

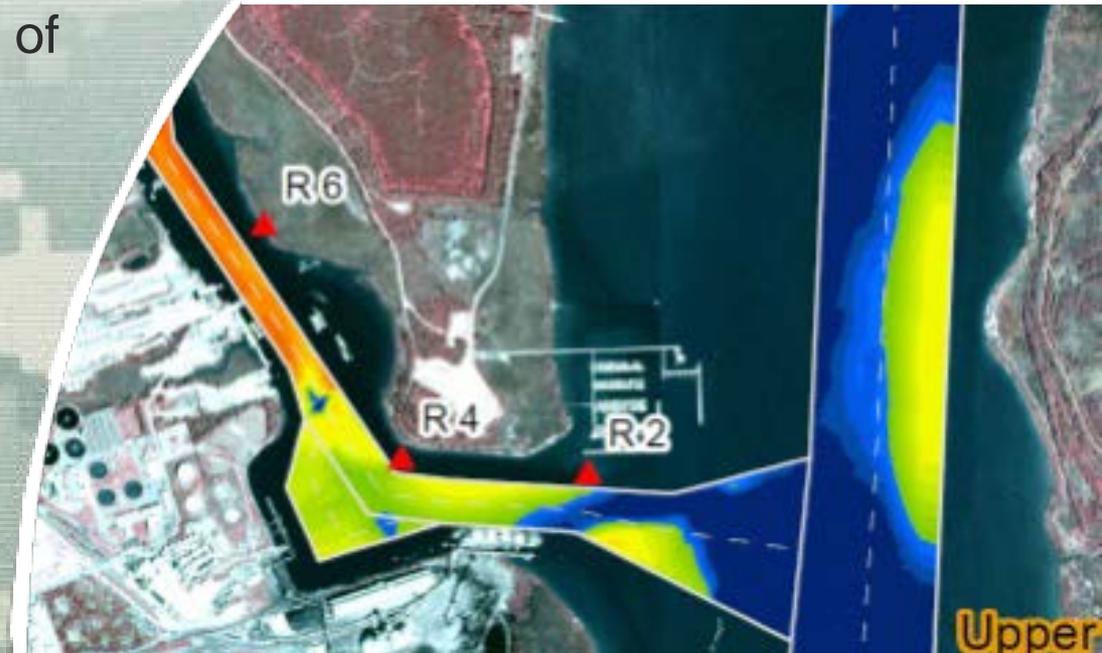
NOAA Hydrographic Services Review Panel

Updated Nautical Charting and Consistency Standards

Tony Niles,

Assistant Director for Civil Works
Research and Development

Headquarters, U.S. Army Corps of Engineers

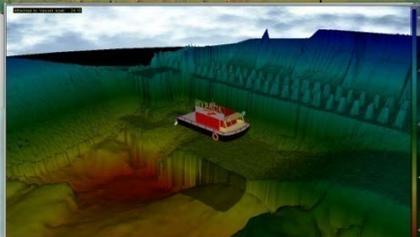


US Army Corps of Engineers

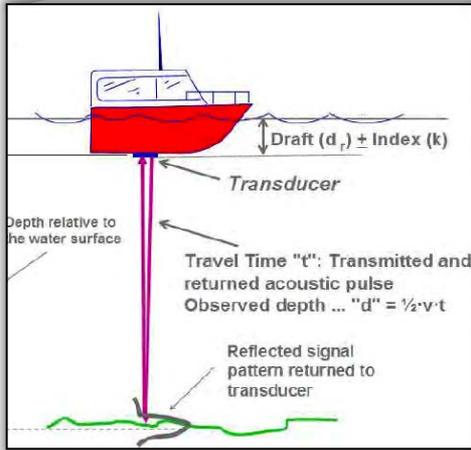
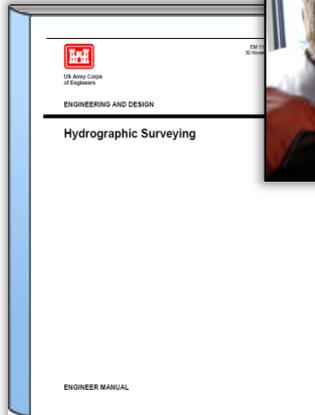
BUILDING STRONG[®]

USACE Coastal Navigation Mission

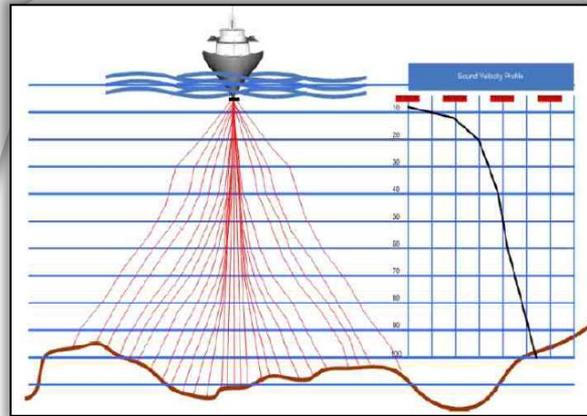
- Largest Business Line
- Mission includes;
 - 1,067 Navigation Projects
 - 19 lock chambers
 - 13,000 miles of channels
 - 929 navigation structures
 - 844 bridges



