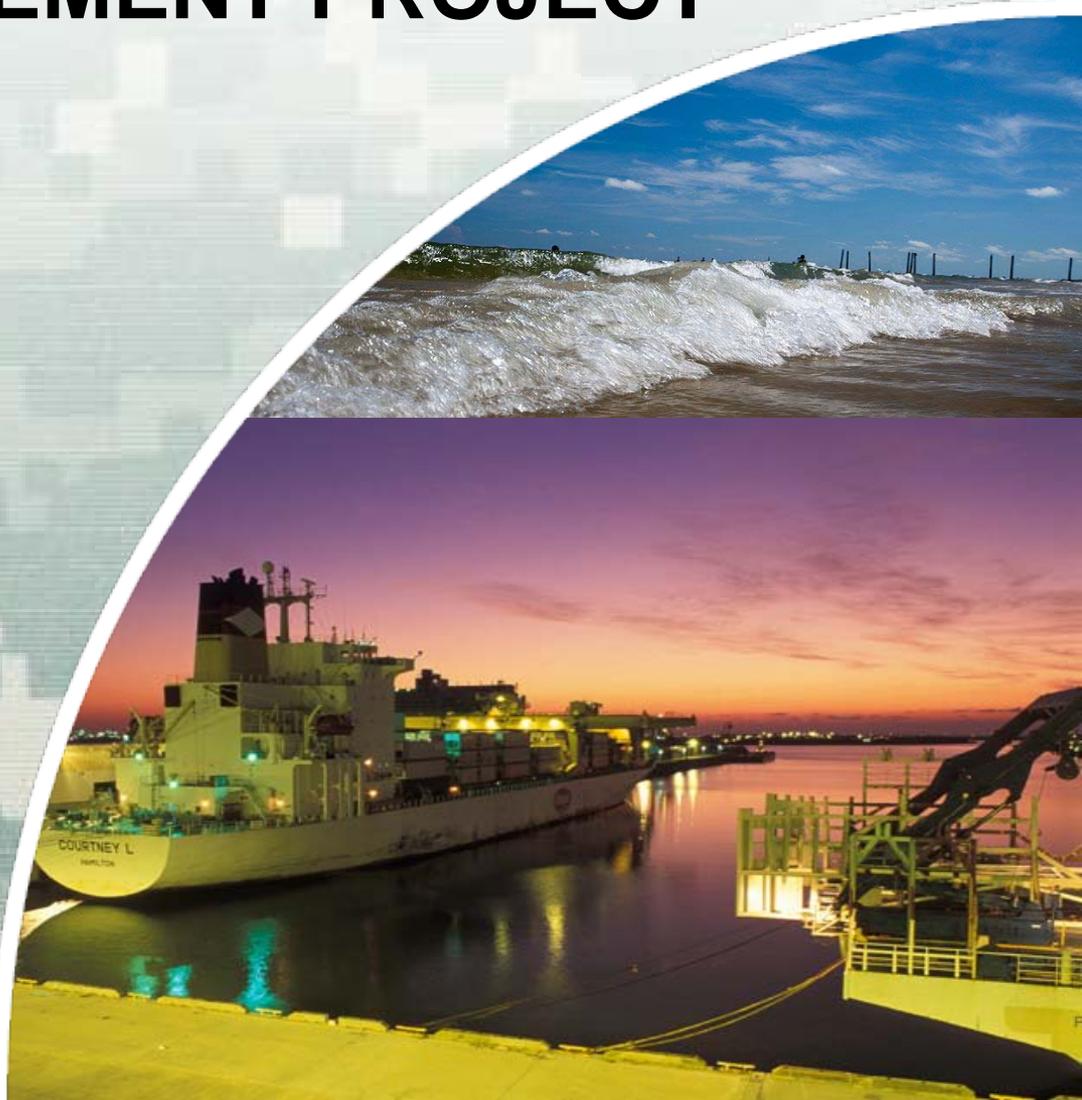


FREEPORT HARBOR, TEXAS CHANNEL IMPROVEMENT PROJECT

Civil Works Review Board (CWRB) Briefing
Galveston District
August 2012

Colonel Christopher Sallese
Commander
Galveston District



Briefing Purpose

- Provide an overview of the Freeport Harbor Channel Improvement Project (CIP)
- Update Board on close-out of action items from previous CWRB including IEPR and Economic Model Approval
- Obtain CWRB approval to release report for State and Agency Review
- Discuss the next steps towards the Chief of Engineers' Report



Briefing Outline

- Overview of Feasibility Study
 - ▶ Vicinity Map/Project and Study Background
 - ▶ Study Authority
 - ▶ Sponsor, Study Participants, and Project Delivery Team
 - ▶ Study Purpose
 - ▶ Study Area Description
 - ▶ Existing Project Dimensions
 - ▶ Plan Formulation
- Review of June 2011 CWRB Action Items
- Economic Summary
- Recommended Plan
 - ▶ Navigation Features
 - ▶ Dredged Material Management Plan (DMMP)
- Public Involvement
- Agency Technical Review/Independent External Peer Review
- Environmental Summary
- Environmental Operating Principles
- Risk and Uncertainty/Strategic Campaign Plan
- Future Timeline and Recommendation
- Questions?



The Texas System



- Texas is the #1 state in the Nation for Maritime Commerce
- 760 miles shallow draft
 - GIWW links the entire system
 - 13 shallow draft ports
- 240 miles deep draft
 - 15 deep draft ports
 - 4 ports in the top 10
 - Accounts for \$300B in economic value
 - Provides over 1 Million direct jobs
- \$20B in private investment planned



BLUF

- Additional economic analyses and model approval process reaffirmed the June 2011 recommendation
- The recommended plan is the locally-preferred plan (LPP)
 - ▶ LPP same as NED in three reaches
 - ▶ LPP smaller than NED in one reach
- Economic model approval by HQ on 13 Mar 2012
- IEPR issues addressed through economic model enhancement, sensitivity analyses and vertical team/SME coordination



Study Purpose



- Determine feasibility of providing navigational improvements to the Freeport Harbor Channel
- Maintain, protect and/or restore quality of terrestrial, cultural, coastal natural resources



Area of Interest



Study Authority

This feasibility study was conducted under authority of Section 216 of the Flood Control Act of 1970.

- *Section 216. The Secretary of the Army, acting through the Chief of Engineers, is authorized to review the operation of projects the construction of which has been completed and which were constructed by the Corps of Engineers in the interest of navigation, flood control, water supply, and related purposes, when found advisable due to significantly changed physical or economic conditions, and to report thereon to Congress with recommendations on the advisability of modifying the structures or their operation, and for improving the quality of the environment in the overall public interest.*



Non-Federal Sponsor



- Phyllis Saathoff, Acting Executive Director/CEO
- David Knuckey, Director of Engineering and Construction

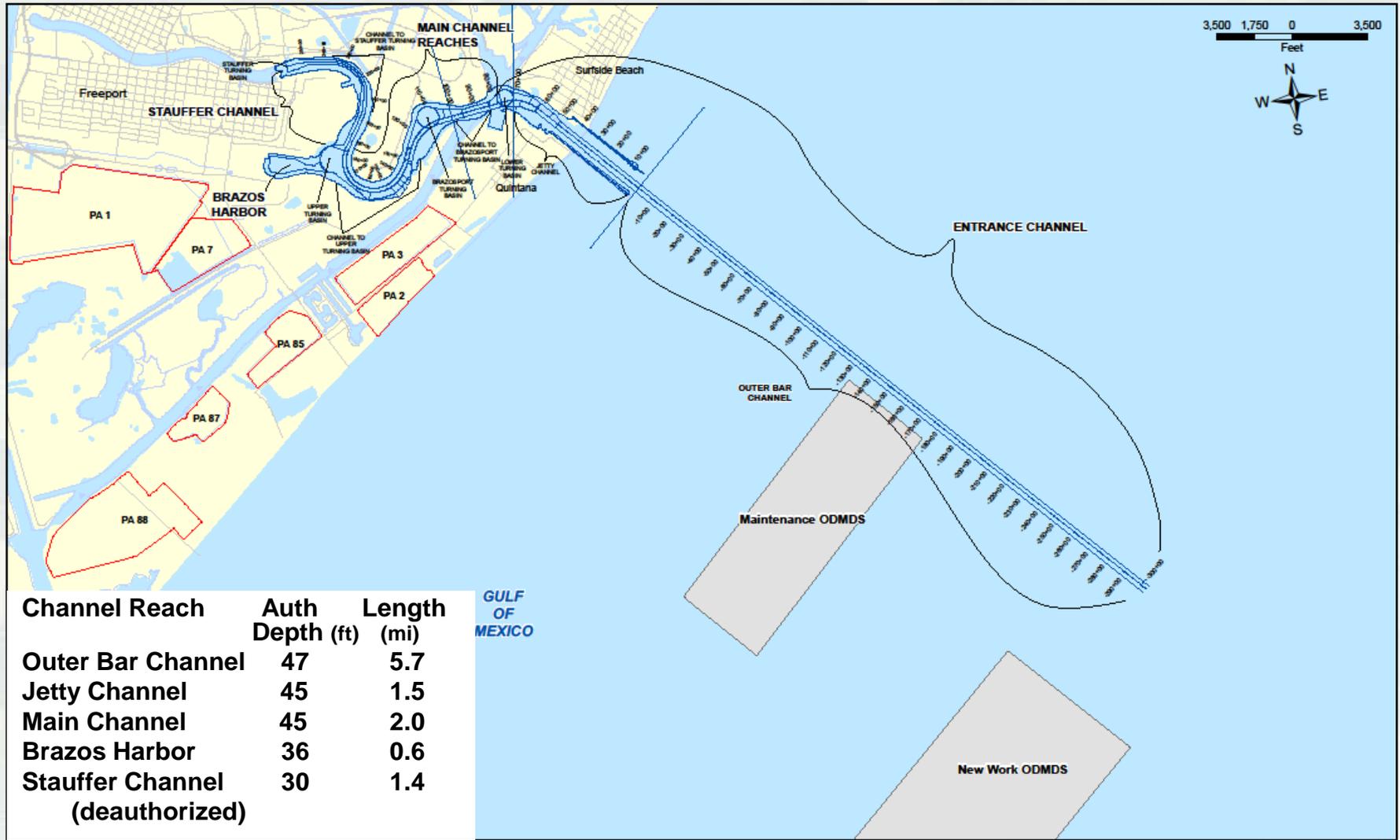


Study Area Description

- 70 square mile area
- Includes:
 - ▶ Brazoria County
 - ▶ Freeport, Surfside Beach, and Quintana
 - ▶ Freeport Harbor Channel
 - ▶ Brazos River
 - ▶ A portion of the Gulf Intracoastal Waterway
 - ▶ Gulf of Mexico shoreline on either side of Freeport Harbor Channel
 - ▶ 10 miles offshore into the Gulf of Mexico



