

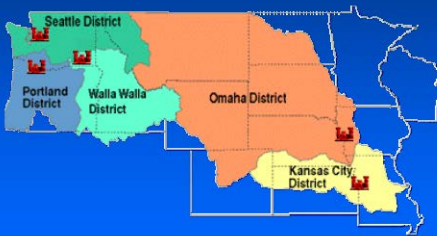


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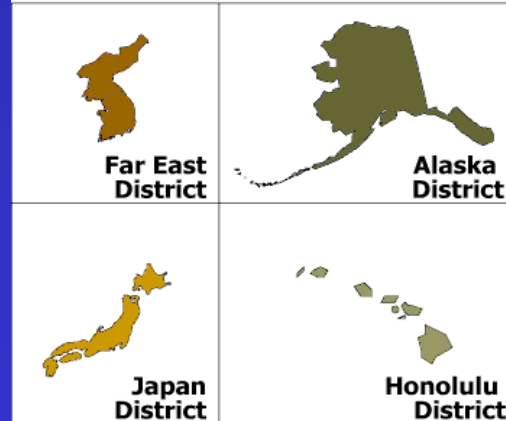
# Pacific Coast Navigation Community of Practice

Northwestern Division  
South Pacific Division  
Pacific Ocean Division

## Northwestern Division



## Pacific Ocean Division



## South Pacific Division





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# Purpose of the Navigation Community of Practice

Programmatic, regional overview of the navigation business area.

Forum for Districts/Divisions to discuss and resolve issues.

Efficient execution of our navigation mission.

Provide regional expertise and cooperative problem solving.

Keep Division/District Commanders informed of issues and actions.

Identify and prioritize regional navigation R and D needs.



# Regional Dredging Initiative

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Northwestern Division



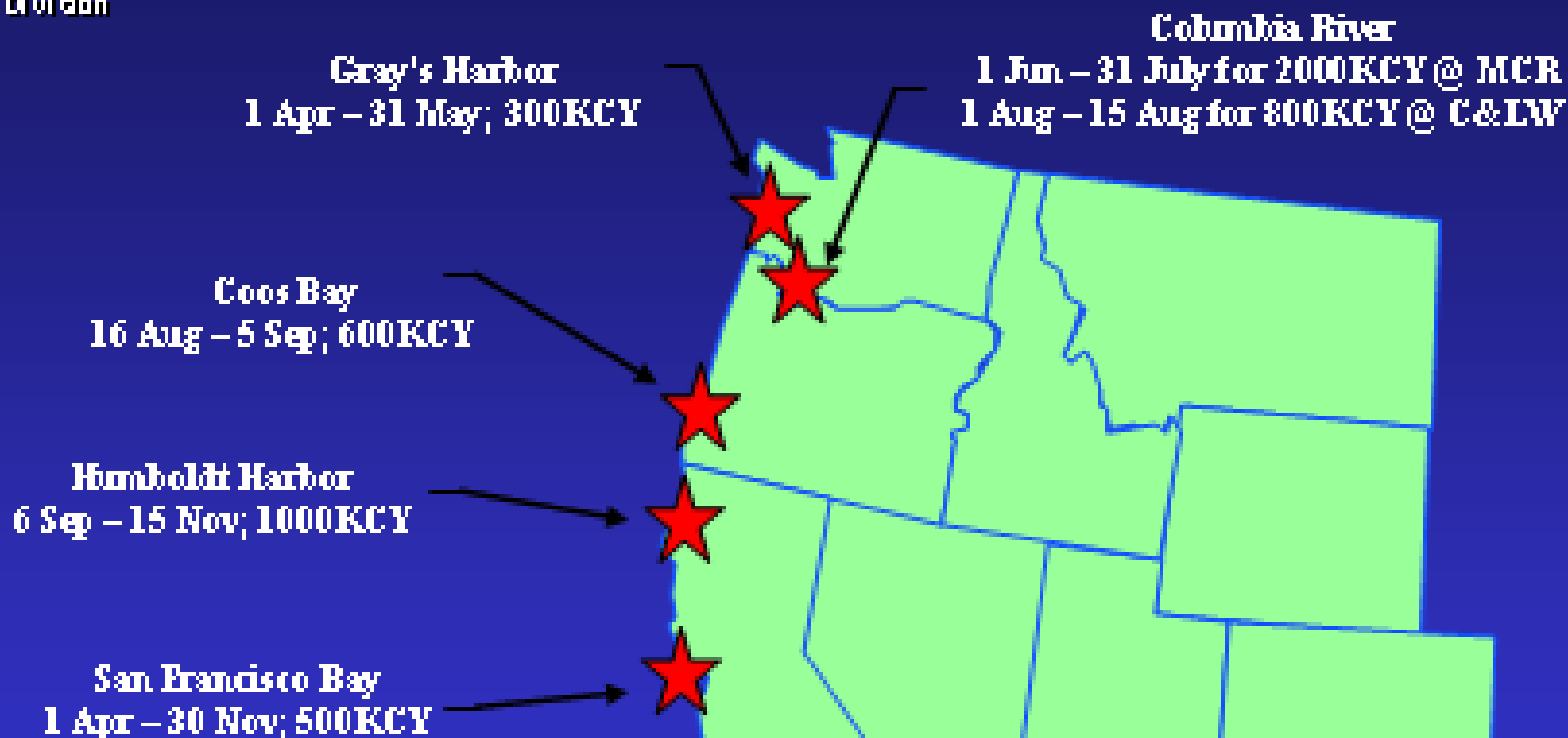
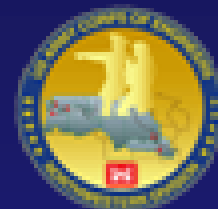
## Regional Dredging Contract Development

- Includes San Francisco, Portland, and Seattle.
- Postponed FY 04-07 because of funding shortages in Portland District, low dredge quantities in San Francisco, and until Columbia River Channel Improvements Complete.
- Scheduled for FY 08.



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Northwest Division

# WEST COAST REGIONAL DREDGING CONTRACT



★ **Projects Being Considered**



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# Welcome FY 2006

## Federal Dredging Program

### Northwestern Division

Walla Walla District

Portland District

Seattle District

### Pacific Ocean Division

Alaska District

Honolulu District

### South Pacific Division

San Francisco District

Los Angeles District





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# Los Angeles District



## On-going Contracts

- Channel Islands Hbr.
- Santa Barbara Harbor
- Ventura Harbor
- Oceanside Harbor
- San Diego Harbor
- Port of Los Angeles  
Deepening
- Santa Ana River



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# Los Angeles District



## Port of Los Angeles Main Channel Deepening

On-going Contract  
7,000,000 Cubic Yards  
Clam, Hopper, Pipeline  
Dredge  
Disposal Type – Various

Contractor: L.A.  
Deepening Contractors,  
AJV



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# FY05 Project Updates

## Everett Harbor, Snohomish River



- Advertising now
- 300,000 CY downstream
- 150,000 CY upstream
- Clamshell & pipeline
- Disposal at Riverside upland site and PSR Superfund site or Port Gardner site





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# Nome Harbor Expansion



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## Nome Harbor Improvements June – Sept 2005 Dredging Operations







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# FY06 Dredging Schedule

	On-going Contracts			Proposed Contracts			Potential Contracts		
<b>Seattle District:</b>									
Grays Harbor Inner (Clam)	1.2 MCY	Great Lakes Dredge & Dock						OB 8/17	1.2 MCY
Grays Harbor Outer (Hopper w/100KCY pumpoff)				OB 3/16	400 KCY				
Everett Harbor (Clam)	OB 10/30	300 KCY							
Olympia Harbor (Clam)							OB 8/22	480 KCY	
Quillayute (Pipe)		OB 11/15	80 KCY						
Keystone (Clam or Pipe)					OB 5/30		35 KCY		



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# FY06 Dredging Schedule

Portland District:												
	Great Lakes Dredge & Dock											
CRCI Phase 1 - MCR & CLW Maint w/ CLW Improvement	[Solid bar]											
Columbia River Channel Improv. MCR & CLW Maint (2Mcy CRCI, 2.6Mcy C&LW, 1Mcy MCR )				AD 2/15	OB 3/15						Subject to Overdepth issue resolution, funding issues (UFR for CLW O&M, increased volumes over expected)	
Columbia River Channel Improv. - Oregon Slough (Port Sponsored)	AD 10/25	OB 11/25								350 KCY		
Columbia River Channel Improv. - Consolidated (Port Sponsored)		AD 11/30	OB 1/5							780 KCY	Subject to Overdepth issue resolution	
MCR Littoral Drift Restoration - Benson Beach (Disposal Option)										500 KCY		
Columbia River, Pipeline Dredge OREGON, continuing											2.5 MCY	
Port Orford (inter Winter Work) 3-YR FY05-FY07						3 KCY					Nehalem Dredging	
South Coast (Clam) Chetco, Port Orford, Charleston, Winchester Bay, Chetco					AD 3/15	OB 4/15					80 KCY	
Pearl Harbor Main & Middle Channels (Clamshell)	AD 9/30	OB 10/11				200 KCY						
Coos Bay Clamshell (RM 12 - 15)				AD 2/15	OB 3/15					250 KCY		
Columbia River Clamshell (Chinook & Baker Bay)				AD 2/15	OB 3/15					150 KCY		
Charleston Pipeline				AD 2/15	OB 3/15			10 KCY				
Depot Slough Pipeline (Toledo)				AD 2/15	OB 3/15			25 KCY				
	[Solid bar]			[Solid bar]				[Dashed bar]				
	On-going Contracts			Proposed Contracts				Potential Contracts				