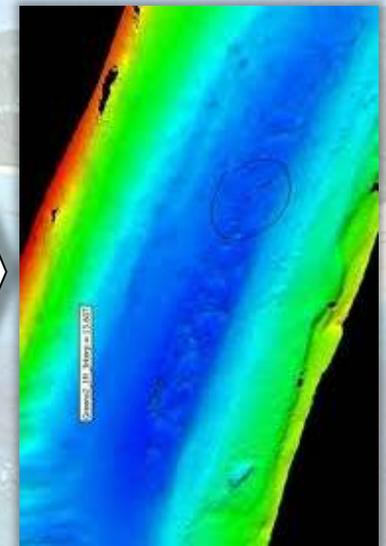
Assessing Channel Conditions



Single-Beam



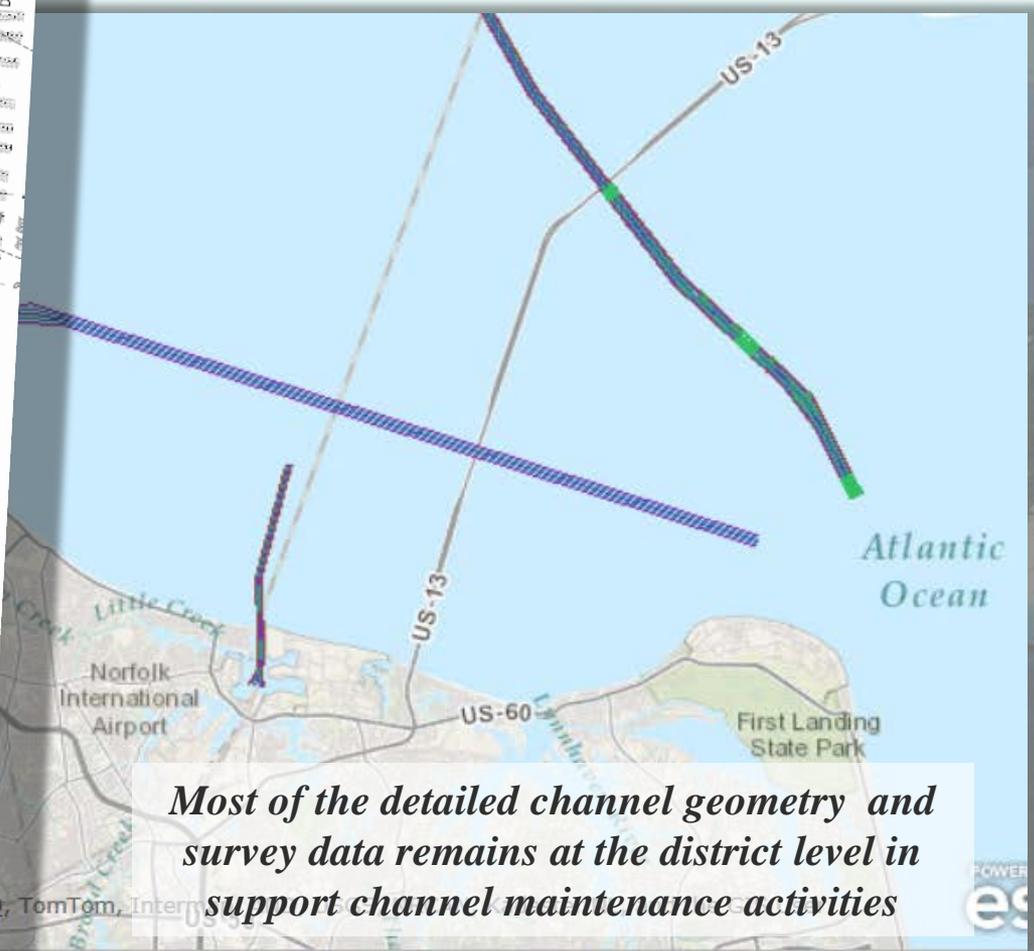
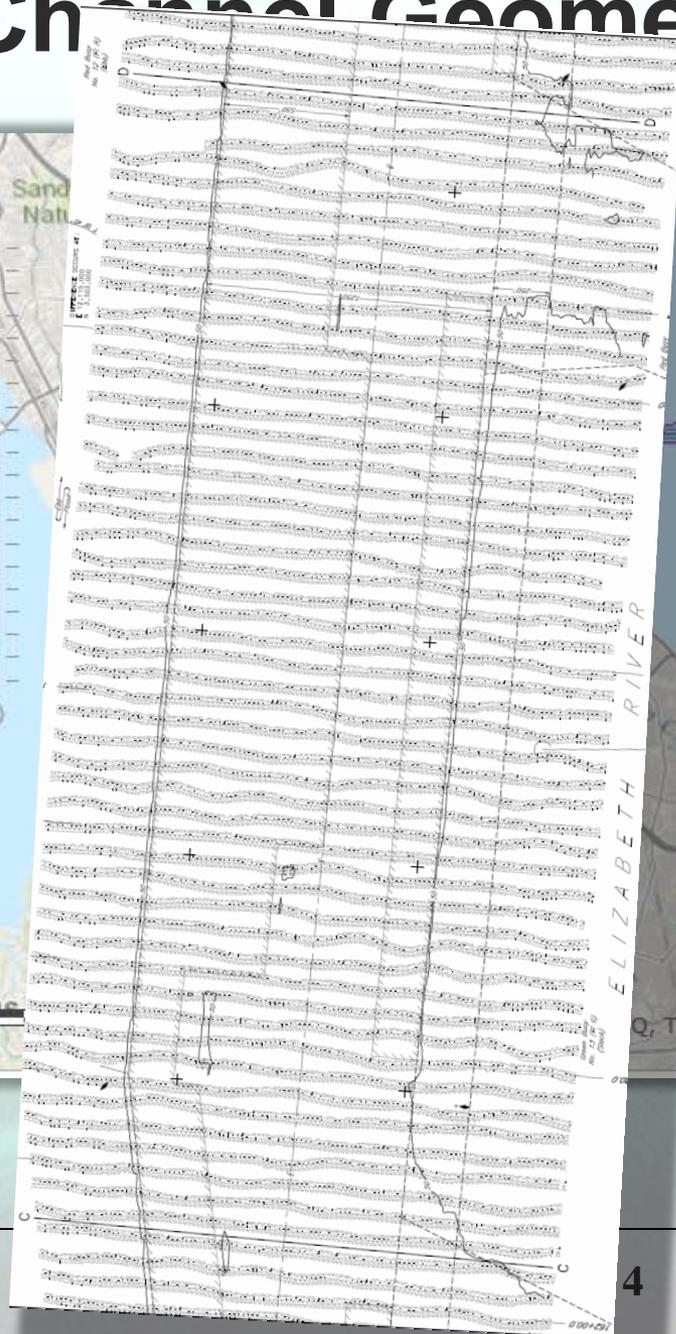
Multi-Beam



Accurate Channel Condition Data



Channel Geometry and Survey Data



Most of the detailed channel geometry and survey data remains at the district level in support channel maintenance activities



Channel Condition Products to NOAA

33 CFR Sec 209.325: USACE is required to provide results of hydrographic surveys to NOAA within one month of the survey.

LEFT OUTSIDE QUARTER (feet)	LEFT INSIDE QUARTER (feet)	RIGHT INSIDE QUARTER (feet)	RIGHT OUTSIDE QUARTER (feet)
37.1	43.5	41.1	44.8
21.2	27.5	30.0	33.6
41.0	37.9	30.1	18.5

**Tabular Channel
Condition Report**



**Digital Survey and Navigation
Channel Framework Data**



BUILDING STRONG®

Channel Condition Product to Navigation Interests



PORTLAND DISTRICT
US Army Corps of Engineers

HOME + MISSIONS + **NAVIGATION** + SURVEYS

HOT INFO Willamette winter flood risk information and resources: www.nwp.usace.army.mil/missions/WaterFloods.aspx