Freeport Existing Project



Port Freeport Significance

- Provides access to one of the largest petrochemical and plastics production complexes in the world
- Nation's 27th largest waterway in total tonnage
- 16th largest port in foreign imports and exports
- Supports the Nation's Strategic Oil Reserves



Project History

- Federal channel improvement at Freeport was authorized by the River and Harbor Act (RHA), approved 14 June 1880. RHA provided for construction of jetties for controlling and improving the channel over the bar at the mouth of the Brazos River.
- Existing Freeport Harbor Project was authorized by the RHAs of May 1950 and July 1958. Acts provided for an Outer Bar Channel 38 feet deep and 300 feet wide from the Gulf of Mexico to a point inside the jetties and for inside channels 36 feet deep and 200 feet wide to and including the Upper Turning Basin.
- Subsequent authorization in 1970 and 1974 provided for the Jetty Channel to be relocated and deepened to 45 feet, widened to 400 feet and the North Jetty relocated northward.
- Current Study
 - ▶ Reconnaissance Report was completed in Oct 2002
 - ▶ FCSA signed in July 2003



Problems and Opportunities

■ Navigation and Commerce

- ▶ Existing Freeport Harbor Channel designed for vessels with loaded drafts of 42 feet – the world fleet is currently significantly larger
- ▶ Approximately 97% of crude oil imports currently shipped in vessels with design drafts ≥ 43 ft
- ▶ Wind and cross current issues
- ▶ Very large crude oil tankers from Middle East, Africa and Europe lighter before entering Freeport Harbor Channel – costly operation
- ▶ Potential annual reduction in direct shipment costs from Central and South America and Mexico is about \$ 19.5 million



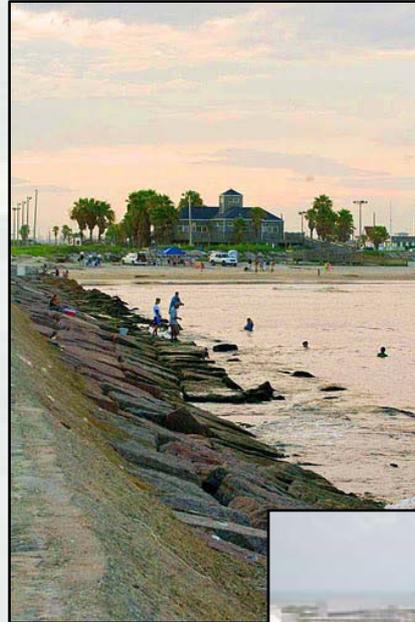
Problems and Opportunities

- Environmental

- ▶ Gulf shoreline erosion
- ▶ Air quality
- ▶ Contaminated sediments

- Economic Opportunities

- ▶ Opportunity to increase transportation efficiency
 - ▶ National Economic Benefits
 - ▶ Regional Economic Benefits
- ▶ Opportunity to serve new Panama Canal fleet – third set of locks to be completed in 2015



Alternatives Considered

- Structural Alternatives
 - ▶ More than 50 combinations of different channel depths and widths
 - ▶ Deepening to 50, 55, and 60-foot depths (main channel)
 - ▶ Widening from 400 to 600 feet for all depths



Alternatives Considered

- No Action Alternatives
 - Widening project completed by non-Federal sponsor before construction of Federal CIP
(Permit issued 2 March 2009)
 - Widening project not constructed before Federal CIP
- Nonstructural Alternatives
 - ▶ Relaxation of Pilots Rules
 - ▶ Alternative Mode of Commodity Transport
 - Inactive proposal for Texas Offshore Port System (TOPS) – permit request withdrawn



Public Involvement

- Scoping meeting –15 Jan '04
- DFR and DEIS released for 45-day public comment period ending 5 Feb '11
- Public meeting on DFR/DEIS held on 13 Jan '11
- All comments and responses have been incorporated into report
 - ▶ Local Texas governments expressed support
 - ▶ Majority of public comments related to Gulf shoreline impacts and air quality
- No significant comments were received that affected plan formulation or selection



**Feb 2011 Public Meeting
in Freeport, Texas**



Environmental Compliance

- Draft Feasibility Report (DFR)/Draft EIS (DEIS) released in December 2010
- Received EPA EC-2 rating (Environmental Concerns and Requests Additional Information in the Final EIS)
- Section 7 Endangered Species Act consultation – ongoing
- Section 401 Water Quality Certification received
- Historic Properties Programmatic Agreement executed with TX SHPO for Section 106 compliance
- Consistent with Texas Coastal Zone Management Program
- Compliant with all other applicable Federal and state regulations and Executive Orders



Independent External Peer Review

- IEPR managed by DDNPCX and conducted by Battelle
- IEPR completed 20 Oct 2008, in accordance with guidance
- 22 recorded comments (18 concurred, 4 non-concurred)
- Final IEPR Back-Check Report received 25 Apr 2011
 - ▶ 20 concur and 2 non-concur
- The two non-concurs pertained to economics which were addressed through model modifications and additional sensitivity analyses vetted through the vertical team.



June 2011 CWRB Action Items

- Panel members identified two action items.
 - ▶ Economic Model Approval
 - ▶ Remaining IEPR concerns



Economic Model Approval

- Initiated contact with PCX in Jun 2011
- PCX identified team of reviewers from SAJ
- Economic model endorsed by DDNPCX on 24 Feb 2012
- HQ approved model for one-time use on 13 Mar 2012
- Actions taken: extensive updating and expanded information included in model. Improved functionality and documentation.
- Outcome: The model reflects the best practices in deep-draft navigation economic analysis.



Remaining IEPR Concerns

Concerns discussed at June 2011 CWRB included:

1. Petroleum and chemical forecasts
2. Container benefits
3. Service vessel benefits
4. Increased draft of petroleum and chemical vessels
5. Amount of sensitivity analyses included



IEPR Concern #1

- *The project benefit-cost ratio depends on what appears to be overly optimistic commodity forecasts of crude petroleum, petroleum products, and chemicals*
 - ▶ Utilized Global Insight (crude), AEO (petroleum products) and regression analyses (chemical products) to forecast expected trends
 - ▶ Utilized conservative growth rates when compared to historical trends
- **Action Taken: Conducted additional sensitivity analyses to address panel's concerns. Concurrence of results with vertical team.**
- **Outcome: No changes to Recommended Plan. Team gained a better understanding of sources of risk through the sensitivity analyses**



IEPR Concern #2

- *The claimed Lower Stauffer Channel container cargo benefits appear invalid*
 - ▶ Utilized conservative growth rates, bulk vessel methodology
- **Actions Taken:**
 - ▶ Consulted with IWR, DDNPCX, SWD and HQ
 - ▶ Revised methodology to be consistent with Savannah Harbor, best practices in container benefit evaluations
 - ▶ More robust analysis as well as numerous sensitivity analyses to identify sources of risk
- **Outcome: Benefits and BCR increased. NED changed from 46 to 51 ft for this reach**



IEPR Concern #3

- *The Upper Stauffer Channel dredging benefits rest on the unsupported opinion of vessel service yards hoping to recapture business lost to Galveston*
 - ▶ Upper Stauffer currently de-authorized but still actively used by industry.
 - Data gathered through extensive coordination with industry and boat operators.
- **Action Taken: Sensitivity analyses evaluating growth rates were incorporated to identify the uncertainty of these benefits (which are 1% of overall benefits) and coordinated with vertical team.**
- **Outcome: No changes to Recommended Plan. Team gained a better understanding of sources of risk through the sensitivity analyses.**



IEPR Concern #4

- *There is no evidence of demand for greater vessel drafts for petroleum products or chemicals*
 - ▶ The drafts of the existing petroleum product vessel fleet are already at depths that could utilize 50-foot channel.
 - ▶ The drafts of existing chemical product vessel fleet are 39-41 feet. Expect this to increase to 47-53 feet based on fleet forecast.
 - ▶ Underkeel clearance of 3 feet established by pilots
- **Action Taken: Sensitivity analyses were added and coordinated with vertical team**
- **Outcome: No changes to Recommended Plan. Team gained a better understanding of sources of risk through the sensitivity analyses**



IEPR Concern #5

- *The report is missing critical reality checks and sensitivity analysis*
 - ▶ Throughout analysis the team collaborated with Port officials and industry representatives
- **Actions Taken:**
 - Conducted an additional 54 sensitivity analyses on model assumptions and were coordinated and concurred with by the vertical team.
- **Outcome: No changes to Recommended Plan. Team gained a better understanding of sources of risk through the sensitivity analyses. Model approved for one time use.**



Summary Response to June 2011 CWRB Action Items

- Result of additional analyses associated with four of the IEPR concerns resulted in no change to the Recommended Plan.
- Result of additional analyses associated with one of the IEPR concerns resulted in an increase in NED depth for Reach 3.
- End result is a better understanding of sources of risk through the additional sensitivity analyses performed.
- Model approval has resulted in more robust model used to identify our Recommended Plan.