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# FY06 Dredging Schedule

San Francisco District:											
Richmond Inner Harbor O&M (Clam)							AD4/4 OB 5/5	150 KCY	[Bar chart showing schedule from Q1 to Q4]		
Oakland Harbor Deepening 46 foot (Clam)	[Bar chart showing schedule from Q1 to Q2]										
Oakland Harbor Deepening 50 foot (Clam) To Montezuma	[Bar chart showing schedule from Q1 to Q4]										
Oakland Harbor Deepening 50 foot (Clam) To Hamilton									[Bar chart showing schedule from Q3 to Q4]		
Suisun Bay Channel O&M (Hopper or Clam)			Resoicitation, combined with Suisun				AD4/21 OB 5/22	150 KCY	[Bar chart showing schedule from Q1 to Q4]		
Pinole Shoal O&M (Hopper or Clam)			Resoicitation, combined with Suisun				AD4/21 OB 5/22	150 KCY	[Bar chart showing schedule from Q1 to Q4]		
Redwood City Harbor O&M (Clam)	[Bar chart showing schedule from Q1 to Q3]			Dutra	400KCY				[Bar chart showing schedule from Q3 to Q4]		
Oakland Outer O&M (Clam)							AD4/4 OB 5/5		[Bar chart showing schedule from Q3 to Q4]		
Noyo Harbor Entrance							AD4/21 OB 5/22		[Dashed bar chart showing schedule from Q3 to Q4]		
Sacramento District:											
Sac/Stock Deep Wtr (Pipe) 3-YR FY03-FY05	[Bar chart showing schedule from Q1 to Q2]			450KCY	Ross Isd.		AW 1/4	450KCY	[Bar chart showing schedule from Q3 to Q4]		











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# South Pacific Division Boundaries





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# Uniqueness of the Region

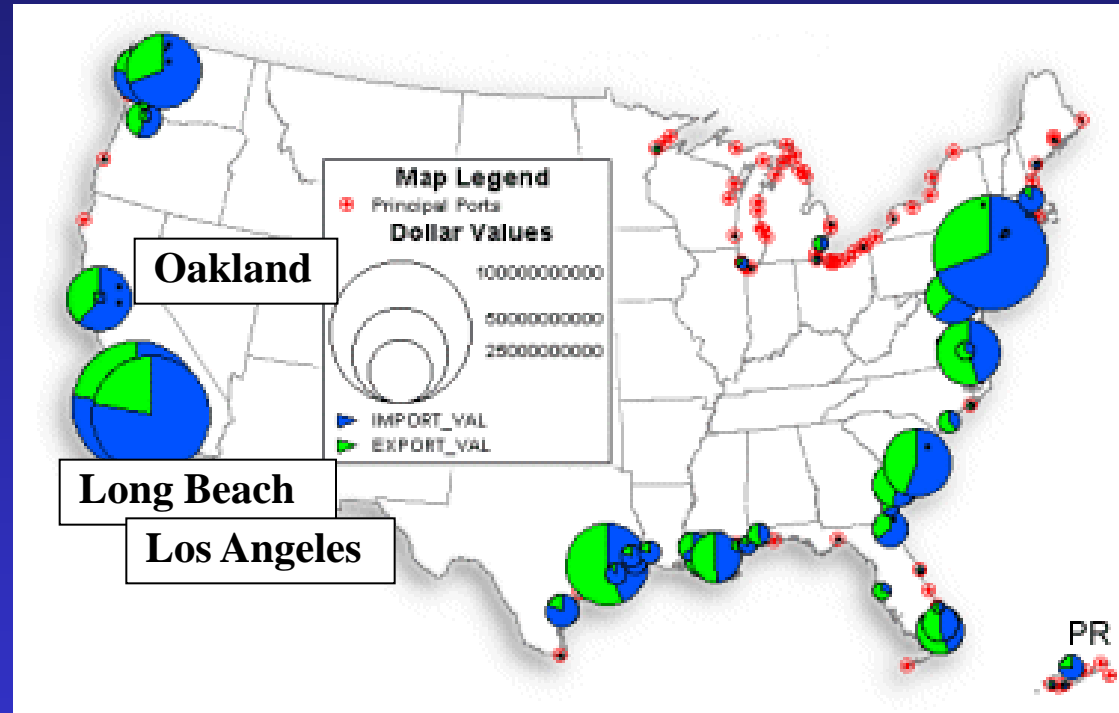
- More than one-seventh of the US population and four of the ten fastest growing states
- Diverse geography and climate requiring sensitivity to environmental stewardship
- Water management for flood control, agriculture, environment and human consumption pose unique challenges



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# Navigation - SPD

- 5 major commercial ports (>40 ft. depth)
- 7 minor commercial ports (20-40 ft. depth)
- 15 small craft harbors
- Dredging dollars expended provide a high rate of return. \$40 to \$60M per year yields \$192B in Commerce.



Value of Imports + Exports



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# Navigation - SPD



Pier 400 - Port of LA

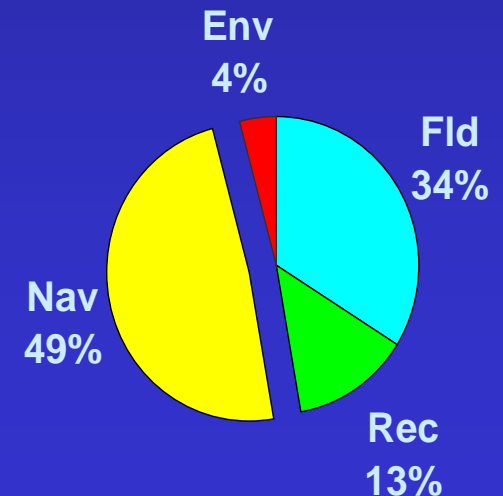


Ventura Harbor

- 27 Ports & Harbors in California
- California ports are #1 in value shipped
- California ports are #3 in the US in tonnage
- 429 mi of navigation channels
- 35 mi of navigation structures
- Debris mission
- 10.0M cu yd dredged annually



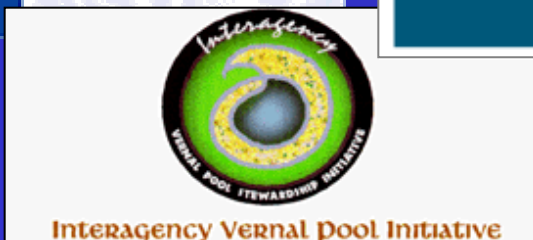
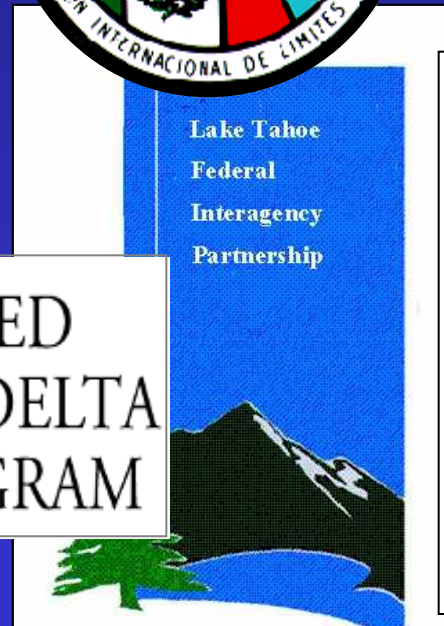
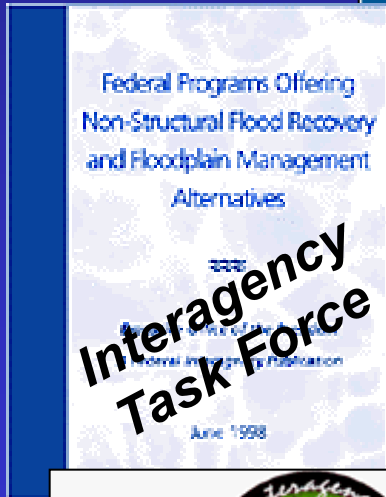
Port of Oakland





# Multi-Agency Collaborative Endeavors

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# California Regional Sediment Management

**... regulation and management of littoral, estuarine, and riverine sediment within the boundaries of a physical system where sediment exchange occurs naturally.**

**Regional sediment management recognizes that the physical system and embedded ecosystems respond beyond the space and time scales of individual projects, and that a proactive regional planning and engineering approach will produce significant cost savings and project benefits.**



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# *California and RSM*



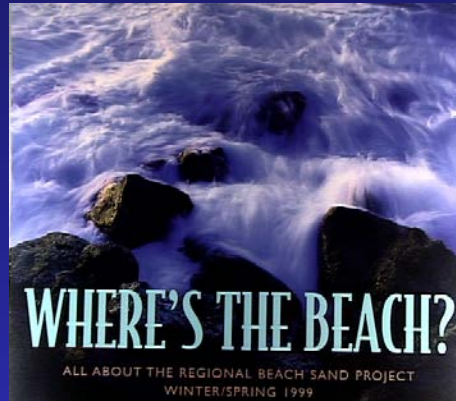
Beach Quality Materials Dredged from Coastal Harbors are placed on Downcoast Shorelines

**Although the term “regional sediment management (RSM)” is new, recognition of the regional nature of coastal processes and the regional influence of engineering works is not. The inter-relationship between coastal navigation projects and contiguous beaches became a Federal interest at least as early as the 1930s.**



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# San Diego Regional Beach Sand Project



**WHERE'S THE BEACH?**  
ALL ABOUT THE REGIONAL BEACH SAND PROJECT  
WINTER/SPRING 1999

**WHY?**  
The beach sand that once made San Diego and other coastal communities a major attraction is disappearing. In San Diego, the sand is being used to build roads, bridges, and other infrastructure. In other areas, the sand is being used for agriculture and other purposes. The result is a loss of beach sand that is essential to the region's economy and environment.

**HOW?**  
The sand beachfills will be located strategically to benefit all of the region's coastal areas. More than \$14 million is being provided by the federal and state governments to support the project. This support recognizes that the San Diego region's beaches are a precious resource of state and national significance as well as a local and regional asset of paramount importance.

**WHAT?**  
The Project will benefit the region's environment and economy and, most of all, our residents' overall quality of life. Community leaders and government officials have worked to make the money available to get the job done. They hope that the Project will lead to support for an ongoing program to keep our beaches wide, clean, and accessible for everyone's enjoyment.