Hydrographic surveys

Collapse All Expand All
About these reports and surveys

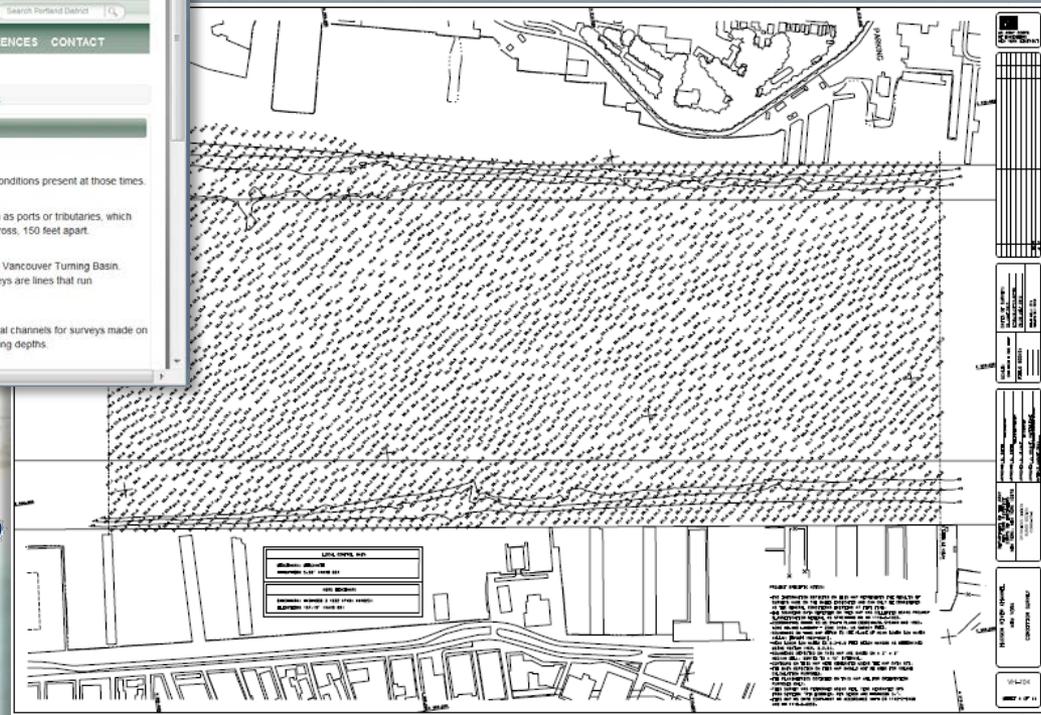
These data files show results of surveys made on the dates shown and can only be considered as indicating general conditions present at those times.

Columbia River Side Channel surveys are channel-line surveys of the projects adjacent to the Columbia River, such as ports or tributaries, which have a Federal-authorized channel. Channel-line surveys are survey lines which run parallel to the channel, 7 lines across, 150 feet apart.

Columbia River surveys are channel-line and cross-line surveys of the Columbia from The Mouth of the Columbia to Vancouver Turning Basin. Channel-line surveys are survey lines which run parallel to the channel, 7 lines across, 150 feet apart. Cross-line surveys are lines that run perpendicular to the channel, bank-to-bank and are generally 500 feet apart.

Each **channel status report** below represents the controlling depth per channel quarter of all the District's navigational channels for surveys made on the dates shown. Reports are usually updated once a month. [Click here for methodology diagram of extracting controlling depths.](#)

Channel status reports (all areas)



Survey Plot of Reach or Project Area



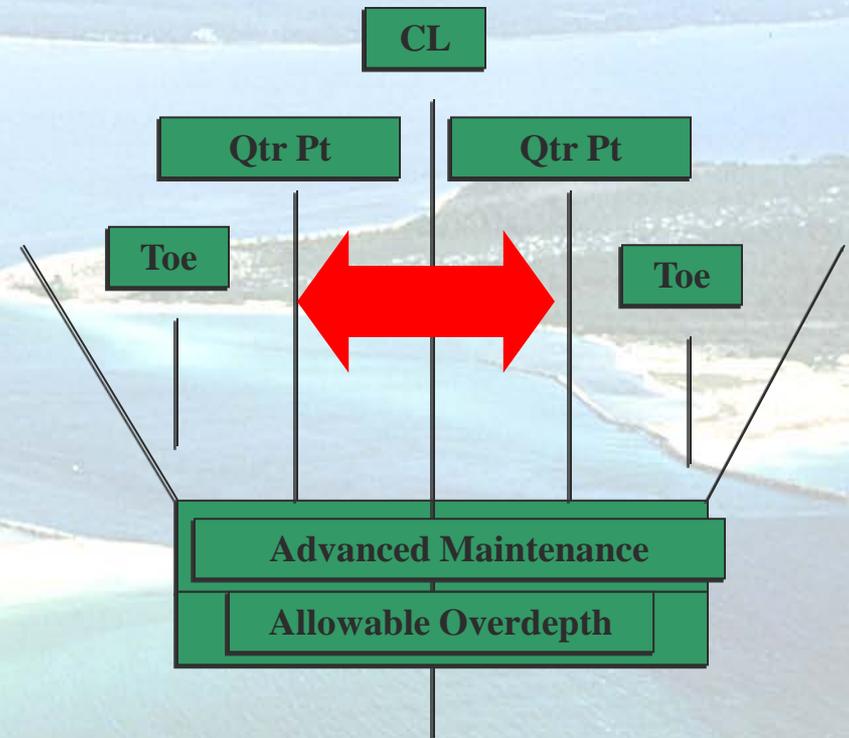
Coastal Navigation Issues - Nationwide

- **Budget Reductions**
- **Dredging Costs Increasing**
- **Dredged Material Placement Capacity Issues**
- **Environmental ‘Windows’: Increasing restrictions on when dredging can be performed**
- **Low Use Navigation Projects**



Channel Performance – Coastal *High Use Channels, >10M tons/year*

- Goal: Half channel width, 95% of time
- Actual: 35% of time
- Analogy to building a 2-lane road; Present funding allows one lane, one-third of the year



Enterprise Needs for Channel Condition Data

Must quantify the impacts of present channel conditions on commercial shipping, and compare to all other channels requesting dredging funds.