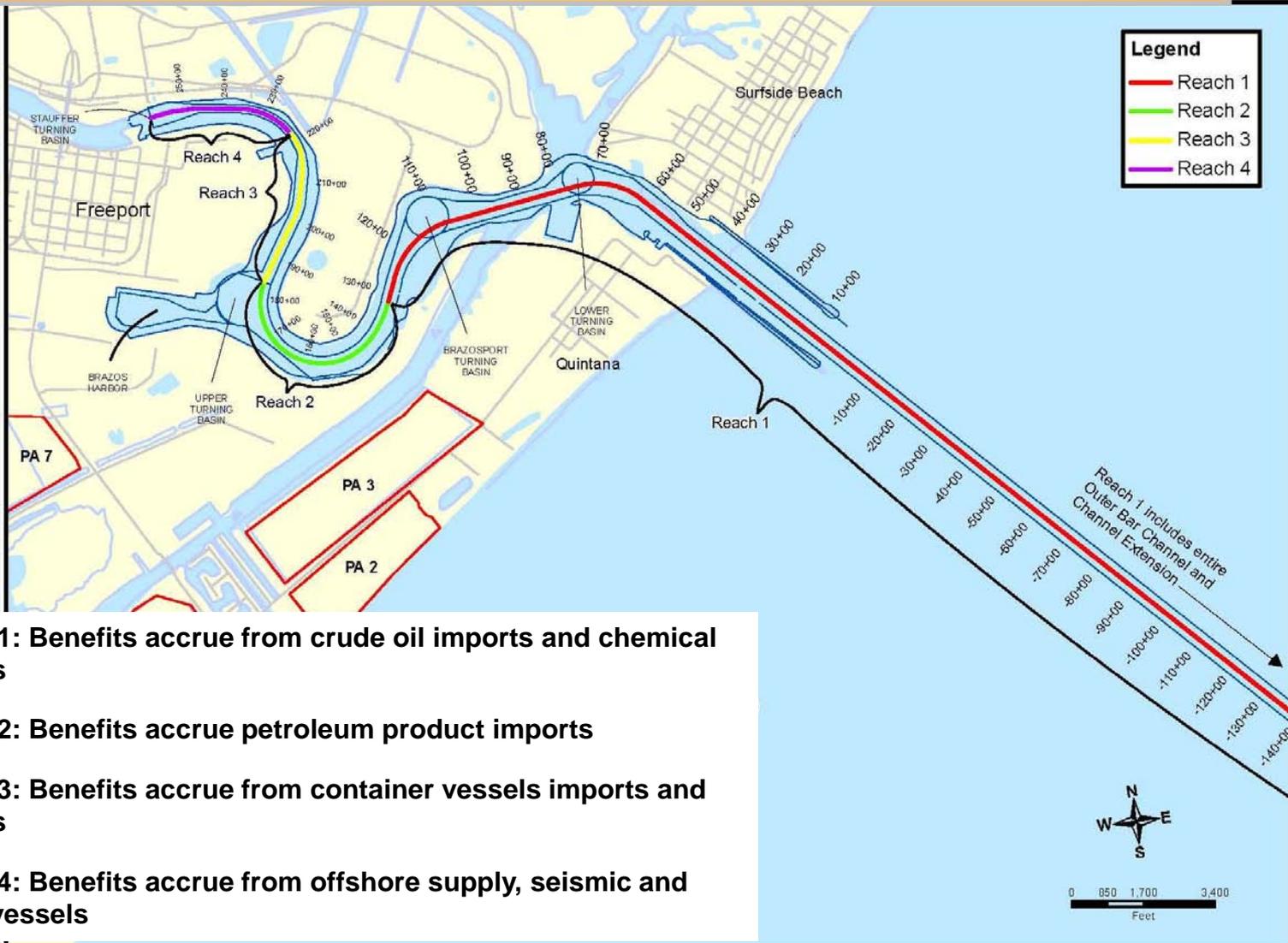


Reviews since June 2011

- District Quality Control
- SWD Quality Assurance
- Agency Technical Review
 - ▶ Modified documents were submitted to the DDNPCX for subsequent ATR
 - ▶ All review comments were resolved and closed
 - ▶ Cost estimates reviewed and certified by the Walla Walla Cost Engineering DX on 2 May 2012
 - ▶ Final FR/EIS ATR documentation and costs certified 25 Jun 2012
- Model Approval
 - ▶ Economic model approved by HQ on 13 Mar 2012



Economic Evaluation



Reach 1: Benefits accrue from crude oil imports and chemical exports

Reach 2: Benefits accrue petroleum product imports

Reach 3: Benefits accrue from container vessels imports and exports

Reach 4: Benefits accrue from offshore supply, seismic and cargo vessels

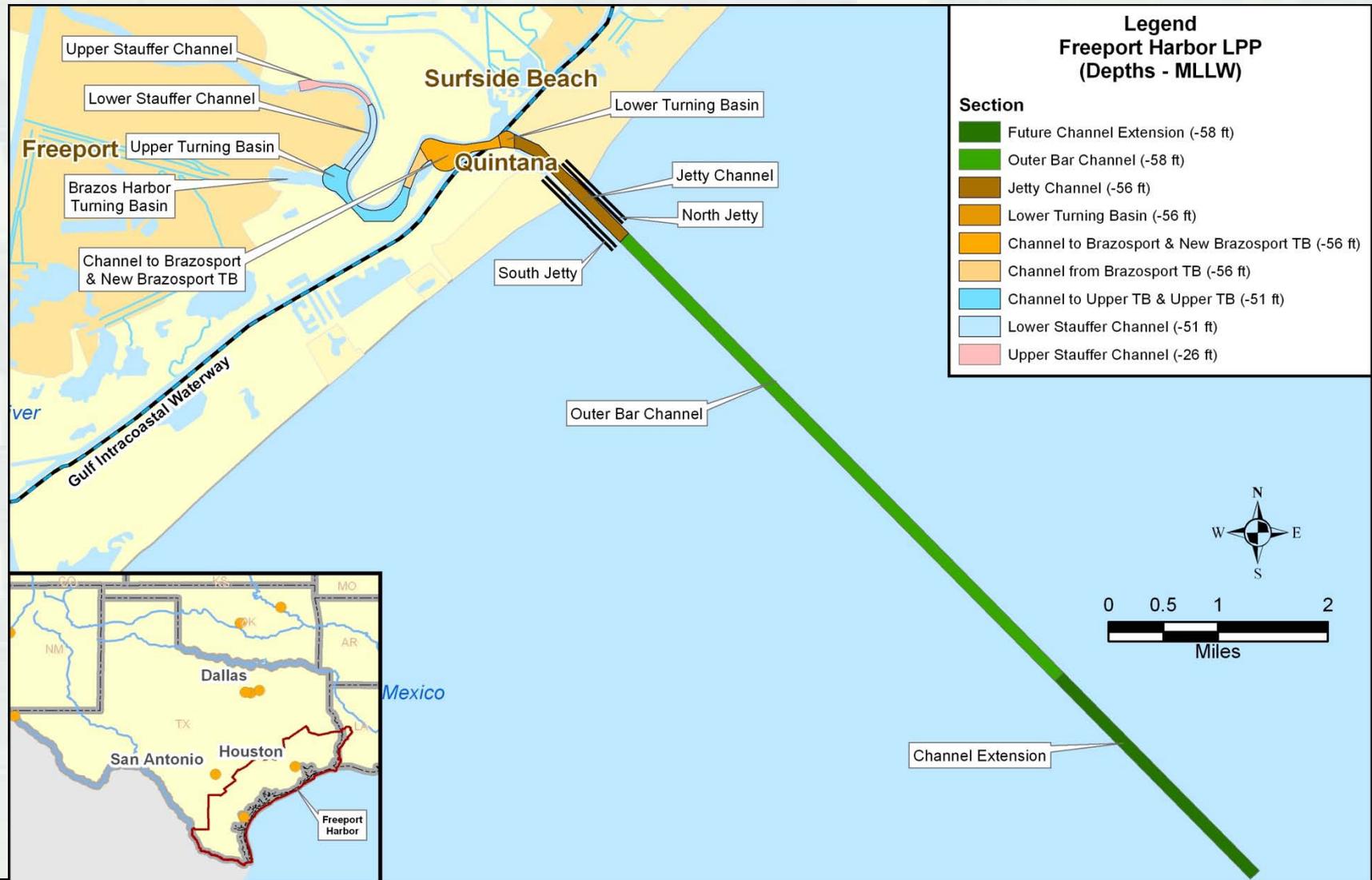
Plan Selection

Non-Federal Sponsor has requested a plan that is a deviation from the NED (Reach 1 < NED)

Segment	NED (ft @ mllw)	LPP (ft @ mllw)
Reach 1	63/ 61	58/ 56
Reach 2	51	51
Reach 3	51	51
Reach 4	26	26
Decision Criteria	NED (\$000)	LPP (\$000)
Total Costs	391,276	290,652
Annual Costs	31,871	25,063
Annual Benefits	74,474	47,646
Net Annual Benefits	42,603	22,583
Benefit to Cost Ratio	2.3	1.9