**More than \$14 million is being provided.**

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**SAN DIEGO REGIONAL BEACH SAND PROJECT**

**SELMA BEACH**

**DEL MAR**

**DELICADSE**

**CARLSBAD**

**ESCONDIDO**

**SAN DIEGO**

**HOW**

The most cost-effective, highest-quality, and environmentally suitable sources of sand will be used.

The sand beachfills will be located strategically to benefit all of the region's coastal areas. More than \$14 million is being provided by the federal and state governments to support the project. This support recognizes that the San Diego region's beaches are a precious resource of state and national significance as well as a local and regional asset of paramount importance.

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**SAN DIEGO REGIONAL BEACH SAND PROJECT**

Beach Quality Materials Dredged from Offshore will be placed on County Shorelines





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# Coastal Sediment Management Workgroup

- **Federal/State/Local Partnership to Address California's Coastal Needs Established in 1999.**
- **South Pacific Division & State Resources Agency.**
- **Leverage State & Federal Funds and Resources.**
- **Collaborate on Coastal Sediments Activities.**





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# CSMW Participating Agencies

## USACE

- South Pacific District
- Los Angeles District
- San Francisco District
- ERDC
- IWR

## ADVISORY

- Cal Coast (local agencies)
- Minerals Management Service
- US Geological Survey
- US EPA
- NOAA

## CA RESOURCES AGENCY

- Boating & Waterways
- Coastal Commission
- Coastal Conservancy
- Parks & Recreation
- State Lands Commission
- CA Geological Survey
- Department of Fish and Game
- Caltrans





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# Sediment Management Activities

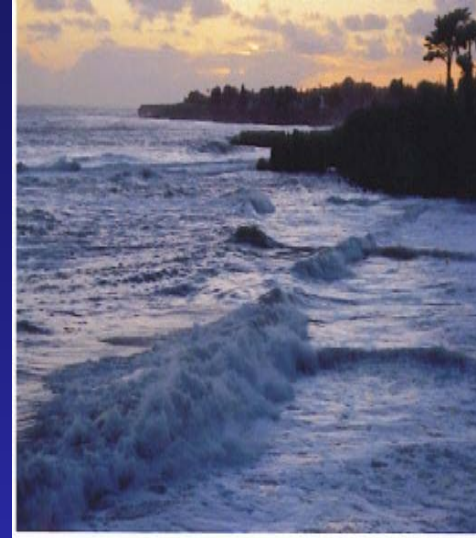
Actions that affect the *transport, erosion, removal, and deposition* of sediment in a region

- ◆ Dredging and placement
- ◆ Building structures that divert or trap sediment
- ◆ Erosion protection structures or methods for riverbanks, shorelines, sea beds, and channel bottoms
- ◆ Habitat stabilization and restoration
- ◆ Sand and gravel mining for construction or other purposes
- ◆ Other



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## Mission



**To facilitate regional approaches to protecting, enhancing and restoring California's coastal beaches and watersheds through federal, state and local cooperative efforts.**



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# Project Goals

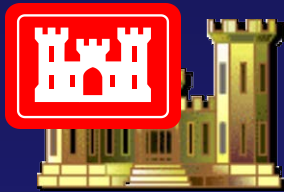
- Prioritize Regional Sediment Management Needs.
- Streamline the regulatory process.
- Make information widely available.
- Coordinate beach and watershed efforts with Federal, State and Local stakeholders.



*Plate 5.9 Pre-nourishment condition at North Carlsbad site, April 2001*



*Plate 5.10 Post-nourishment condition at North Carlsbad site, November 2001  
(arrows point to approximately the same location on each photo)*



# Ongoing Initiatives

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- ✦ Literature Search
- ✦ Fate & Transport of Fines
- ✦ Regional Sediment Budgets
- ✦ Biological Impacts
- ✦ Implementation Strategy
- ✦ Policies, Procedures and Regulations Analysis
- ✦ Sand Compatibility and Opportunistic Use Templates

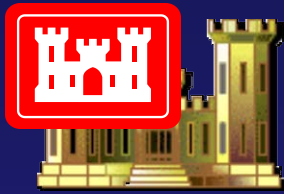




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# Decision Support Tool for RSM





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# Decision Support Tools

- ❖ Assist policy and decision makers, coastal managers, and engineers with powerful, but simple to use IMS applications.
- ❖ DSTs will be developed in coordination with stakeholder and technical users.
- ❖ DSTs are the building blocks for a Decision Support System





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# Benefits of Regional Sediment Management

## Cost Savings

- ◆ **Reduced Rehandling of Material**
- ◆ **Extended Dredging Cycles**
- ◆ **Combined Equipment Mobilization and Demobilization of Linked Projects**
- ◆ **Sharing Information and reduction of duplication of efforts**
- ◆ **Collaborative leveraging of financial and manpower resources**
- ◆ **Improved Environmental Conditions**



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## **Additional Benefits of RSM**

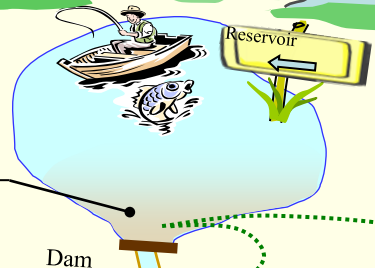
- **Improved agency and interagency working relationship**
- **Reduce study costs and time**
- **Enhance support of environmental goals**
- **Potential to streamline regulatory process**
- **Shared regional scale data management systems, models and other tools.**
- **Greater consistency analysis between projects in a region.**



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Sediment Trapped Behind Dams And Debris Basins



*Sediment excavated and bypassed downstream.*

Sand and Gravel Mining



*Sand and gravel used for construction. Sand loss compensated through projects or fees.*



Urbanization of Watershed



*Sand held in place by future urbanization is compensated through projects or fees.*

*Mining moved out of river. More sand transported to coast.*



*Sand from harbors placed on beaches in need.*



Less Beach Erosion



Harbor

Sand Trapped by Harbor Structures

More Sand Reaching Coast

*Beach replenished with sand dredged from offshore and/or inland.*

Ocean

**Regional Sediment (Sand) Management**



US Army Corps of Engineers

Welcome to *California*



[CSMW Home](#)

[Mission & Overview](#)

[Partner Programs](#)

[Sediment Master Plan](#)

[Library](#)

[RSM Workshops](#)

[Meetings](#)

[Regulations and Funding](#)

[Contact CSMW](#)

[Links](#)

[Ocean Action Plan](#)

[Resources Agency](#)



Flex your POWER



Peninsula Beach

### CA Coastal Sediment Management Workgroup Home Page

California Coastal Sediment Management Workgroup



A collaborative effort by federal and state agencies chaired by the U.S Army Corps of Engineers South Pacific Division and the California Resources Agency

Welcome to the Coastal Sediment Management Workgroup's website! We have provided information on the various coastal sediment-related [programs](#) and [projects](#) of CSMW [member agencies](#) as well as [meeting records](#) and access to relevant [documents](#).

Visitors may also access detailed information on an innovative Coastal "[Sediment Master Plan](#)" (CSMP) designed to address the conservation, restoration and preservation of coastal sediment resources along the California coastline. On the Sediment Master Plan page you will find link's to projects underway or completed, each project's objectives, scope of work and finding (if available). Comments received from our [public outreach](#) activities and a [questionnaire](#) to help identify your concerns are also available. The physical setting for coastal sediment, related problems and our road to solutions are discussed in CSMW's overview, "[Why a CSMP is needed](#)".

We encourage you to [contact us](#) and comment on our programs and on this website. Please direct technical issues to the CSMW Project Manager. Policy or

Search  Search  
My CA CSMW  
[Search Help](#) [Advanced Search](#)

GOVERNOR Schwarzenegger  
Click To Visit His Home Page

SECRETARY Mike Chrisman  
Click To Visit His Home Page

- #### What's New
- [SCOUP Report](#)
  - [Why a CSMP is Needed](#)
  - [Beach Nourishment GIS Shapefile](#)

### Sediment Master Plan

- [Public Questionnaire](#)
- [Coastal Sediment References](#)

<http://dbw.ca.gov/csmw/>



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# Business Execution - Navigation



San  
Francisco



Sacramento



Los Angeles



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# Navigation - San Francisco



- Humboldt Harbor
- Oakland Harbor
- 93 Miles of Channel
- 12.8 Miles of jetties/breakwaters
- 3,200,000 CY annual dredging
- 107,944,000 Commercial Tonnage
- 3 Debris boats
- 2 Survey boats



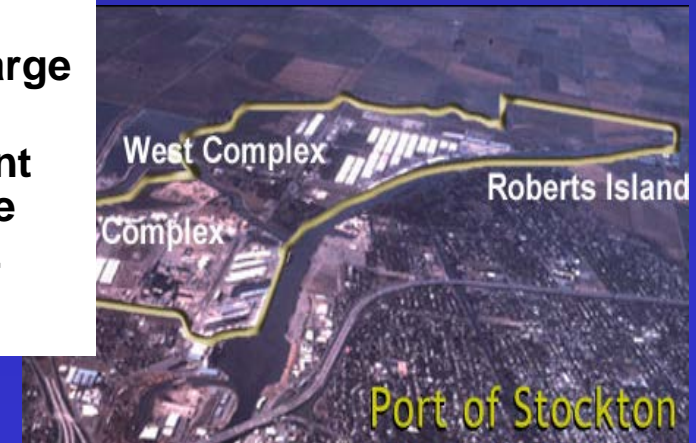


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# Navigation - Sacramento



- Sacramento Deepwater Ship Channel - 30 ft
- Stockton Deepwater Ship Channel - 35 ft
- Sacramento River Tributaries
- Sacramento Shallow Draft Project
- 303 miles of channel
- W.G. Stone Lock & Barge Canal
- Stone dike & revetment structure maintenance
- Annual commerce-5.4 million tons





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# Navigation – Los Angeles



- 14 Harbors along the California Coast
- POLA 81 ft. Channel
- POLB 76 ft. Channel
- 5 Endangered Species
- 33 Miles of Navigation Channels
- 29 Rock Breakwaters and Jetties
- Annual commerce - 107 million tons