- Data must be **quantitative, objective, repeatable, consistent, and straightforward** enough that it can be applied rapidly and affordably to all channels in the navigation portfolio of projects.

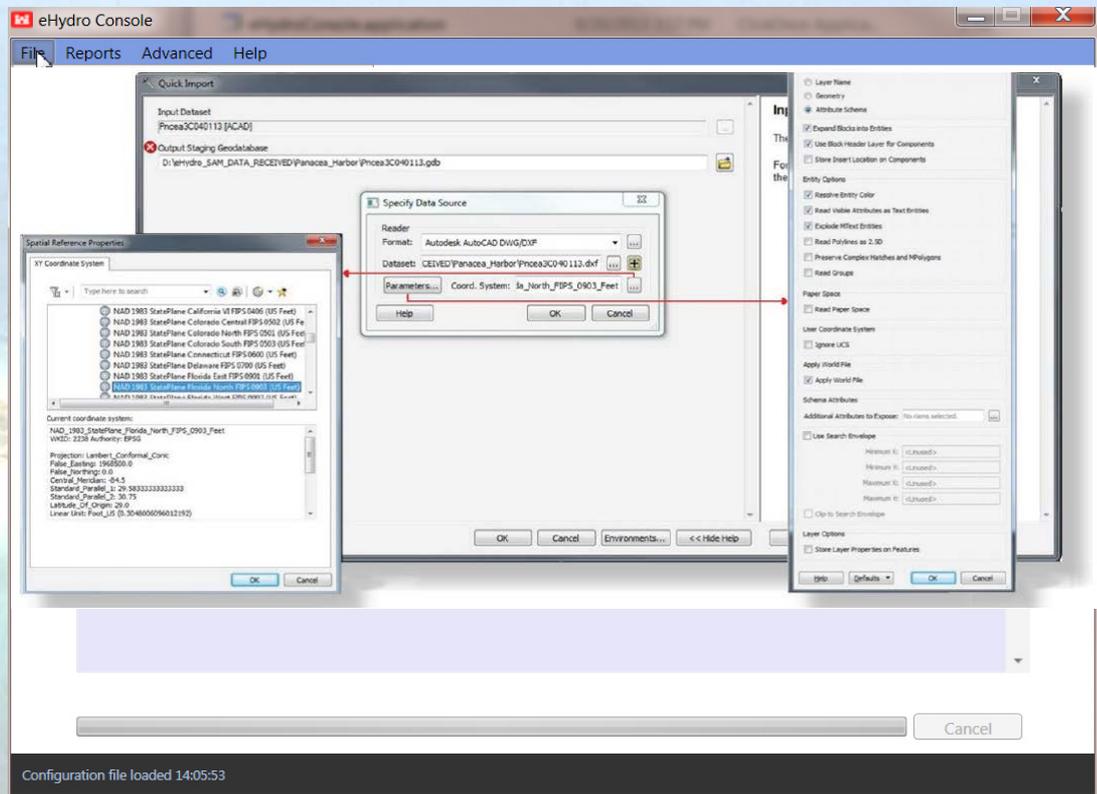


eHydro Application and Reporting Process

Agency-wide software and process that must pass the unfunded mandate requirement;

1) Minimal burden on the districts' resources,

2) Must benefit the field's project workflow.



eHydro Application and Reporting Process

Condition Plots

HQ Channel Indices

NOAA Reports

Metadata



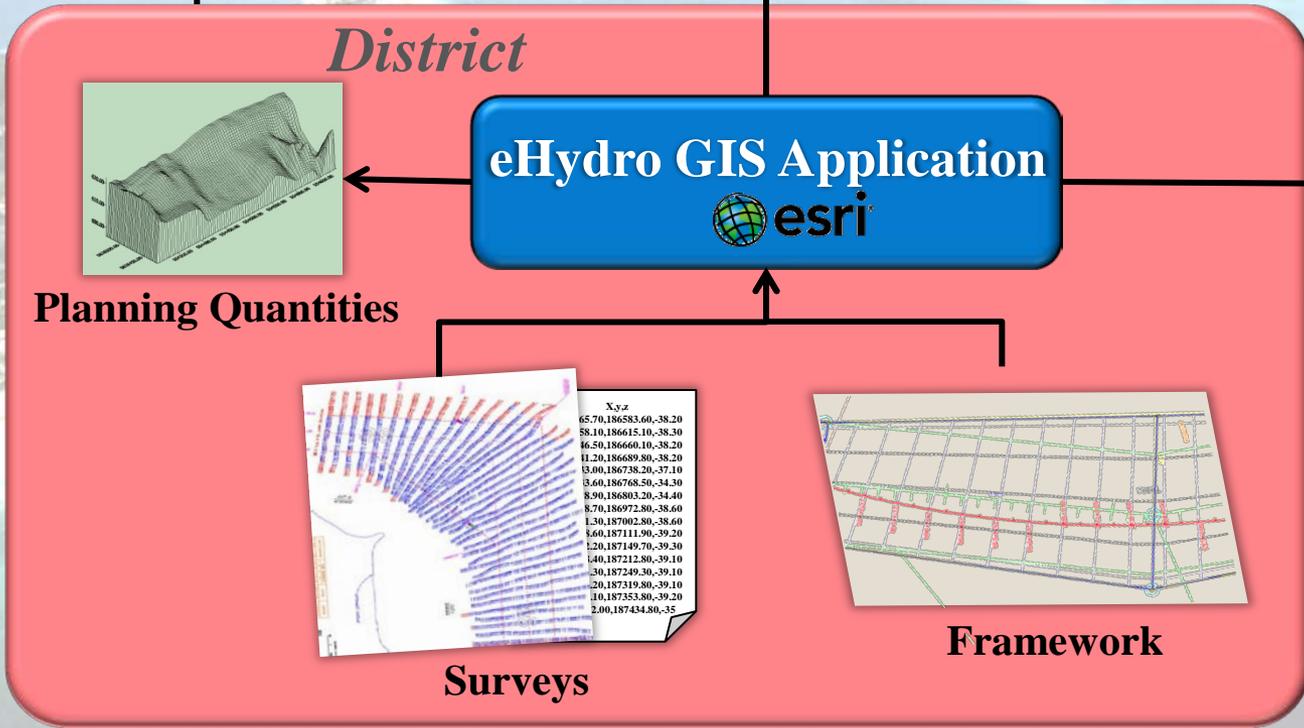
Project - Civil Works Identification System Number	Channel	1991		2001		Total
		Depth	Width	Depth	Width	
CORPUS CHRISTI SPB CHANNEL 014342	Solo Dike Channel	27.00	5,500.000	27.00	5,500.000	55,000.00
	Jetty Channel	17.00		17.00		
	Inner Basin of Harbor 16	30.00		30.00		
	Inner Basin Main Channel	63.67		63.67		
	Harbor Basin to Junction at La Quinta Channel	27.00		27.00		
	La Quinta Channel Junction to Box 82	30.00		30.00		
	Box 82 to Main Turning Basin	30.00		30.00		
	Main Turning Basin	30.00		30.00		
	Industrial Canal	30.00		30.00		
	Army Front Turning Basin	30.00		30.00		
	Tide Lake Channel	30.00		30.00		
	Channel Turning Basin	30.00		30.00		
	Tide Lake Turning Basin	30.00		30.00		
	Yards Channel	30.00		30.00		
	Water Turning Basin	30.00		30.00		
	DETROIT SUPER HARBOR 004716	30.00	5,500.000	30.00	5,500.000	55,000.00
	DETROIT SUPER HARBOR MAIN CANAL 005650	60.00	7,300.000	60.00	7,300.000	73,000.00
	EAST RIVER 015162	30.00	830.000	30.00	830.000	8,300.00
	FREESTON HARBOR 001875	30.00	12,800.000	30.00	12,800.000	128,000.00
	Outer Basin Channel	31.61		31.61		