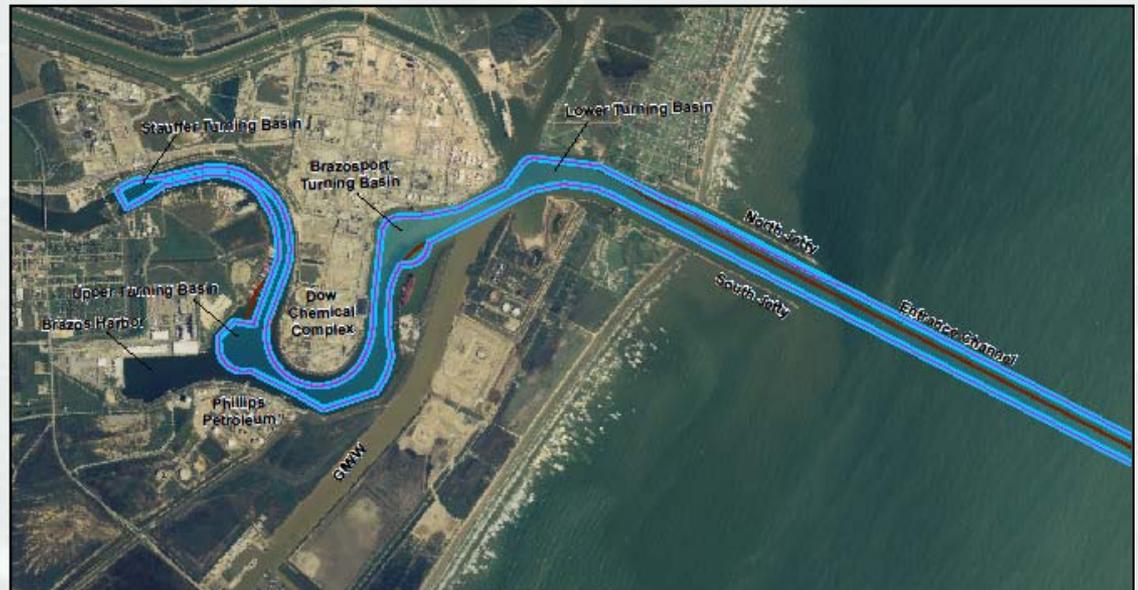


Recommended Plan

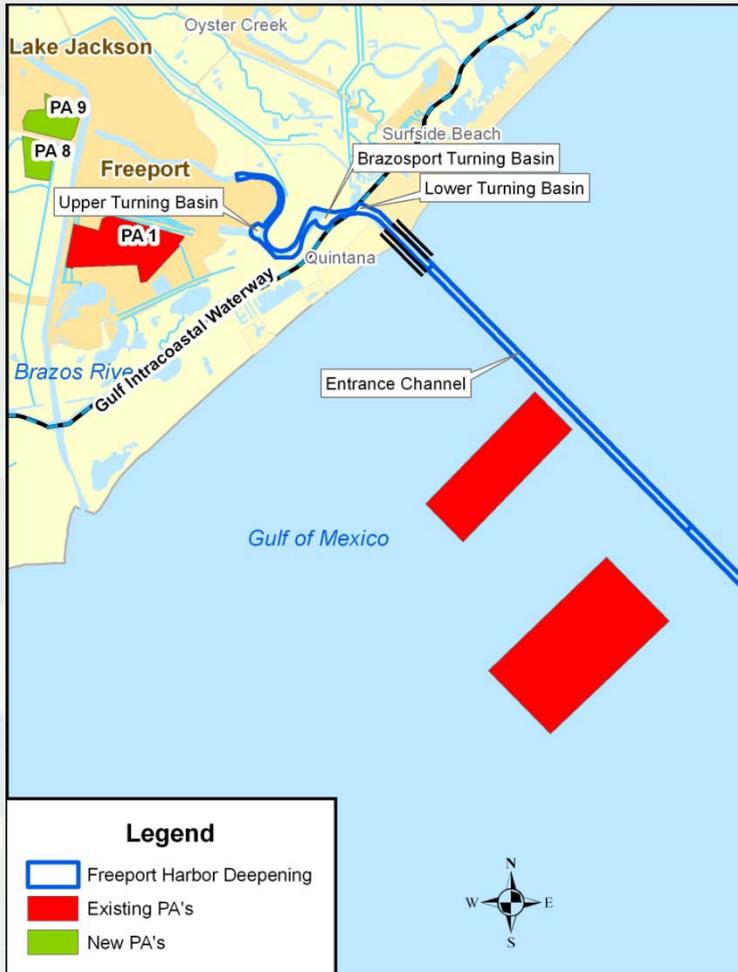


Recommended Plan Features

- Deepening of Freeport Harbor Channels and Turning Basins
- Dredged Material Management Plan
- Compensatory Mitigation Plan



Dredging Quantity Estimates

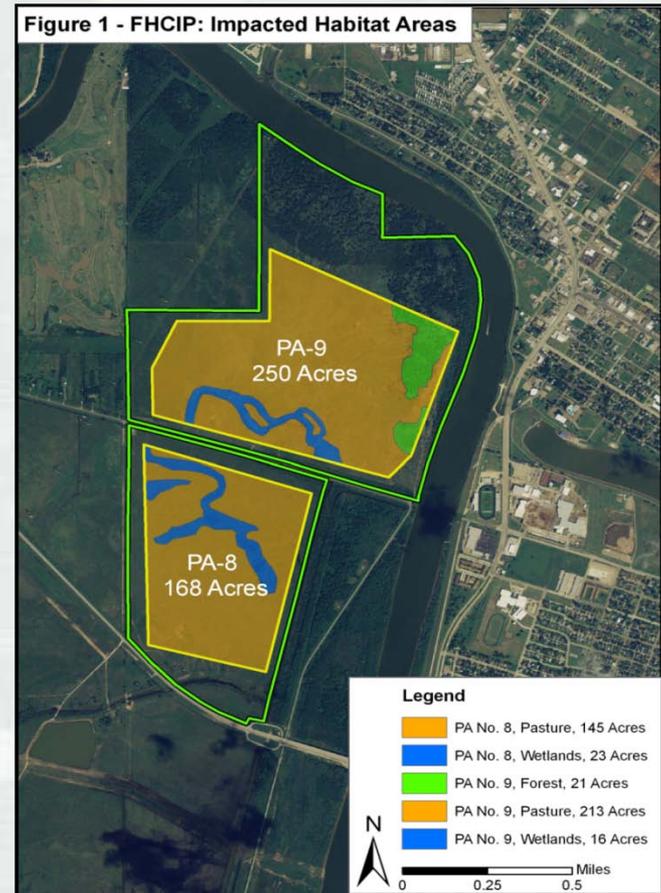


- New work (construction) quantity – 17.3 mcy
 - ▶ 12.7 million cubic yards (mcy) from hopper dredging extension channel and deepening of entrance navigation channel
 - ▶ 4.6 mcy from hydraulic pipeline deepening of inshore navigation channels and basins
- Maintenance dredging quantities
 - ▶ 50-yr total increases to 176 mcy
 - ▶ Average annual cost increase by about \$10.6 million cost shared at a rate of 52% Fed/48% Non-Fed



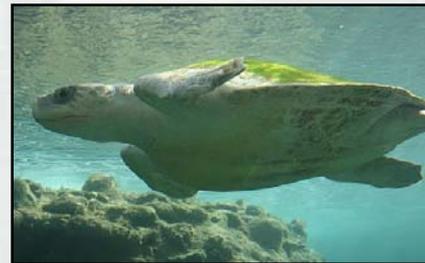
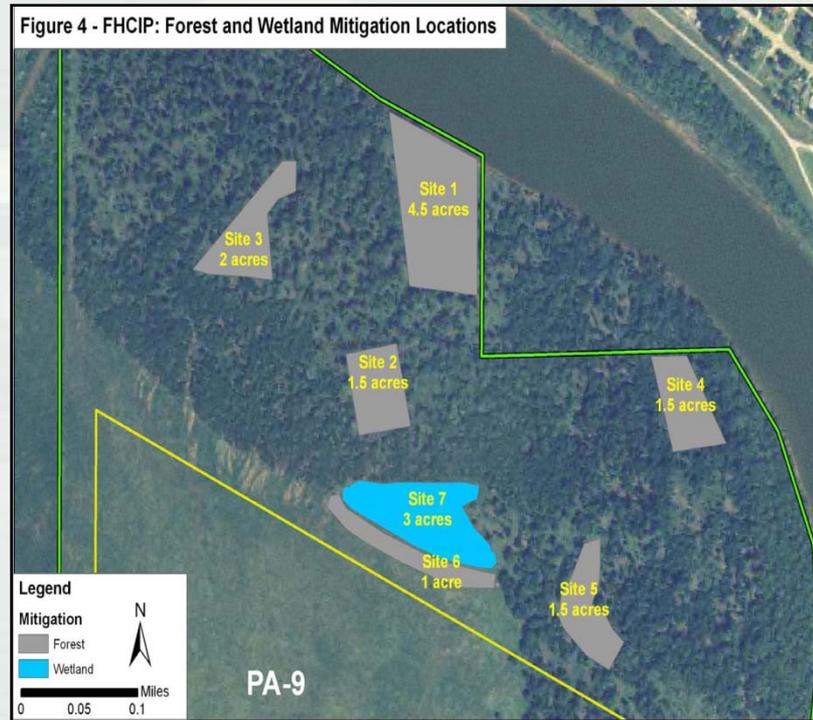
Environmental Impact

- Placement area construction adversely impacts
 - 39 acres of marginal wetlands
 - 21 acres of low quality forest
- Potential impacts to threatened and endangered sea turtles during offshore dredging
- NO_x emissions during construction comply with the State Implementation Plan
- Very small increase in tide range and tidal surge
- Minimal increase in Gulf shoreline erosion
- No salinity, water, elutriate and sediment quality impacts or significant cumulative impacts