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# Navigation - Issues

## ● Dredging

- ◆ contaminated/non-contaminated materials
- ◆ environmental windows

## ● Disposal

- ◆ site location
- ◆ monitoring
- ◆ environmental windows

Site	Species	Jan	Jan	Feb	Feb	Mar	Mar	Apr	Apr	May	May	Jun	Jun	Jul	Jul	Aug	Aug	Sep	Sep	Oct	Oct	Nov	Nov	Dec	Dec	
		1-15	16-31	1-15	16-31	1-15	16-31	1-15	16-31	1-15	16-31	1-15	16-31	1-15	16-31	1-15	16-31	1-15	16-31	1-15	16-31	1-15	16-31	1-15	16-31	
Carquinez Bridge to Collinsville	Sacramento Splittail (Juveniles)	Yellow																								
	Delta Smelt	Yellow																								
	Longfin Smelt	Yellow																Green								Yellow
Pinole Shoal Suisun Bay Chan.	Chinook Salmon (Adults)	Yellow										Green														
SF Bay Bridge to Sherman Island	Chinook Salmon (Juveniles)	Yellow										Green														
	Steelhead Trout	Yellow										Green														
	Anadromous Fish	Red										Yellow														
Napa & Petaluma River, Sonoma Creek	Steelhead Trout	Yellow										Green								Yellow						
	Anadromous Fish	Red										Green								Red						
North San Pablo Bay, Napa & Petaluma Rivers	Sacramento Splittail (Juveniles)	Green		Yellow										Green												
San Pablo Bay	Longfin Smelt	Green		Yellow										Green												
San Pablo & North SF Bay shallow berthing areas	Dungeness Crab	Green						Yellow						Green												
San Pablo Bay & South SF Bay	Snowy Plover	Yellow																								
Central SF Bay, Richardson Bay, & North South Bay	Pacific Herring	Yellow						Green												Yellow						
1 mile of coast Berkeley Marina to San Lorenzo Creek	California Least Tern	Green						Yellow										Green								
South of Highway 92 Bridge (San Mateo-Hayward)	California Least Tern	Green						Conflict with BO & Appendix J						?						Green						
Throughout Area Habitat Loss	California Clapper Rail	Yellow																								
Throughout Area Disturbance	California Clapper Rail	Green		Red														Green								
Eelgrass Beds	California Least Tern	Yellow																								
Within 300' of known roost site	California Brown Pelican	Disposal in 4 Jan 99 draft Not dredging						Green						Red						Green						
Throughout Area w/1 250' vegetation	Salt Marsh Harvest Mouse	Yellow																								



**No dredging**



**Consultation required**



**No restrictions**

**Dredging environmental windows by location**



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# Issues Affecting the SPD Region

## Re-Programming in O&M

### Overdredging

Environmental window impacts on dredging and disposal.

Water quality impacts on dredging and disposal methodologies.

Contaminated sediments dredging and disposal.

Costs of doing business is escalating rapidly.

Level of Service – expectations by the customer.

Future Port Requirements – Can we respond in a reasonable time ?



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# Navigation

## Where We Are Going

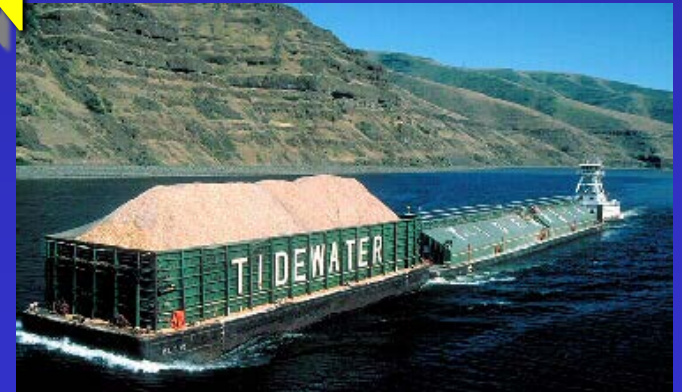
- Dredging of high use harbors must continue
- Partnering to solve dredging and disposal issues
  - ◆ LTMS, LA Region Contaminated Sediments Task Force, Coastal Sediment Management Workgroup
- Partnering benefits
  - ◆ promotes beneficial re-use of dredged materials
  - ◆ streamlined dredging permit process
- Impacts to costs
  - ◆ reduced contaminated material disposal costs
  - ◆ ocean disposal / beneficial re-use (100% increase), monitoring (30% to 50% increase), design costs increase
  - ◆ continue to strive for efficiencies and improvements



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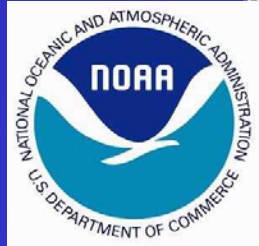
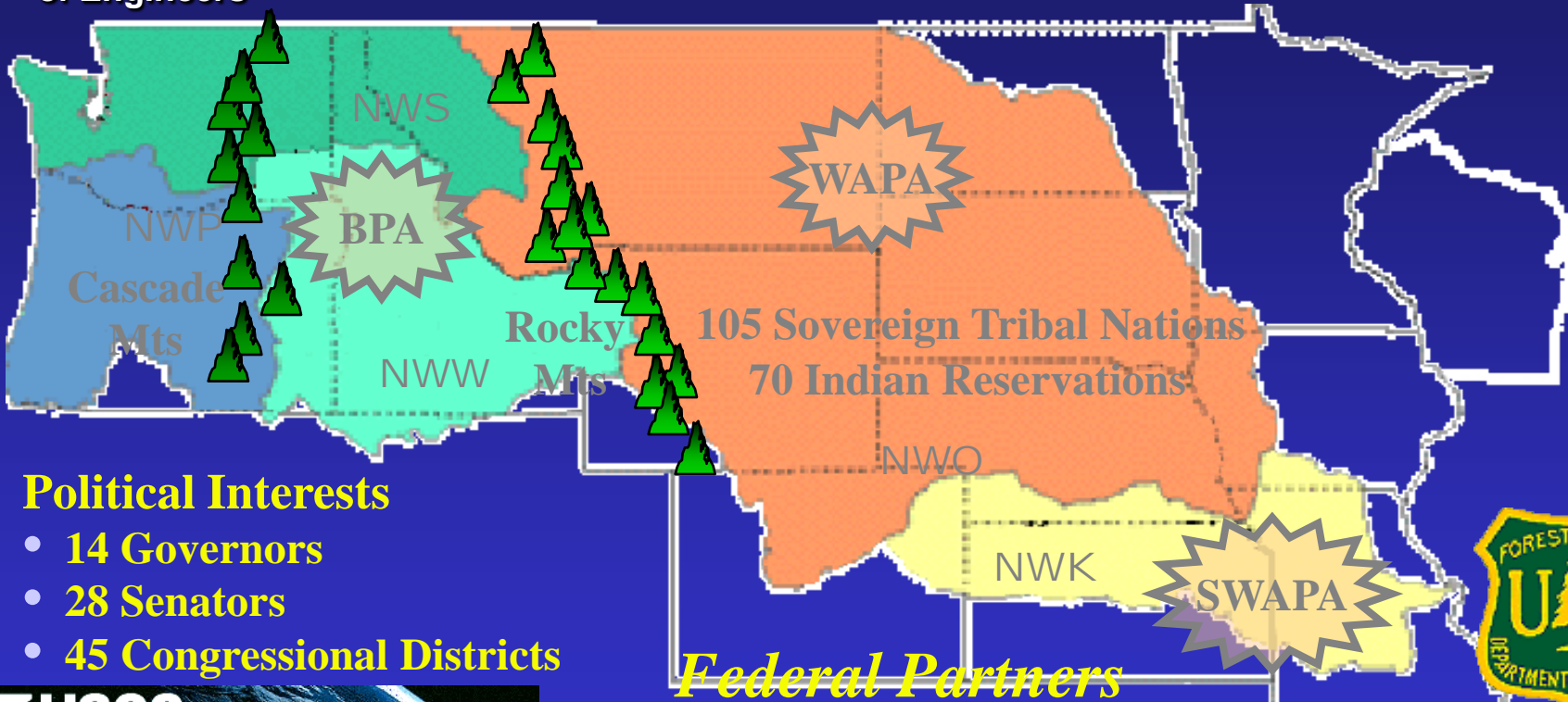
# NORTHWESTERN DIVISION





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# Regional Interface



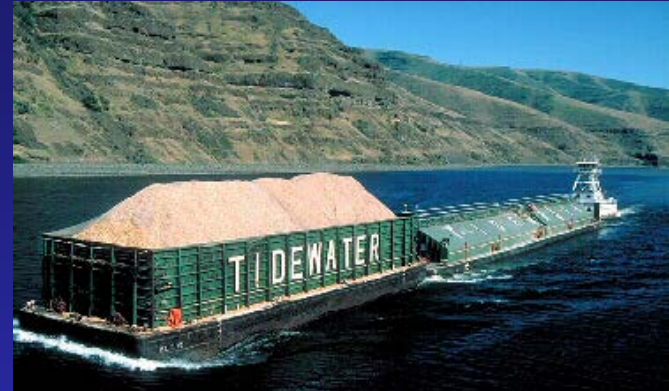
Bonneville Power Administration



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# NWD Navigation Program

- **1724 Miles Inland Navigation**
- **22 Deep Draft Harbors**
- **20 Shallow Draft Harbors**
- **10 Locks**
- **16 Lock Chambers**
- **7500 Dikes/Revetments**
- **39 Miles Breakwaters & Jetties**



- **2 Dredges**
- **Survey Boats**
- **212 Work Boats**
- **U.S. Moorings**
- **Contract Dredging/Surveying**



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**FY 2006**

## **Major Contract Work**

- **Columbia River Channel Improvement Project**
  - ◆ **Dredging, no rock**
  - ◆ **Mouth of Columbia River Interim Jetty Repair**
  - ◆ **South Jetty Interim Repair, 2-yr project major rehab in out years.**
- **Snake River Dredging Completed**



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# **REGIONAL INITIATIVES**

- **REGIONAL DREDGING TEAM (RDT)**
- **REGIONAL SEDIMENT EVALUATION TEAM (RSET)**
- **REGIONAL SEDIMENT MANAGEMENT (RSM)**
- **REGIONAL DREDGING CONTRACT**





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# **OBJECTIVES OF ALL COLLABORATIVE REGIONAL EFFORTS**

**CAPITALIZE ON POTENTIAL ECONOMIC  
BENEFITS**

**IDENTIFY AND ELIMINATE BUREAUCRATIC  
OBSTACLES**

**IMPROVE RELATIONS WITH PARTNERS**

**RESTORE AND MAINTAIN THE NATURAL  
SYSTEM**



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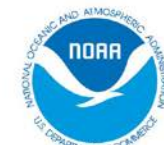
# REGIONAL DREDGING TEAM



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Northwestern Division



## Northwest Regional Dredging Team



### Charter Agency Member

#### CHARTER Vision

Dredging and disposal of sediments from Northwest harbors, channels and waterways is conducted in a timely and cost effective manner while meeting national and regional environmental protection, restoration, and enhancement goals.