NAME OF CHANNEL	ROLLING DEPTHS FROM GEOWARD IN FEET AT MEAN LOWER LOW WATER			WIDTH (FEET)	DATE OF SURVEY
	LEFT QUARTER CHANNEL	MIDDLE HALF OF CHANNEL	RIGHT QUARTER CHANNEL		
LT. BUOY 1 TO LT. BUOY 20	37.0	36.0	29.0	600	7/10/1903
THENCE TO END OF JETTY OPPOSITE LIGHT 62	28.0	34.0	26.0	500	6/7/1900
THENCE TO INTERSECTION WITH G. I. W. W.	26.0	32.0	22.0	500	6/7/1900
THENCE TO INNER HARBOR NAVIGATION CANAL	26.0	28.0	26.0	500	8/3/00

Identification_Information:
 Citation:
 Citation_Information:
 Originator: U.S. Army, Corps of Engineers, New England District (comp.)
 Publication_Date: 20090306
 Title: Boston Harbor, Boston, Massachusetts, After Dredge/Condition Survey
 Geospatial_Data_Presentation_Form: map
 Series_Information:
 Series_Name: N/A
 Issue_Information:
 Issue_Identification: N/A

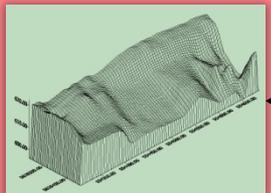
Web Site

Web Services



District

eHydro GIS Application



Planning Quantities

X,y,z
65.70,186583.60,-38.20
58.10,186615.10,-38.30
46.50,186660.10,-38.20
11.20,186689.80,-38.20
3.00,186738.20,-37.10
3.60,186768.50,-34.30
8.90,186803.20,-34.40
8.70,186972.80,-38.60
1.30,187002.80,-38.60
8.60,187111.90,-39.20
1.20,187149.70,-39.30
140.187212.80,-39.10
30.187249.30,-39.10
20.187319.80,-39.10
10.187353.80,-39.20
2.00,187434.80,-35

Surveys



Framework

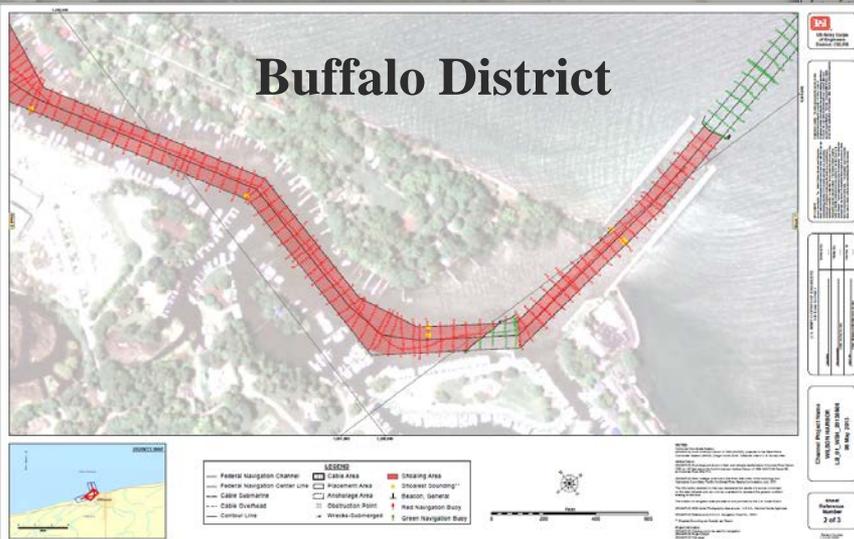
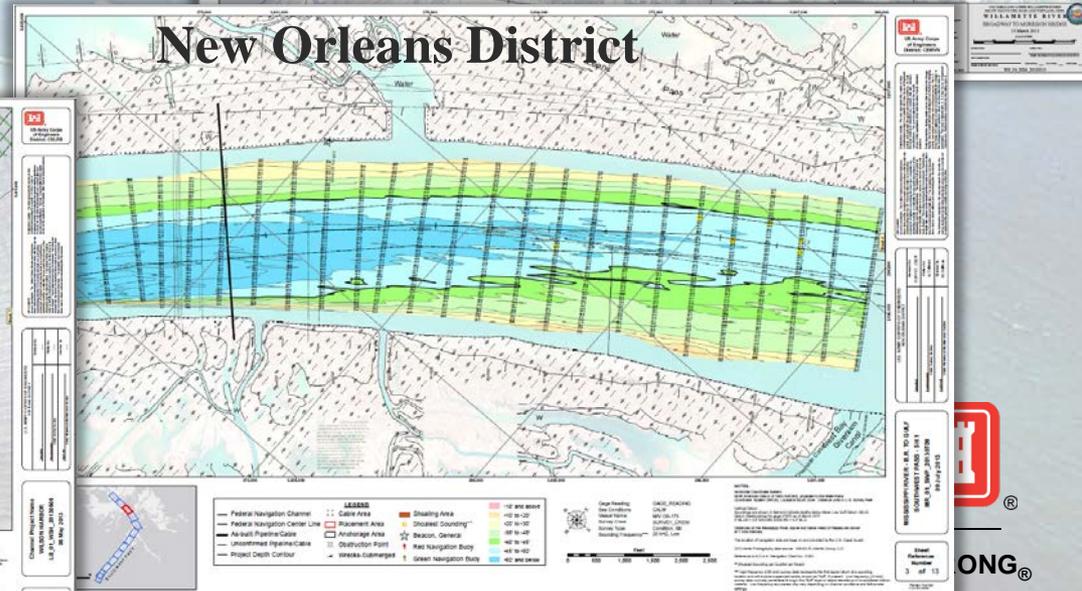
Enterprise Navigation Channel Framework