Fish and Wildlife Mitigation

- Unavoidable habitat impacts mitigated by
 - ▶ Preservation of 131 acres of riparian forest and creation of 12 acres of new forest
 - ▶ Creation of 3 acres of wetland
- Adoption of reasonable and prudent measures to minimize incidental take of sea turtles



Estimated Costs for Recommended Plan

(October 2011 price level; 4.0% interest rate)

	Total First Cost	Fully Funded Cost
General Navigation Features (GNF)		
Fish and Wildlife Mitigation	\$161,000	\$180,000
Navigation Ports & Harbors	203,389,000	219,370,000
Planning, Engineering & Design	17,726,000	19,606,000
Construction Management	9,192,000	10,595,000
Sub-total GNF	230,468,000	249,751,000
LERRs and LSF		
Lands & Damages	1,653,000	1,753,000
Relocations	-0-	-0-
Navigation Ports and Harbors (LSF)	57,179,000	61,829,000
Sub-total LERRs and LSF	58,832,000	63,582,000
Aids to Navigation (USCG)	1,352,000	1,456,000
Total Cost	\$290,652,000	\$314,788,000



Cost Share for Recommended Plan

TOTAL COST (Baseline) = \$290.65 mil*

	Federal Share	Non-Federal Share	
Deep Draft Nav. from 19– 20 ft.	\$ 0.8	\$ 0.08	
Deep Draft Nav. from 20 – 45 ft.	8.5	2.8	
Deep Draft Nav. from 45 – 56 ft.	109	109	
Lands, Easements, ROW&Relocations	0	1.7	
Mitigation	0.1	0.1	
TOTAL COSTS*	\$ 118.4	\$113.7	\$232.1

GNF Costs - deepening to 20 feet - 90% Fed/10% non-Fed

GNF Costs - deepening between 20 and 45 feet - 75% Fed/25% non-Fed

GNF Costs - deepening greater than 45 feet - 50% Fed /50% non-Fed

*Total cost (baseline) excludes \$38.8 in bulkhead modifications, \$18.4 in non-Federal dredging and \$1.4 in aids to navigation.



Environmental Operating Principles

- ✓ **Foster sustainability as a way of life**– Design of project features addresses potential changes over time (e.g., sea-level rise, shoreline erosion, etc.)
- ✓ **Proactively Consider Environmental Consequences** – Direct and indirect effects of the project on the environment quantified using ecological modeling and compensatory mitigation provided for all unavoidable impacts
- ✓ **Create Mutually Supporting Solutions**– Provides economic benefits to the Nation and region while minimizing project impacts to greatest extent practicable
- ✓ **Continue to Accept Responsibility and Accountability** – Complies with all Federal and State laws and applicable Executive Orders
- ✓ **Employ Risk Management and a Systems Approach**– Risk was included in analyses and communicated in Report and EIS.
- ✓ **Leverage Knowledge**– Engaged all stakeholders, interest groups and agencies to develop an environmentally sustainable project
- ✓ **Employ a Transparent Process that Respects all Views**– Views of the public and agencies were solicited throughout the process



Strategic Campaign Plan

- **Goal 2: Deliver Enduring and Essential Water Resources Solutions through Collaboration with Partners and Stakeholders**
 - ▶ Freeport Harbor Channel study analyzed potential effects over a 70-square-mile area.
 - ▶ Close collaboration with local sponsor and agencies throughout study.
 - ▶ State and Federal resource agency professionals familiar with the highly complex coastal ecosystems of Texas integrally involved in the evaluation and development of the Recommended Plan.

- **Goal 3: Deliver Innovative, Resilient, Sustainable Solutions to the Armed Forces and the Nation**
 - ▶ Developed plans to be sustainable over long-term
 - ▶ Utilized latest development in engineering, economic, and environmental modeling
 - ▶ Review and inspection of work will be conducted during design and construction
 - ▶ Project design based upon risk analyses conducted throughout study
 - ▶ Independent review of the project documents and analyses was performed internally by USACE and externally by professionals from academia and expert consultants.

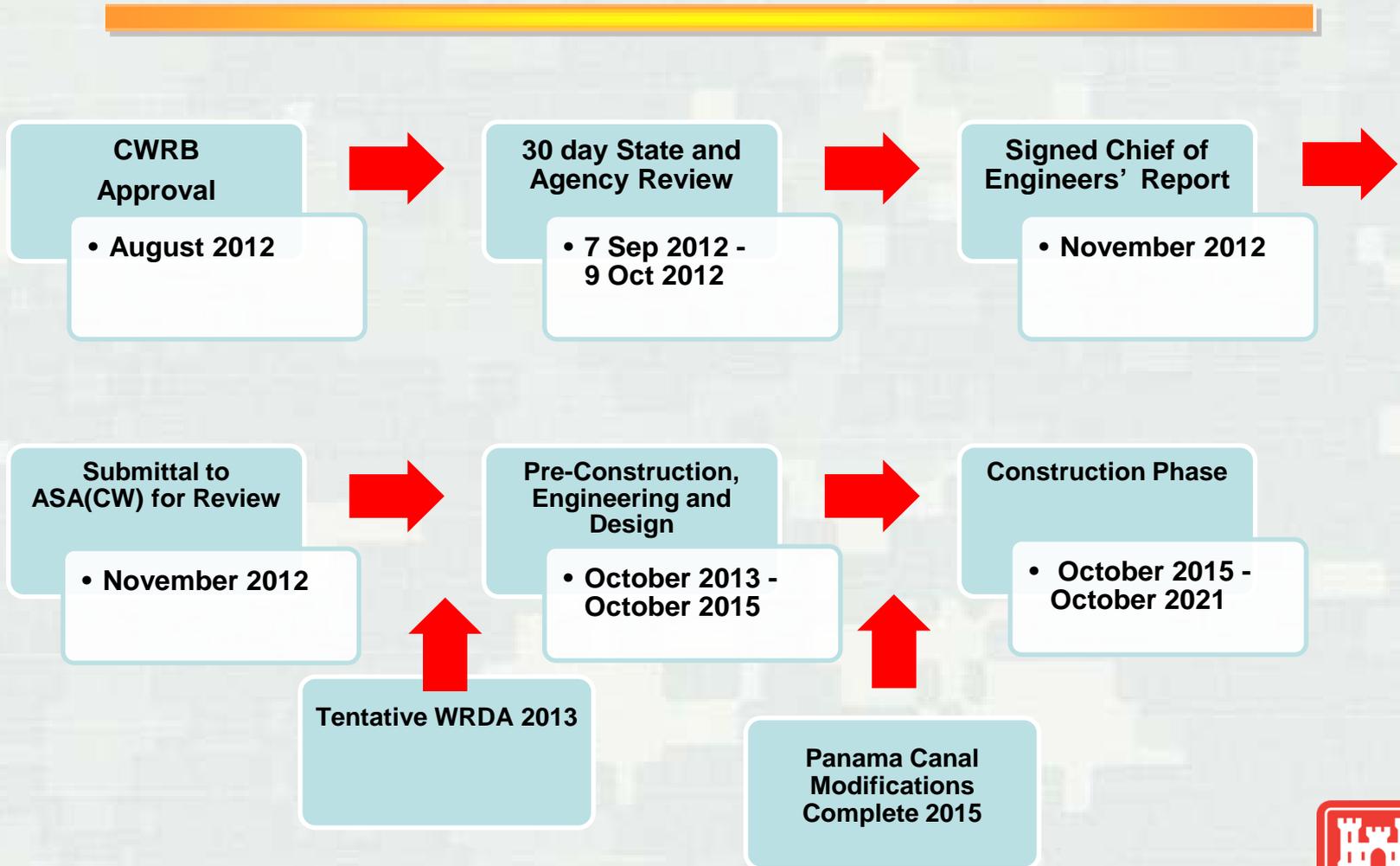


Risk and Uncertainty

- Considered in the following analyses
 - ▶ Economic benefit calculations – numerous sensitivity analyses indicate Recommended Plan BCR is greater than 1.0 for most likely scenario
 - ▶ Storm surge effects – minimal risk established by sensitivity analysis
 - ▶ Shoaling rates – rates based on sediment study; DMMP capacity sufficient for 50 years
 - ▶ Relative sea-level rise – risk to engineering features is minimal
 - ▶ Fish and wildlife mitigation – risk minimized by monitoring and contingency plan
 - ▶ Cost analysis – statistical modeling established contingency range of 11 to 24%
- Risk and uncertainty communicated in FR/EIS



Future Timeline



Recommendation

That the Civil Works Review Board approve the release of the Freeport Harbor Channel Improvement Feasibility Report and Environmental Impact Statement for State and Agency Review.



QUESTIONS?