#### Goals

The Regional Dredging Team will facilitate communication, coordination, and resolution of dredging issues among the participating Federal agencies, and will serve as a forum for promoting the implementation of the recommendations in the Report to the Secretary of Transportation, and subsequent recommendations of the National Dredging Team already functioning as recommended in the plan.



*David A. Fastabend*

David A. Fastabend  
Brigadier General, U.S. Army  
Division Engineer  
U.S. Army Corps of Engineers  
U.S. Department of Defense  
Co-Chair

*L. John Iani*

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Regional Administrator  
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U.S. Environmental Protection Agency  
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Regional Administrator  
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Administration – Fisheries  
U.S. Department of Commerce

*David Allen*

David Allen  
Regional Director  
U.S. Fish and Wildlife Service  
U.S. Department of Interior

*Francis X. Johnston*

Francis X. Johnston  
Maritime Administration  
U.S. Department of Transportation  
Western Region



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# REGIONAL DREDGING

## TEAM

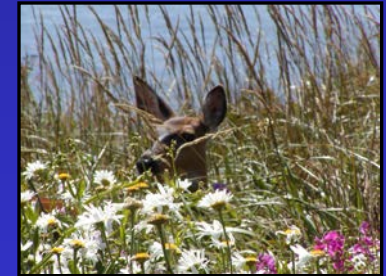
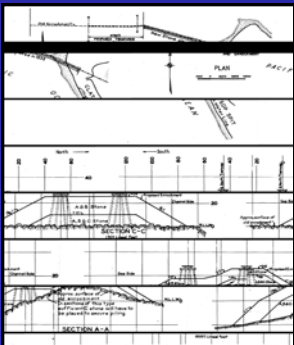
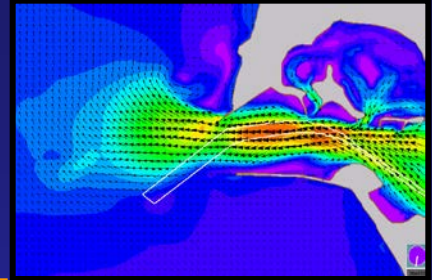
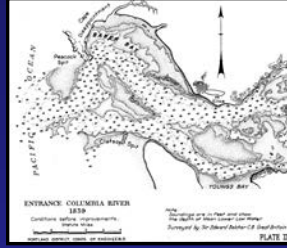
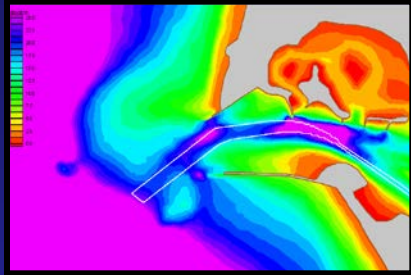
## VISION

**Dredging in Northwest harbors, channels, and waterways is conducted in a timely and cost effective manner while meeting national and regional environmental protection/restoration/enhancement goals**



# Regional Sediment Management Mouth of the Columbia River, OR and WA

U.S. Army Corps



Oregon and Washington, USA



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# Regional Sediment Management Activities

- **Mouth of the Columbia R Littoral Cell**
  - ◆ HQ RSM Funded from 2003-2005
  - ◆ 2005 work – Mega-transect data collection
  - ◆ 2006 – Regional March Workshop presented all work
- **SW Washington Littoral Drift Restoration, 2005 and 2006 Congressional Addition**
  - ◆ Placement Authority Required
- **Nearshore Beneficial Use Site South of the South Jetty (LCSG)**
  - ◆ 2006 Congressional Addition
  - ◆ Placement within cost of the MCR Project



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# Columbia Snake River System

## Federal Infrastructure





# Federal

## Infrastructure

### Columbia & Lower Willamette River Channel

40 foot (12.2 m) x 600 feet (183 m) wide

Mouth to Portland & Vancouver - 106 mi (107 km)

Willamette River - 10 mi (16 km)

Annual Maintenance Dredging -6 Mcy (4.6 hm<sup>3</sup>)

Presently deepening to 43 feet (13.1 km)

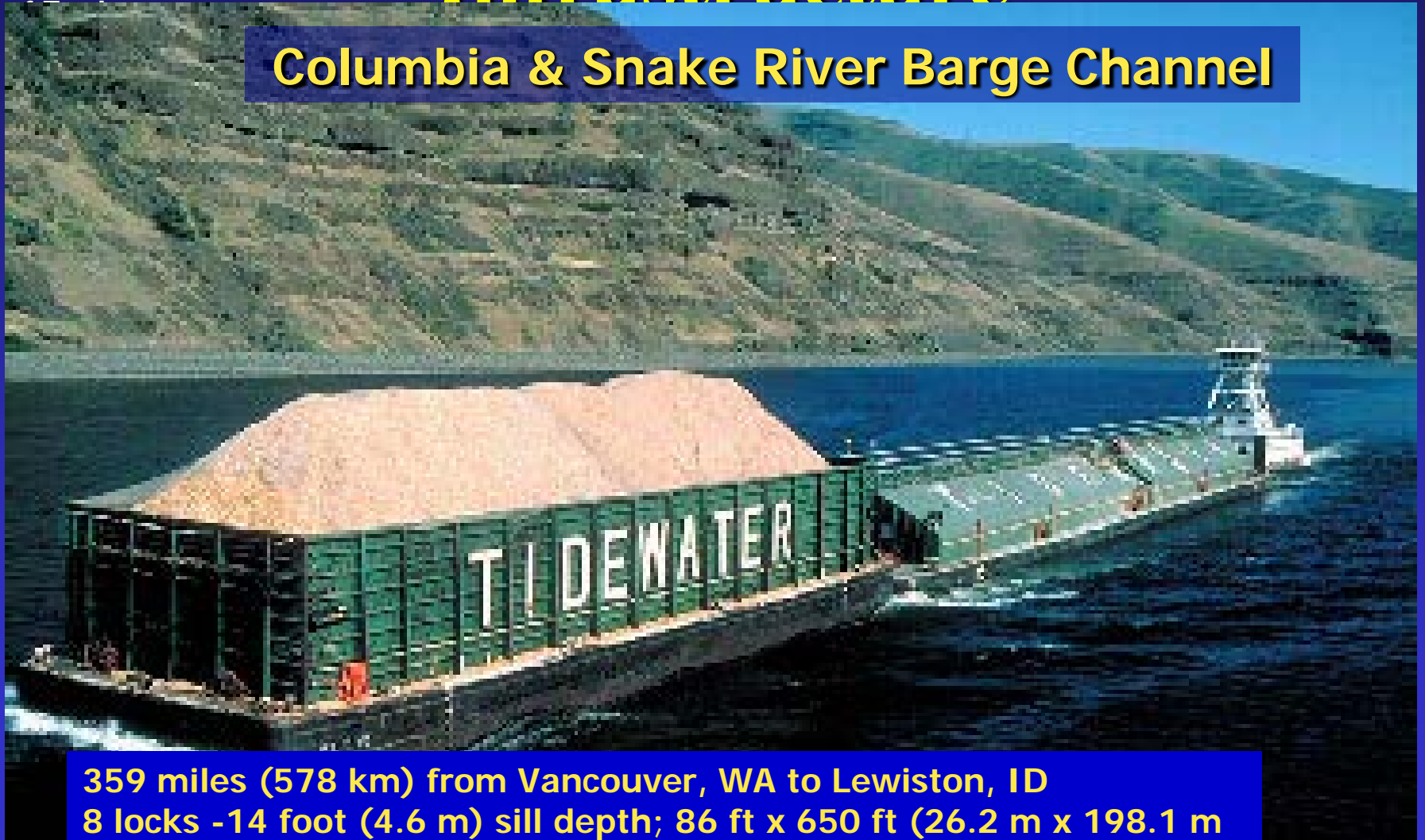




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# Federal Infrastructure

## Columbia & Snake River Barge Channel



359 miles (578 km) from Vancouver, WA to Lewiston, ID  
8 locks - 14 foot (4.6 m) sill depth; 86 ft x 650 ft (26.2 m x 198.1 m)  
Annual Dredging 200 kcy (15.3 dam<sup>3</sup>)