BUILDING STRONG®

eHydro – Condition Plots

- Minimum list of features to include NAIP Imagery, channel geometry, controlling depths, official NAVAIDs
- flexible size and orientation
- basic notes
- additional features to suit local requirements



eHydro - Channel Condition Report

RIVER/HARBOR NAME AND STATE COOS BAY OREGON					MINIMUM DEPTHS IN EACH 1/4 WIDTH OF CHANNEL ENTERING FROM SEAWARD		
NAME OF CHANNEL	DATE OF SURVEY	AUTHORIZED PROJECT			LEFT OUTSIDE QUARTER (feet)	MIDDLE HALF (feet)	RIGHT OUTSIDE QUARTER (feet)
		WIDTH (feet)	LENGTH (miles)	DEPTH (feet)			
COOS BAY ENTRANCE Entrance Range	09-03-2013	0	1.90	47	35	40	40
COOS BAY RANGES Entrance Range & Turn	06-06-2013	300	0.80	37	38	42	34
COOS BAY RANGES Coos Bay Inside Range	06-06-2013	300	0.80	37	36	38	39
COOS BAY RANGES Coos Bay Range	06-06-2013	300	0.90	37	38	37	38
COOS BAY AND EMPIRE RANGES Empire Range	07-23-2013	300	2.30	37	35	38	30



eHydro - Channel Condition Index

COOS BAY OREGON						Date 09/18/2013
Sheet Name	Reach Number	Depth	Left Outside Quarter	Middle Half	Right Outside Quarter	Survey Name
COOS BAY ENTRANCE	1	47	35	40	40	CB_01_CB1_20130903
COOS BAY RANGES	1	37	38	42	34	CB_02_CB2_20130606
COOS BAY RANGES	2	37	36	38	39	CB_02_CB2_20130606
COOS BAY RANGES	3	37	38	37	38	CB_02_CB2_20130606
COOS BAY AND EMPIRE RANGE	1	37	35	38	30	CB_03_CB3_20130723
JARVIS RANGES	1	37	34	38	22	CB_04_CB4_20130718
JARVIS RANGES	2	37	37	37	33	CB_04_CB4_20130718



eHydro - Survey Planning Quantities

COLUMBIA 43 FOOT FY2012

Sheet Name	Reach Number	Depth	Left Outside Quarter	Left Inside Quarter	Right Inside Quarter	Right Outside Quarter
LOWER DESDEMONA SHOAL	1	43	45\100\4	47\100\4	49\100\4	47\100\4
UPPER DESDEMONA SHOAL	1	43	42\36\4	43\100\4	44\100\4	42\91\4
FLAVEL BAR	1	43	38\0\10	40\64\10	42\81\10	33\0\10
UPPER SANDS	1	43	41\0\9	43\100\9	44\100\9	42\93\9
UPPER SANDS	2	43	42\24\9	43\100\9	43\100\9	42\3\9
TONGUE POINT CROSSING	1	43	38\0\11	41\96\11	42\96\11	41\96\11
TONGUE POINT CROSSING	2	43	38\0\11	40\62\11	40\64\11	35\0\11
MILLER SANDS	1	43	41\52\11	39\92\11	37\61\11	31\0\11
MILLER SANDS	2	43	37\0\11	43\100\11	41\71\11	31\33\11
MILLER SANDS	3	43	37\3\11	40\54\11	40\74\11	38\9\11
PILLAR ROCK RANGES	1	43	37\17\13	41\72\12	38\60\12	37\0\12
PILLAR ROCK RANGES	2	43	32\38\12	40\53\12	41\90\12	41\37\12

eHydro - Metadata

FGDC or ISO Standard....

Identification_Information:

Citation:

Citation_Information:

Originator: U.S. Army, Corps of Engineers,
New England District (comp.)

Publication_Date: 20090306

Title: Boston Harbor, Boston, Massachusetts,
After Dredge/Condition Survey

Geospatial_Data_Presentation_Form: map

Series_Information:

Series_Name: N/A

Issue_Identification: N/A

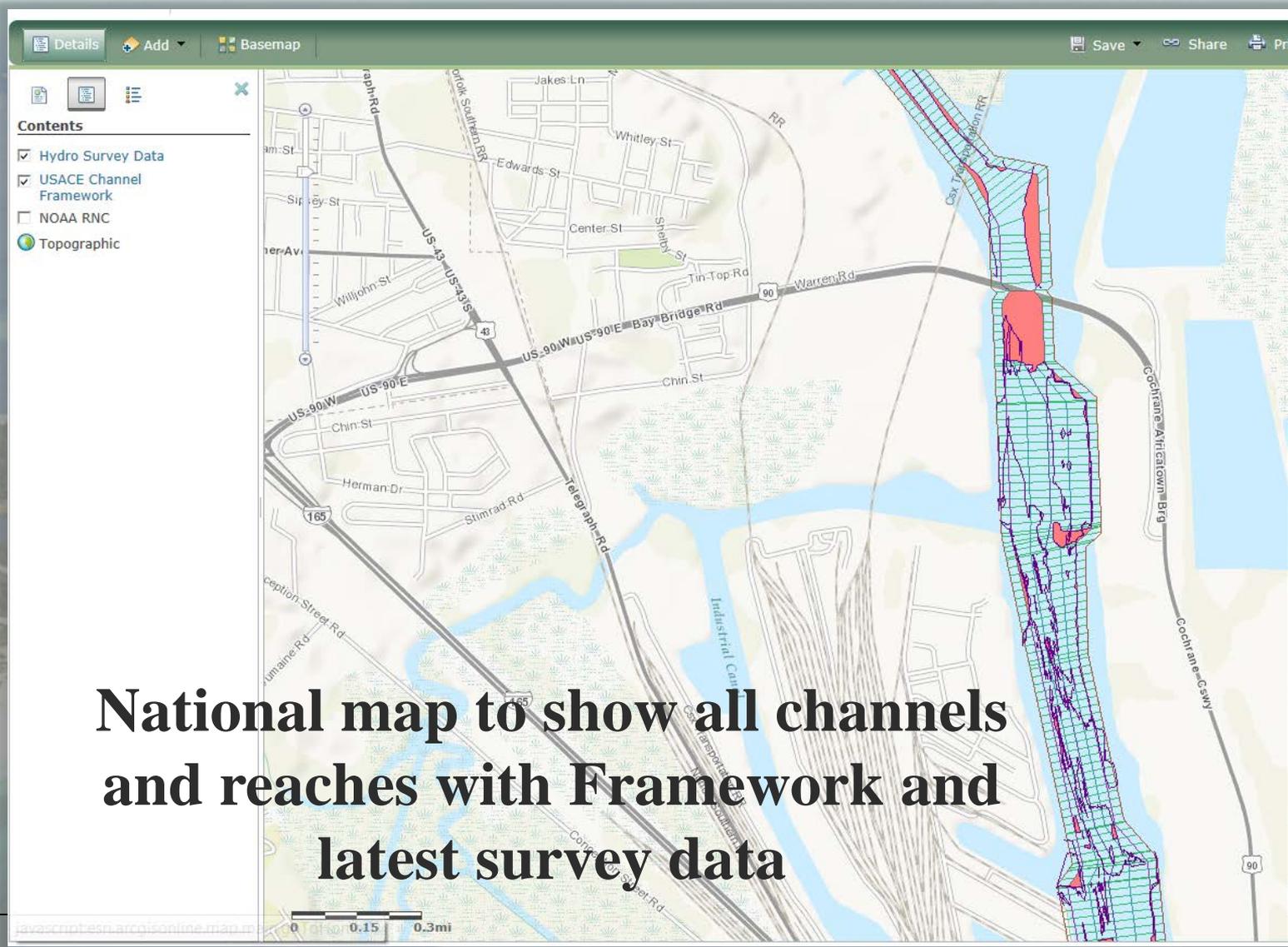
Publication_Information:

Publication_Place: Concord, MA

Publisher: Navigation, Project M
Management Section, NE District



eHydro – Web Map Display



**National map to show all channels
and reaches with Framework and
latest survey data**



STRONG®

eHydro Deployment Status

- **18 Districts ready to begin operational use on all High use channels**
- **4 Districts need to develop channel templates**
- **Operational order to be issued this week**
- **All 22 districts to be operational with all High and Moderate use channels by the end of FY14.**

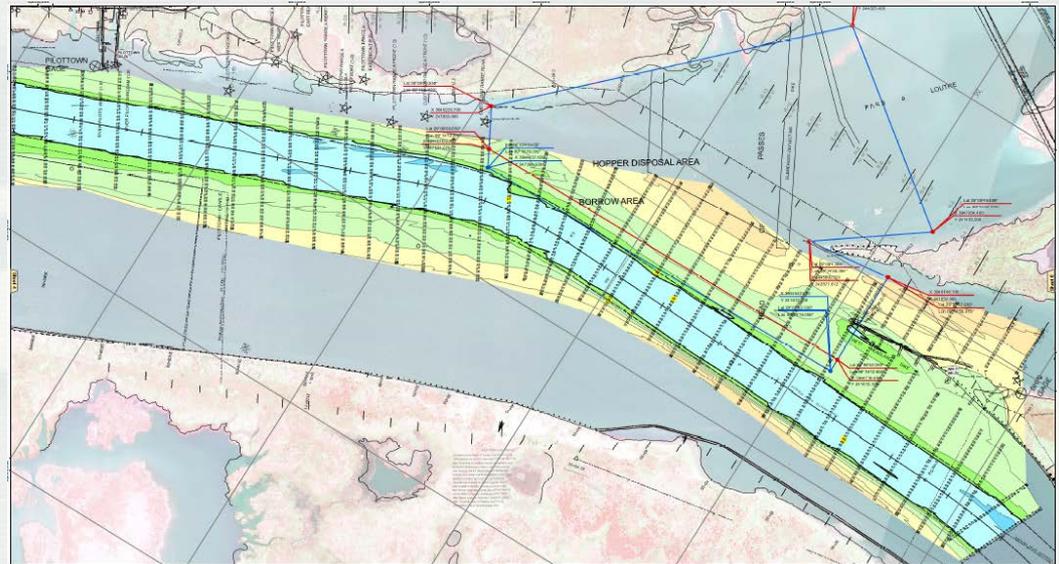


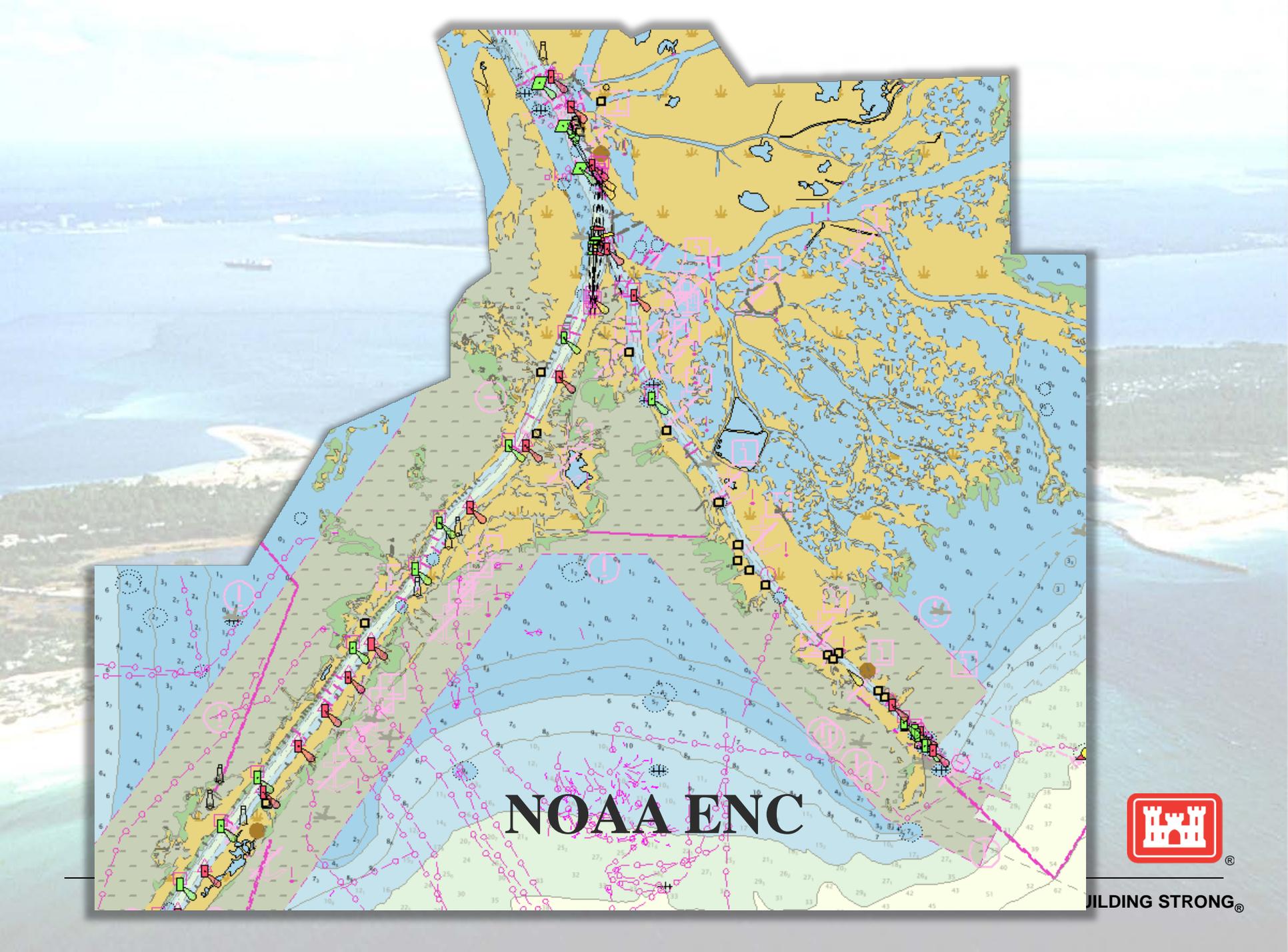
New Channel Product for Navigation Interests