Following slides are backup information only



Study Participants

- U.S. Army Corps of Engineers - Galveston
- Non-Federal Sponsor – Port Freeport
- Environmental review coordinated with:
 - ▶ Environmental Protection Agency
 - ▶ US Fish and Wildlife Service
 - ▶ National Marine Fisheries Service
 - ▶ Texas General Land Office
 - ▶ Texas Commission on Environmental Quality
 - ▶ Texas Parks and Wildlife Department
 - ▶ Texas State Historic Preservation Officer



Project Delivery Team Performance

- Multidisciplinary Project Delivery Team (PDT) met monthly at minimum
 - ▶ District team included project management, planning, engineering, environmental, operations, real estate, and cost engineering
 - ▶ Non-Federal sponsor (Port Freeport)
- PDT assisted periodically by:
 - ▶ ERDC and IWR technical experts
 - ▶ Environmental contractors
- Deep Draft Navigation Planning Center of Expertise (DDNPCX) at Mobile District provided Agency Technical Review (ATR) and Independent External Peer Review (IEPR) of draft reports, and ATR and IEPR backcheck of final documents
- Cost Engineering Directory of Expertise (DX) at Walla Walla District provided ATR of cost estimates and backcheck
- SWD RIT – several progress reviews, draft report reviews (2009 – 2012)



Environmental Summary

- Project environmental impacts are minimal
- All project impacts are mitigated
- No opportunities for beneficial use because of unsuitable material and cost

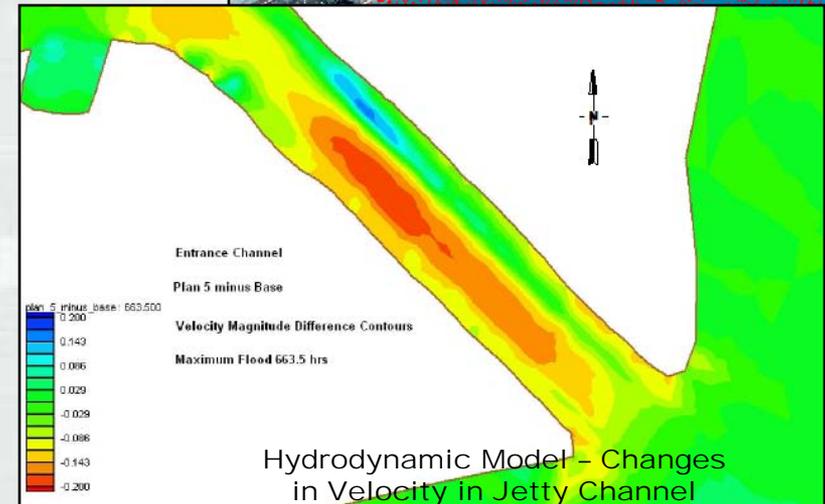


Boardwalk over dunes at
Quintana County Park



Technical Studies

- Ship simulation modeling
- Hydrodynamic-salinity modeling
- Sediment modeling
- Gulf shoreline impact study
- Ocean disposal modeling
- Storm surge modeling
- Ecological modeling
- Air emissions studies
- Cultural resource surveys
- Economic Modeling



Cost Apportionment

By Channel Reach

Cost Apportionment Navigation	First Cost	Fully Funded Cost
Federal Navigation:		
Freeport Channel	108,029,000	115,262,000
Lower Stauffer Channel	7,520,000	7,958,000
Upper Stauffer Channel	2,719,000	2,876,000
Mitigation	135,000	142,000
Total Federal Navigation	118,402,000	126,238,000
Non-Federal Navigation		
Freeport Channel	108,029,000	115,262,000
Lower Stauffer Channel	3,104,000	3,284,000
Upper Stauffer Channel	806,000	852,000
Land & Damages	1,653,000	1,713,000
Mitigation	127,000	136,000
Total Non-Federal Navigation	113,719,000	121,247,000
Total Navigation	232,121,000	247,485,000



FREEPORT HARBOR CHANNEL IMPROVEMENT PROJECT

**CIVIL WORKS REVIEW BOARD
WASHINGTON, DC
August 23, 2012**

FREEPORT HARBOR CHANNEL IMPROVEMENT PROJECT

THE BEGINNING

- Port Freeport and the U.S. Corps of Engineers embarked on this journey some 11 years ago.
- It started with a strategic meeting of port personnel. At the time, we were at a crossroads and asking “What kind of port do we want to develop?”

FREEPORT HARBOR CHANNEL IMPROVEMENT PROJECT

THE BEGINNING

- We looked at our assets
 - More than 7,000 acres of land
 - Close to the open sea
 - 50 miles from a major commercial zone and 4th largest city
 - In the center of a major petrochemical complex
 - Rail service and adequate highway infrastructure
 - But most of all, a supportive constituency from both industry and the public.

FREEPORT HARBOR CHANNEL IMPROVEMENT PROJECT

THE BEGINNING

- Containerization was at an all time high. Did we want to play a role in that segment of the shipping industry?
 - YES!
- Slowly, the future began to take shape.
 - We needed a multi-purpose terminal on deep water that could handle both general cargo as well as containers, hence Velasco Terminal. Construction of Phase I is near completion at a cost of \$60 million.

FREEPORT HARBOR CHANNEL IMPROVEMENT PROJECT

THE BEGINNING

- Deep water was next. Would containers stand alone and support deep water?
 - Probably, to some degree. So we visited with our petro-chemical industry leaders and oil company leaders and the answer was “yes, they could use a deeper channel.”
- How deep?
 - Per local industry - 56 ft.
 - Per the container shipping industry - 51 ft.

FREEPORT HARBOR CHANNEL IMPROVEMENT PROJECT

U.S. ARMY CORPS OF ENGINEERS

- Next stop, U.S. Army Corps of Engineers and a recon study to determine if there was a federal interest in taking our channel down to 56ft.
 - The recon study indicated substantial federal interest in moving forward with the project.

THE PORT OF CHOICE

- As we went through the process we saw any number of things coming together to create the port of choice for the 21st century.
- We are building the port of the future.

FREEPORT HARBOR CHANNEL IMPROVEMENT PROJECT

THE PORT OF CHOICE

- Velasco Terminal, a \$350 million facility, when completed, will be a state of the art terminal capable of handling 780,000 TEU's annually.
- Highway infrastructure improvements will make access to the Port more efficient; partnering with the State and county.
- The Union Pacific Railroad recently replaced the old swing bridge over the Old Brazos River which will improve rail service to and from the Port at a cost of \$15 million.
- Extensive pipeline network connecting the port and the petrochemical industry to other markets in the U. S.

FREEPORT HARBOR CHANNEL IMPROVEMENT PROJECT

THE PANAMA CANAL

- The Panama Canal should be completed by 2015 allowing the larger container ships access to the Gulf and South Atlantic ports.
- Currently no port in the Gulf of Mexico has 50+ft
- Port Freeport will have:
 - 56ft. channel for crude
 - 51 ft. channel for the petro-chemical industry and containers.



FREEPORT HARBOR CHANNEL IMPROVEMENT PROJECT

ECONOMIC ADVANTAGES



- The Port today generates:
 - 56,000 jobs - direct, indirect and induced
 - \$10 billion annual economic value
 - state and local taxes of \$400 million.
- Velasco Terminal will add:
 - 7,500 jobs - direct, indirect and induced
 - \$1 billion annual economic value

FREEPORT HARBOR CHANNEL IMPROVEMENT PROJECT

PETRO-CHEMICAL/CRUDE

- Sitting in the midst of one of the world's largest petro-chemical complexes, Port Freeport works in harmony with it's corporate neighbors such as :



FREEPORT HARBOR CHANNEL IMPROVEMENT PROJECT

PETRO-CHEMICAL/CRUDE

- Dow Chemical Texas Operations (Freeport) - \$4B
 - Currently building in a joint venture with Mitsui a new chlor-alkali plant valued at \$1.4 billion with production starting in mid-2013
 - Constructing a new, world-scale, propylene production facility for start-up in 2015
 - Constructing a new world-scale ethylene production plant in the U.S. Gulf Coast, for start-up in 2017
 - Dow **exports 48%** of all the products they manufacture by deep draft vessels which complements the President's goal to double exports in 5 years
 - Dow accounts for approximately 15 million tons of product – import and export

PETRO-CHEMICAL/CRUDE

- **Phillips 66/Enterprise**
 - Import approximately 12 million tons of crude annually
 - pumped by pipeline not only to it's refinery in Sweeny, Texas, but to refineries throughout the mid-west, Oklahoma, Missouri, Illinois, Ohio and Michigan
 - Phillips 66, in a joint venture with Chevron, currently building two new polyethylene units valued at \$1.1 billion with production starting in 2016

FREEPORT HARBOR CHANNEL IMPROVEMENT PROJECT

PETRO-CHEMICAL/CRUDE

- Freeport LNG
 - Recently announced a \$4+ billion liquefaction project allowing them to export domestic product in addition to their current LNG import/export operations, again complimenting the President's goal of doubling exports in 5 years.
 - Have reached agreements with Osaka Gas Co. and Chubu Electric Power Co. and in negotiations with Shell.
 - 1st Train operational 2017.



FREEPORT HARBOR CHANNEL IMPROVEMENT PROJECT

PETRO-CHEMICAL/CRUDE

- **Bryan Mound Strategic Petroleum Reserve**
 - Port Freeport is home to one of two federal Strategic Petroleum Reserve storage sites in Texas
 - Bryan Mound is a subterranean salt dome with 20 underground chambers, capable of holding a total of 226 million barrels, for use in national emergencies.
- **The Gulf of Mexico was a logical choice for oil storage sites**
 - Salt domes are known to be an inexpensive and secure means of petroleum storage.
 - Gulf Coast is the location of many U.S. refineries and distribution points for tankers, barges and pipelines serving the many parts of the U.S.

FREEPORT HARBOR CHANNEL IMPROVEMENT PROJECT

PETRO-CHEMICAL/CRUDE

- And many other chemical refiners who use the Freeport channel on a regular basis.
- Port Freeport and its stakeholders truly add value to the area, the region and Nation.



FREEPORT HARBOR CHANNEL IMPROVEMENT PROJECT

ADVANTAGES

- Improve navigation and safety for our Port, always an important factor.
- Allow for crude carriers to maximize vessel loading at 800,000 bbls verses the current light loading of only 500,000 bbls, thereby taking advantage of economy of scale.
- Allow larger crude carriers to discharge their crude at a safe and secure berth vs. lightering.
- Allow the larger 7,000 TEU container vessels access to Velasco Terminal verses 4,500 TEU vessel at the current 45' draft.