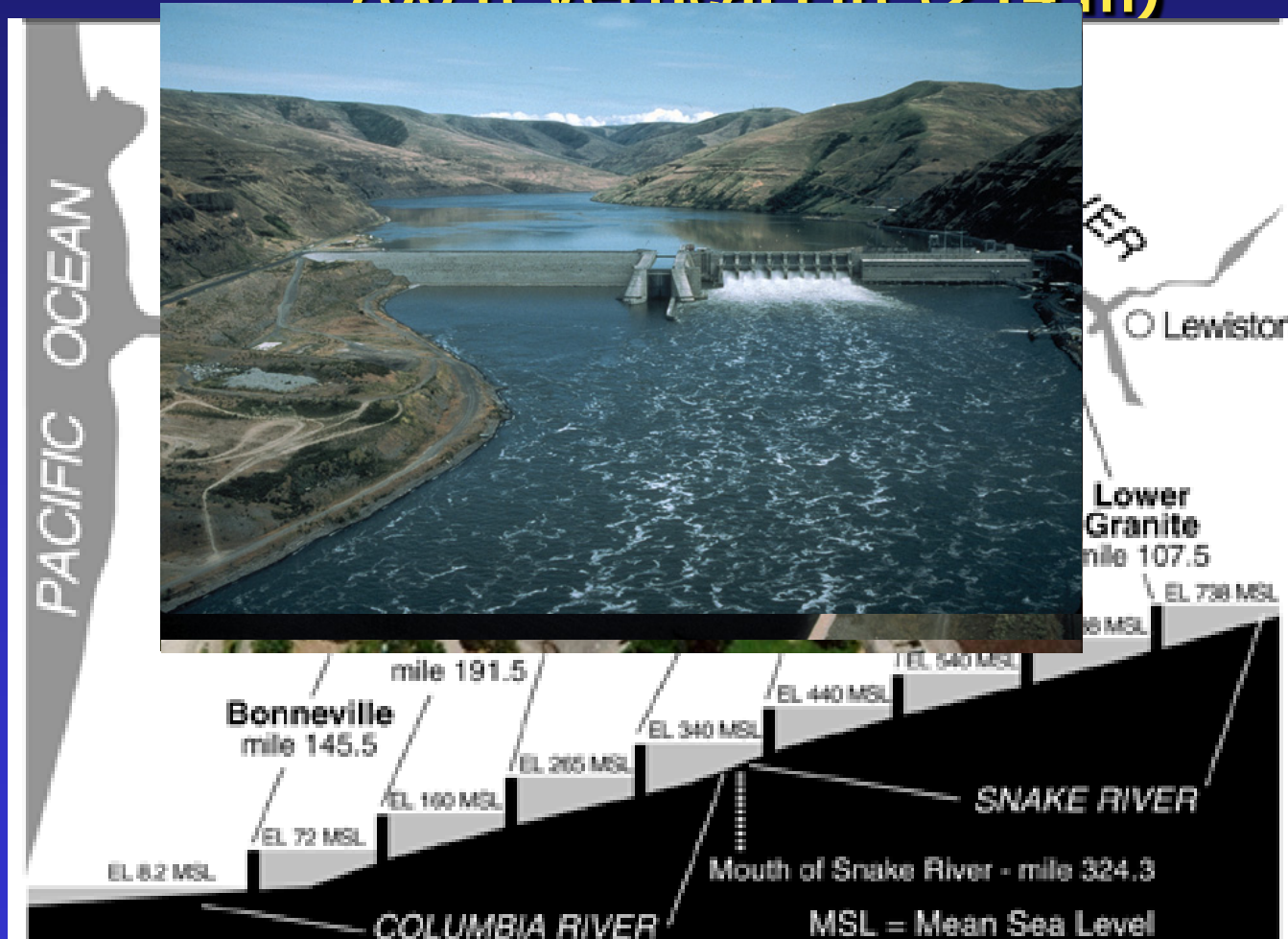




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# Federal Infrastructure

## 8 Locks through Multipurpose Dams 700 ft Vertical Lift (214 m)





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# Columbia Snake River Dams

## 8 Multipurpose Projects

Power – Generation Cap. 10.3 MWatt

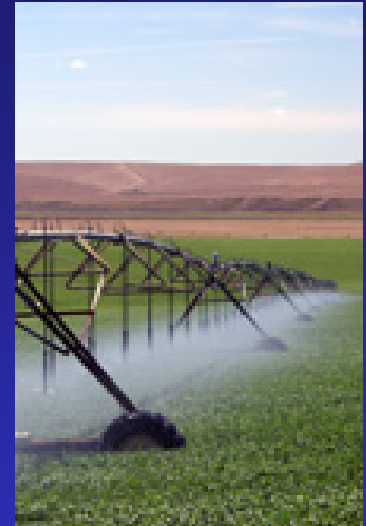
Navigation – 359 mi of barge channel

Flood Control - 534,000 AF

Irrigation – 6.5 MAc land (26,304 km<sup>2</sup>)

Recreation – Over 100 Camps, Parks  
& Recreational Facilities

Environmental – Fish Passage Facilities





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# Environmental Challenges

## **Dredging & Disposal Restrictions due to ESA fish in the Columbia – Snake River System**

**Lower Columbia Deep Draft Channel: Operational, Disposal,  
Timing**

**Shallow Barge Channel: Operational, Timing, Delays;**

**Snake River Dredging Delayed 3 years**



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# UPSTREAM GATE REPAIR

## Lock Gate Damage

Gate Guide Buckled



Buckled Beams

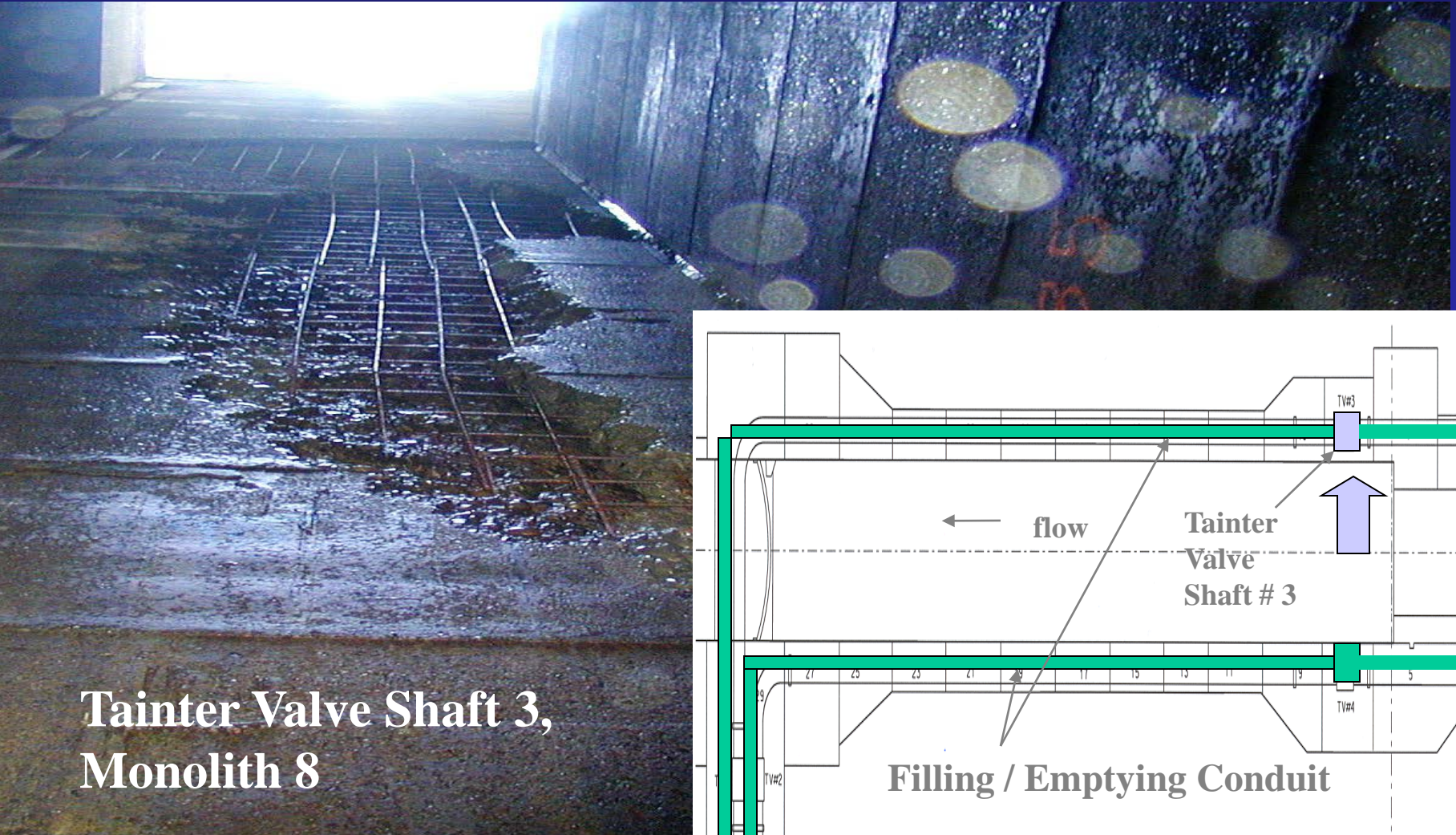




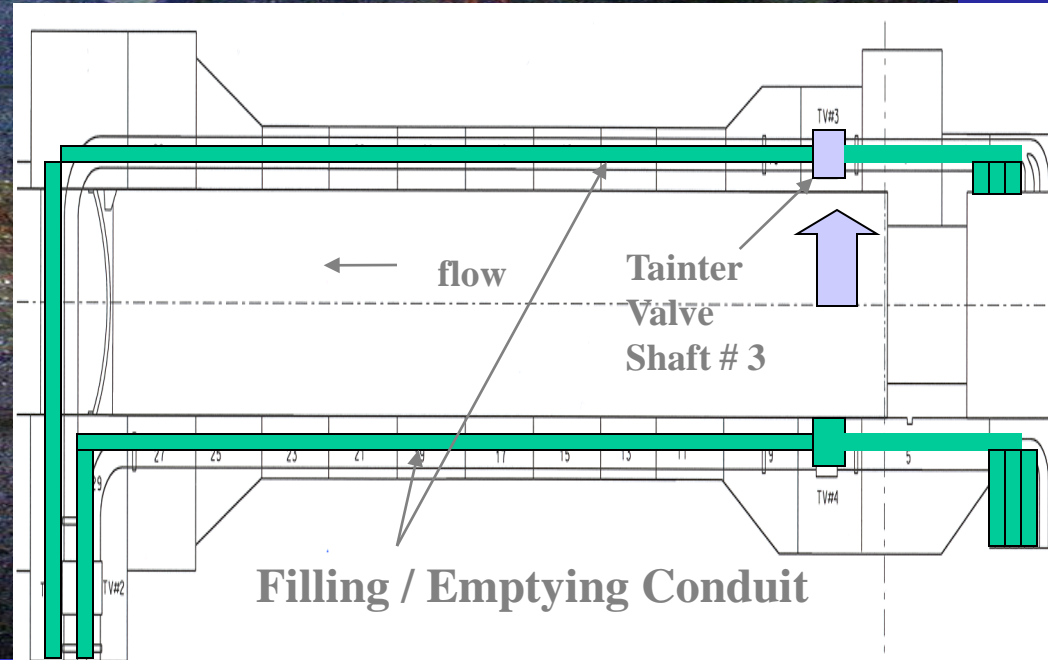
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# EMERGENCY REPAIRS