Goal: S-57 overlay of latest channel condition data for Southwest Pass.

Result:

- ❖ **Channel survey data that can be overlaid on the NOAA ENC.**
- ❖ **No modification or preparation needed by the ECS vendor.**
- ❖ **Compatibility with data and display standards.**

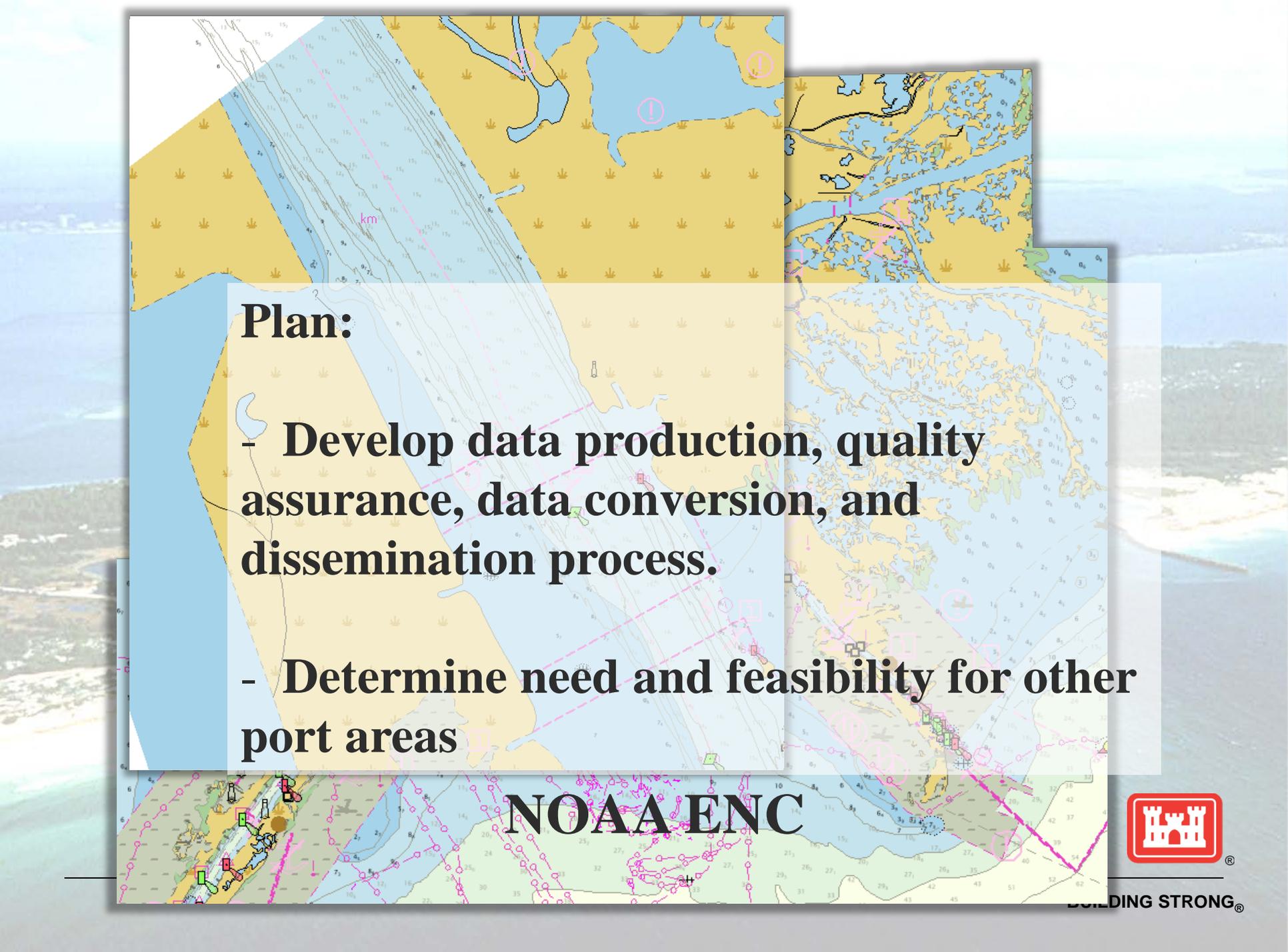




NOAA ENC



BUILDING STRONG®



Plan:

- Develop data production, quality assurance, data conversion, and dissemination process.
- Determine need and feasibility for other port areas

NOAA ENC



BUILDING STRONG®

Channel condition and Framework data that is;

- **quantitative**
- **objective**
- **repeatable**
- **consistent**
- **usable**

Questions??