OTHER ADVANTAGES

- Marine Highway using the Gulf Intracoastal Waterway
- Promotes economic development
- Time is of the essence with the Panama Canal expansion due to be completed by 2015
- Longer it takes to complete this project the more it's going to cost
- Low interest rates

FREEPORT HARBOR CHANNEL IMPROVEMENT PROJECT

NON-FEDERAL WIDENING PROJECT

- Port Freeport is also pursuing a separate project to widen the Freeport Harbor Entrance Channel
- \$35 million project being funded by local interests
- Will accommodate the largest LNG tankers in service today providing additional economies of scale.
- Allow for 2-way traffic for certain class vessels.
- Expect to begin work Spring 2013

FREEPORT HARBOR CHANNEL IMPROVEMENT PROJECT

CONCLUSION

- Combined, the federal government and the Port have contributed approximately \$8.2 million to this project to date.



FREEPORT HARBOR CHANNEL IMPROVEMENT PROJECT

CONCLUSION

- **Support for the Locally Preferred Plan**
 - The Port Commission has acknowledged its ability to fund the local sponsor portion of the project
 - Our industry partners have said 56ft provides them depth needed to realize benefits in terms of reduced operating cost
 - Industry will support project cost in terms of local service facility modifications required and by supporting issuance of General Obligation Tax Bonds
 - NED Plan may have higher BCR but the preferred project depth is 56ft with a supported cost of \$291 million and BCR of 1.9

FREEPORT HARBOR CHANNEL IMPROVEMENT PROJECT

CONCLUSION

- This is a good project in terms of:
 - Environmentally friendly
 - No overhead obstructions
 - No pipeline issues
 - Adequate dredge material placement areas
 - Short dredging project of 11.8 miles, and
 - Strategic local and national investment
- The \$291 million price tag is an investment in our nation that will pay enormous dividends for decades.
- After more than a decade of study, it is time to move this project of national significance forward.

FREEPORT HARBOR CHANNEL IMPROVEMENT PROJECT

CONCLUSION

**After more than a decade of in-depth study,
we request you move forward
this project of
proven national significance
and
release the Feasibility Study Report for
State and Agency Review**

FREEPORT HARBOR CHANNEL IMPROVEMENT PROJECT

THANK YOU

- Once again thanks to all in the Corps, from headquarters, division in Dallas and the District in Galveston and others - Thanks for all the hard work you've put into developing these documents
- We thank our consultants, Younger and Associates, Steinberg and Associates and Herbie Maurer and Associates.
- And our economist, John Martin of Martin and Associates for all of their hard work to get us this far.

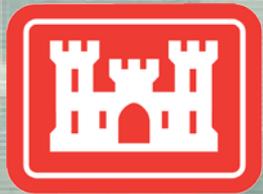
QUESTIONS?

www.portfreeport.com

Freeport Channel Improvement Project, Texas Southwestern Division

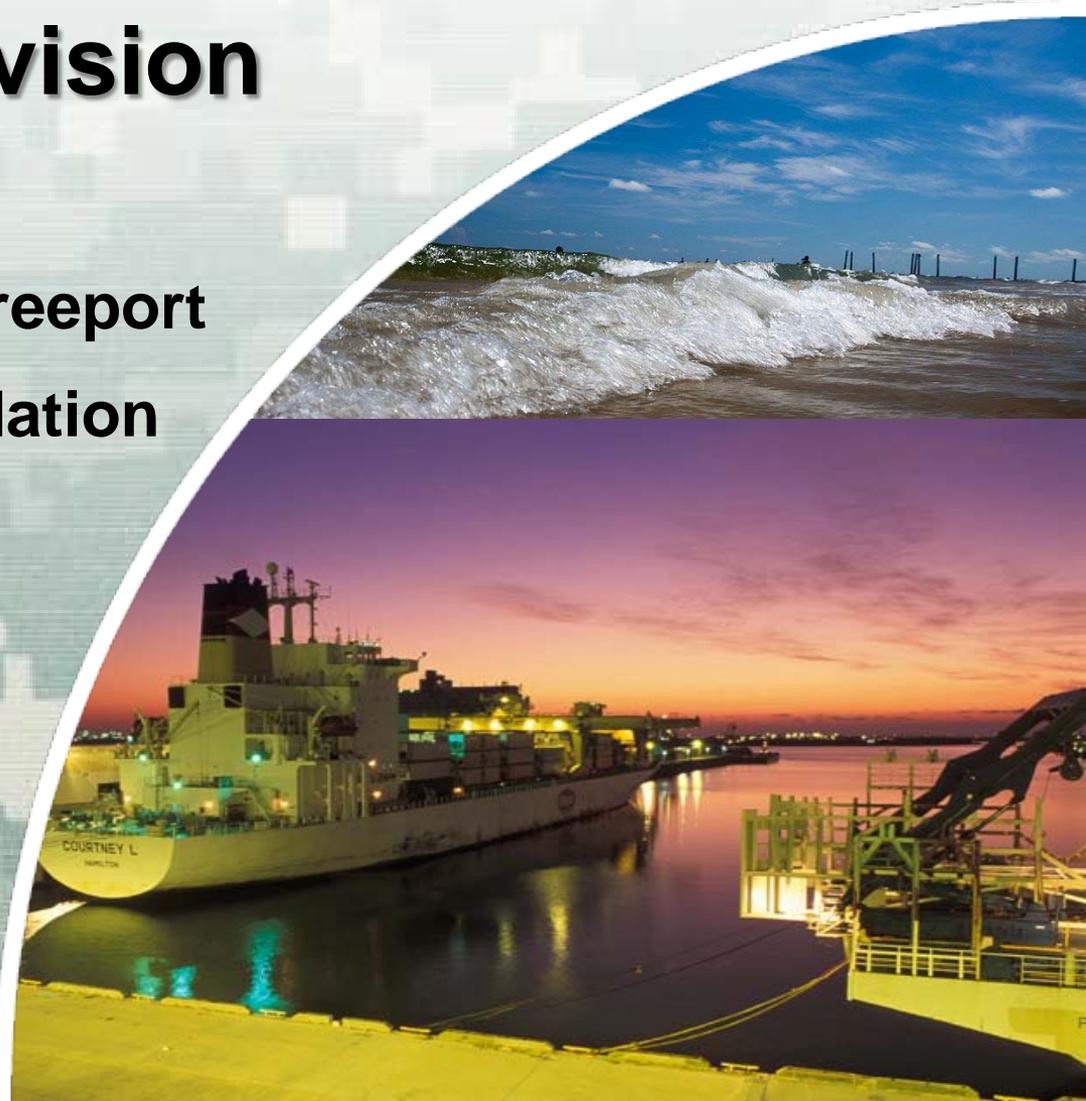
- Texas Coast Navigation
- MSC Endorsement of Freeport
- Support of Recommendation

BG Thomas W. Kula
Southwestern Division



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Galveston District

Texas Coast - Deep Draft Navigation



Beaumont
(Neches River)

Sabine-Neches Waterway:

Channel to Orange
(Sabine River)

Green's Bayou (Deep Draft)
Barbour's Terminal Channel
Bayport Ship Channel

Port Arthur

Houston Ship Channel

Galveston Harbor
Texas City Ship Channel

Freeport
Harbor

Matagorda Ship Channel

La Quinta Channel

Corpus Christi Ship Channel

Brazos Island Harbor - BIH
(Brownsville Ship Channel)
& Port Isabel Deep-Draft Channel & Turning Basin

Port Freeport



CWRB 2011 Action Items

Five IEPR items identified

- Fully addressed and resolved through the Vertical Team**
- Validated and strengthened the economic analysis**
- Economic analysis thoroughly vetted and more robust**

Economic Model

- Approved for one time use on 13 March 2012**
- BCR remained above unity**



SWD Rationale for Supporting Recommendation

- **District Counsel legal certification July 2012**
- **Report complies with applicable policy and law in place at this time**
- **Recommended project is economically justified and environmentally compliant**
- **Project is consistent with the Environmental Operating Principles**
- **Project supports Strategic Campaign Plan**
- **Strong Local Sponsorship**



SWD Recommendation

The Civil Works Review Board approve the release of the Freeport Harbor Channel Improvement Feasibility Report and Environmental Impact Statement for State and Agency Review



Southwestern Division

Questions?



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Back Up



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Quality Assurance

Centers of Expertise Involvement:

- **Cost Estimating DX**
- **Deep Draft PCX (ATR, IEPR, Econ)**
- **ERDC**
- **IWR**
- **Requirements met – Appreciate the support and teamwork from everyone**



Quality Assurance

Recent Reviews:

CWRB

New Legal Certification

New ATR Certification

New Cost DX Certification

Econ Model HQ Approval

SWD Review

HQ/OWPR Review

Review Plan for PED

Jun 2011

9 July 2012

11 July 2012

5 May 2012

22 March 2012

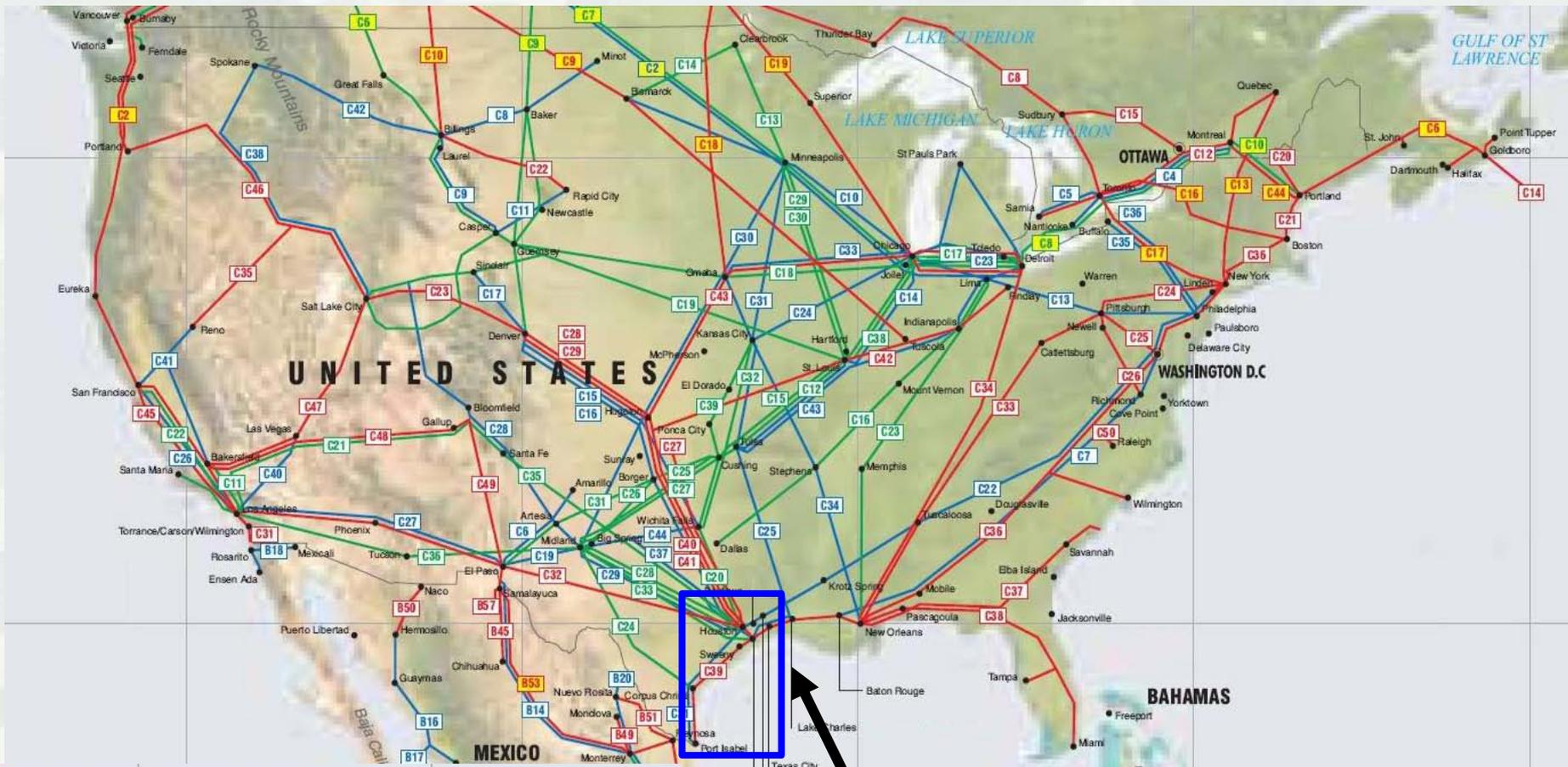
16 July 2012

14 Aug 2012

Update Underway



Petrochemical Pipeline Distribution



LEGEND:

- Oil pipeline
- - - Oil pipeline (planned/under construction)
- Gas pipeline
- - - Gas pipeline (planned/under construction)
- Products pipeline
- - - Products pipeline (planned/under construction)
- B12 Inter-Country oil pipeline label
- C12 Cross-Border oil pipeline label
- B12 Inter-Country gas pipeline label
- C12 Cross-Border gas pipeline label
- B12 Inter-Country products pipeline label
- C12 Cross-Border products pipeline label

Texas Coast - where the U.S. large refinery infrastructure exists...the main start and end point for the Value Chain



Southwestern Division

LESSONS LEARNED

- It takes a BIG TEAM
- Sponsor, District, Division and HQUSACE, CXs, Labs, States and Other Agencies
- Teamwork needs to continue to move this project from plan to reality



AGENCY TECHNICAL REVIEW

- ATR Back-Check 2 – May 2011
 - ▶ 144 comments received, evaluated and closed
- Final ATR – 29 comments received and closed
 - ▶ Cost Engineering, Plan Formulation, Environmental and Economics – June 2012
 - ▶ PCX Certified Final ATR 25 June 2012
- Economic Model – Approved for Use
 - ▶ 22 March 2012 – 50 comments received and closed



Break



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HQUSACE POLICY REVIEW CONCERNS

Civil Works Review Board

Freeport Harbor Channel Improvement Project

Texas

Commercial Navigation

Lee Ware

Office of Water Project Review

Planning and Policy Division

Washington, DC – 23 August 2012



HQUSACE Team Reviews:

- FSM was held on 6 July 2005
- AFB was held on 3 April 2009, AFB-PGM 17 July 2009
- FRC was held on 11 August 2010
- Draft Report Review (concurrent w/public) 12 January-11 Feb 2011, PGM 8 March 2011
- Draft Final Report- 6 April 2011, PGM 19 May 2011
- Final Feasibility Report /EIS: review began 14 June 2011, PGM dated 22 July 2011
- Revised Final Report- current review began 19 July 2012, currently being completed by HQ team

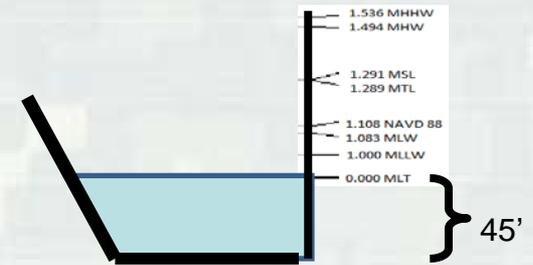


Policy Issues from AFB, Draft, and Final Report Reviews

- ❑ Planning Objectives and Constraints
- ❑ Future Without Project Conditions, Widening
- ❑ **Datum Conversion**
- ❑ **Economic Analysis and Projections**
- ❑ Price Levels, Discount Rate
- ❑ Beneficiaries and Associated Project Costs
- ❑ Agency Technical Review
- ❑ **Model Certification**
- ❑ Plan Formulation and Selection, ASA Waiver
- ❑ Mitigation
- ❑ Environmental Compliance
- ❑ Total Project Cost for Authorization
- ❑ DMMP
- ❑ Cost Engineering/MCACES, O&M Costs
- ❑ Cost Sharing
- ❑ Local Cooperation and Financial Certification
- ❑ Real Estate Plan



Datum Conversion



- **CONCERN:** The original work and report documentation was referenced to the local legacy datum Mean Low Tide (MLT) which is 1' lower than Mean Lower Low Water (MLLW) at Freeport. This was a concern relative to project depths for authorization, consistency with national datum standards, and application of cost sharing rules.
- **REASON:** ETL 1110-2-349 and EM 1110-2-1003 stress the need to convert local datums such as MLT to MLLW for consistency of U.S. port information and continuity with NOAA/U.S. Coast Guard navigation charts.
- **RESOLUTION:** The report was revised to explain and reference both datums in key sections related to project description and recommendations. Blended cost sharing was revised based on MLLW depths.
- **RESOLUTION IMPACT:** The concern is resolved.



Economic Analysis and Projections

- **CONCERN:** Many economic concerns were raised during the policy review regarding the vessel fleets (tankers, containerships, supply vessels) and commodity forecasts (oil, petrochemicals, containers), loading factors, and vessel operating costs for the various channels. These included uncertainties of projections given the changes in market conditions, effects of the oil spill, Panama Canal expansion, etc.
- **REASON:** Commodity/fleet projections and cost assumptions are important in that they form the basis for the estimated transportation cost savings (benefit) analyses. Appendix E of ER 1105-2-100 details the analytical steps to be followed in accomplishing economic studies for deep draft navigation studies.
- **RESOLUTION:** The report was revised to address numerous economic comments through expanded discussions and multiple sensitivity analyses. That helped to address the uncertainties of forecasts relative to project justification, including the concerns of the policy and IEPR reviewers.
- **RESOLUTION IMPACT:** Concerns have been resolved.



Model Certification

- **CONCERN:** The 2011 report summary indicated that the DDNPCX approved the economic spreadsheet model used on this study. However, the ATR documentation did not clearly state that model had been approved for use and raised a policy question. Further investigation concluded that the model approval process undertaken in 2009 had not been completed.
- **REASON:** The goal of certification/approval is to assure models produce technically and theoretically sound results. Under current guidance in EC 1105-2-412, PCXs submit model documentation to HQ. CECW-P provides final approval or certification in consultation with the Model Certification Panel.
- **RESOLUTION:** The PCX coordinated technical review of the model and submitted it to HQ for consideration by the Model Certification Panel in order to satisfy current requirements. The model was approved for use on 13 March 2012.
- **RESOLUTION IMPACT:** The concern has been resolved and the revised results have been incorporated into the final report.



HQUSACE POLICY COMPLIANCE REVIEW TEAM RECOMMENDATION

**Release of the draft Chief's Report – Feasibility Report
and EIS for S&A Review.**



Board Action



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SWG Lessons Learned

- 3x3x3 is essential from the standpoint of steady funding and prompt completion prior to changes in policy.
- 3x3x3 Risk register will allow us to limit sensitivity analyses to identify proper level of risk for a successful study scope.
- Don't close out ATR comments based on future actions pending.
- Early and regular coordination with the vertical team and PCXs throughout the life of the study is essential.
- Make sure ATR team members have knowledge of regional variabilities.
- PCXs role is still maturing in light of Civil Works Transformation.
- There is a need for additional certified models to ensure structured and consistent analysis.



SWD Lessons Learned

- Improved integration within entire vertical team
- Transformation will better drive unified vision to more effectively scope efforts to reach end-state
- Transformation will require corporate pieces in place, well-staffed, accountable, and with defined measures of success