## Navigation Lock



Tainter Valve Shaft 3,  
Monolith 8





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# Infrastructure Challenges Columbia Snake River System

**MCR Jetty Rehab**

**Interim Fix: \$25M**

**Total Rehab: \$100M+**

**South Jetty Head  
4000 ft loss in length  
(1200 m)**



# Infrastructure Challenges

## Unplanned Expenditures



2003 – Coos Bay Jetty Breach – Emergency Winter Interim Repair  
Final Repair Est.: \$20M

2003 / 2004 – John Day Lock Failure – Emergency Repair to U/S  
Gate, Foundation, and Monolith - \$16M

2005 Fern Ridge Dam – Active Failure Emergency Repairs \$17M



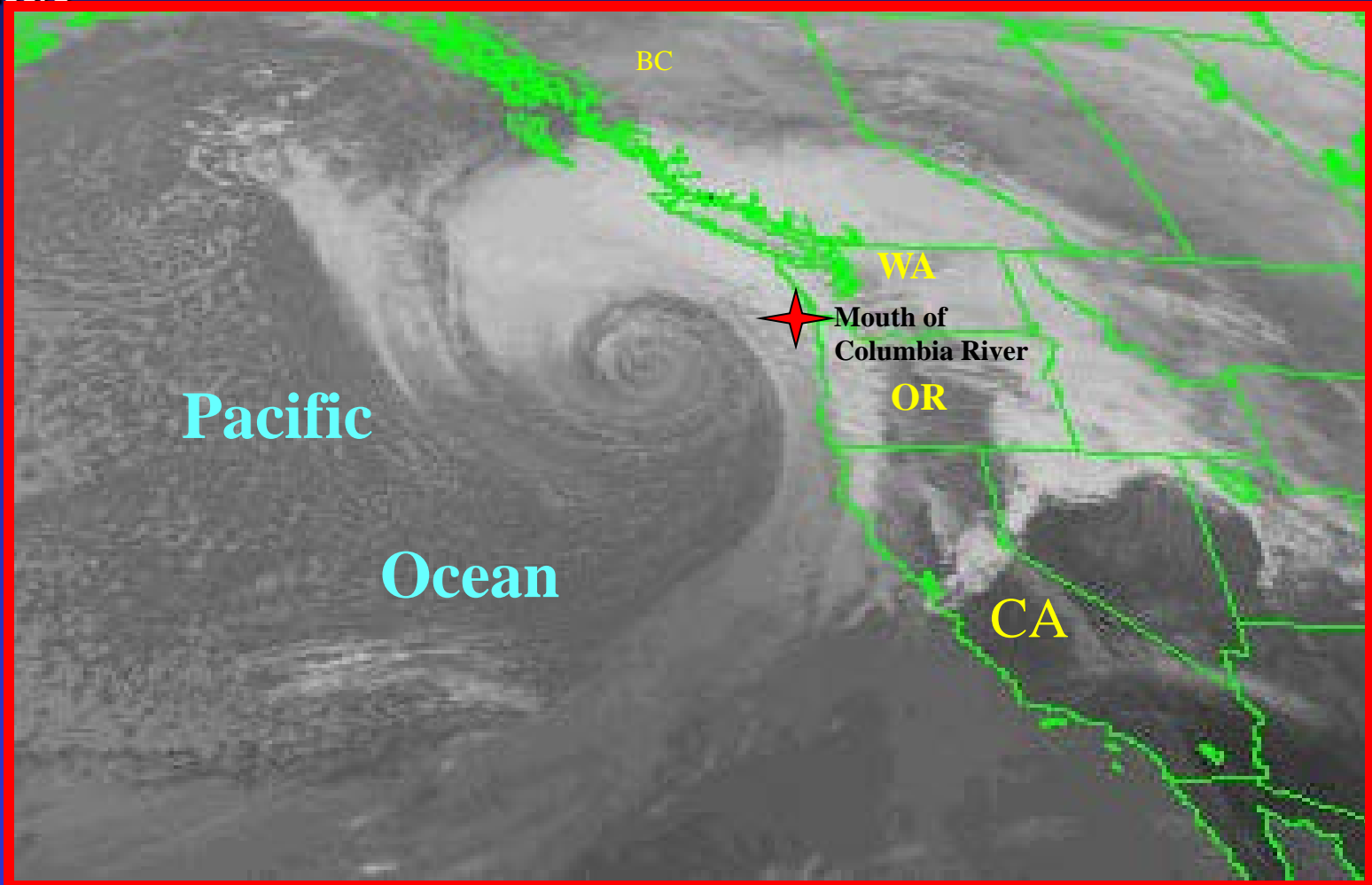
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Portland District

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# Pacific Coast of United States

image courtesy of NOAA

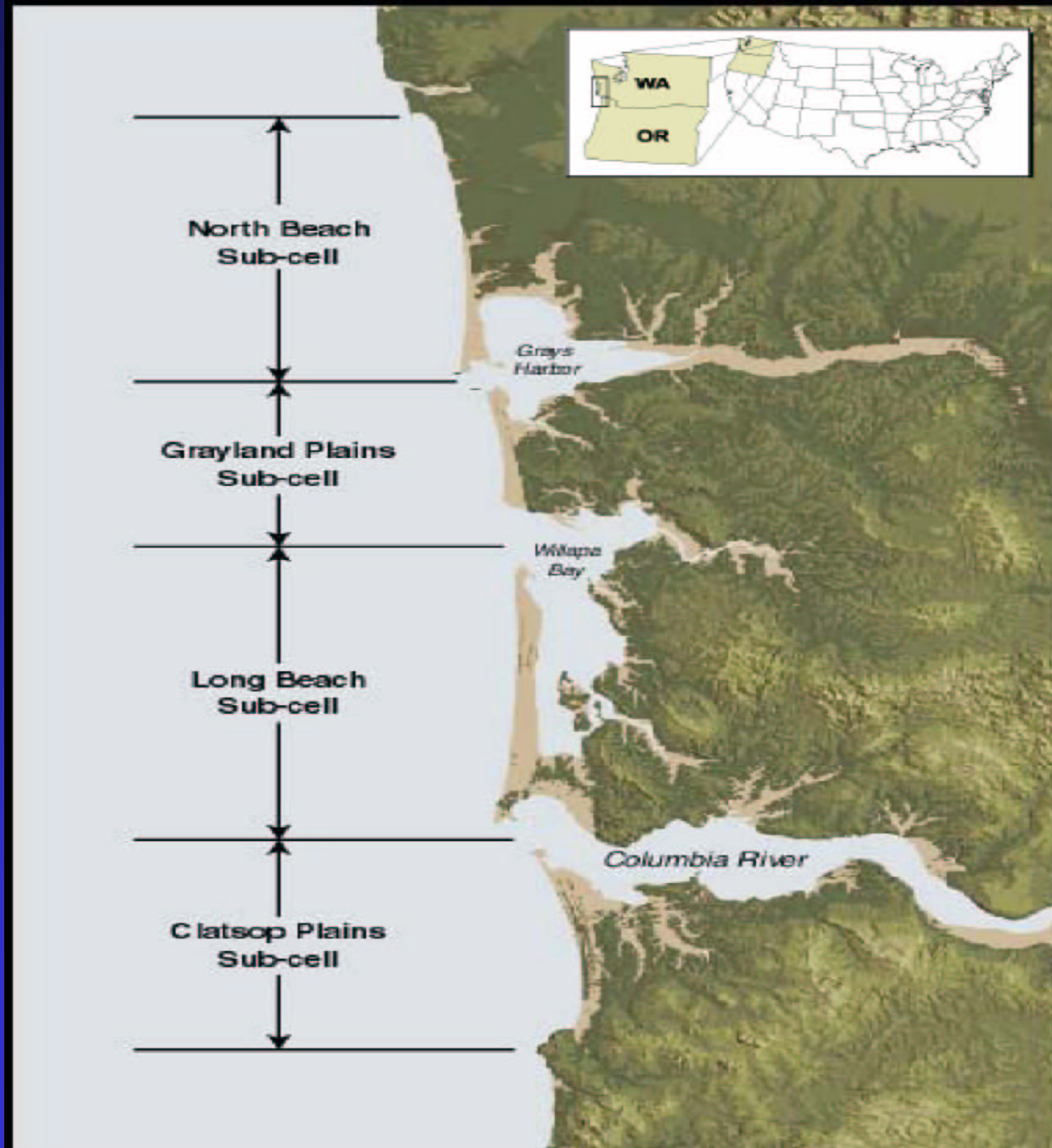






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# MCR Littoral Cell off the Oregon and Washington Coasts





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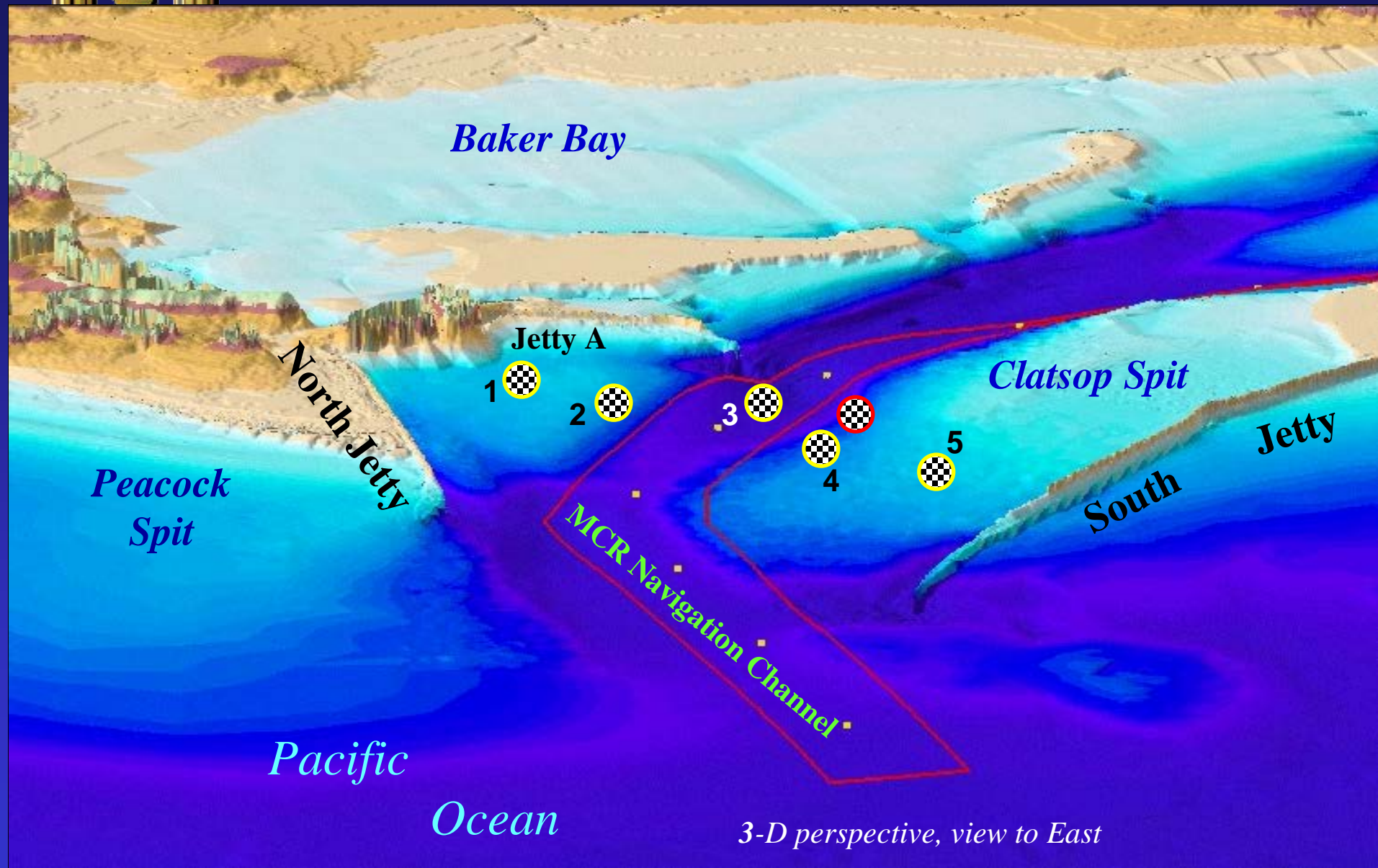
# MCR LITTORAL

## CELL RSM

### MEGA-TRANSECT

- **Purpose:** Collect wave, currents, suspended-bedload sediment, CTD, and tide between the MCR and C&LW and use data to feed existing models for better understanding of MCR sediment movement
- **Rod Moritz, Corps Lead**
- **Guy Gelfenbaum, USGS – Menlo Park**
- **ERDC – Nick Krause**
- **Moffatt-Nichol**
- **Evans-Hamilton**

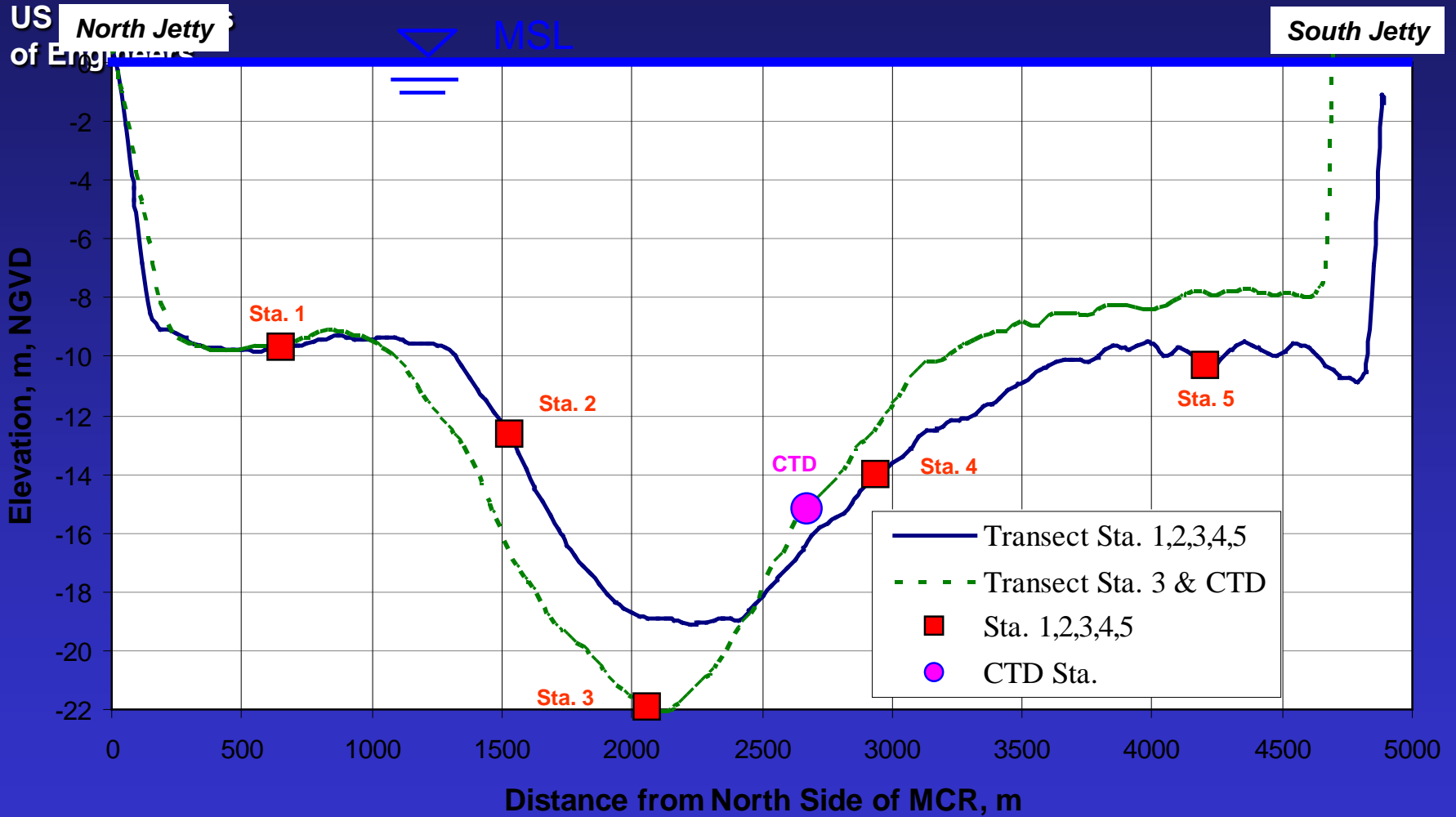
# MEGA-TRANSECT DATA COLLECTION at MCR Entrance 2 miles wide



Understand Sediment Transport Dynamics at MCR: Continuously Sample Waves, Currents, Sediment Transport, Temperature, Salinity



# Cross-Section View Across MCR along Mega-Transect Area





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# Littoral Drift Restoration , SW Washington

## Stakeholders: Coastal Communities Similar Project to Benson Beach 2002

Placeme





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# **SW WASHINGTON LITTORAL DRIFT RESTORATION (BENSON BEACH) RSM**

**PURPOSE – Restore material to the littoral drift along the Washington Coast**

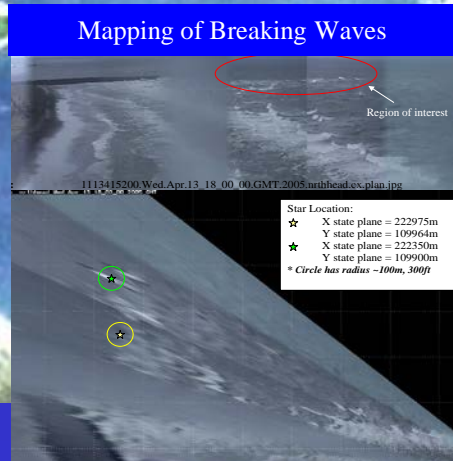
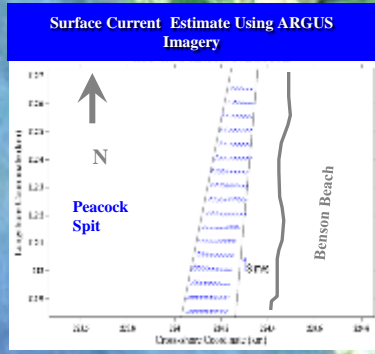
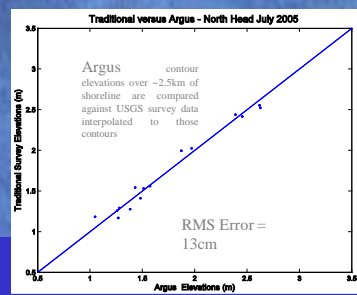
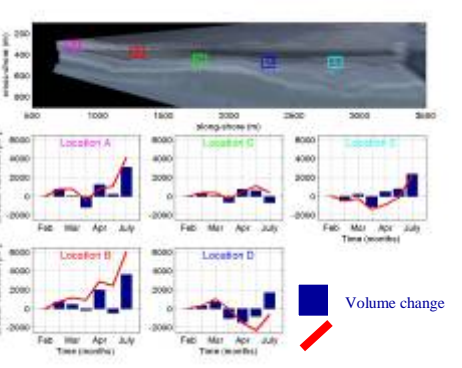
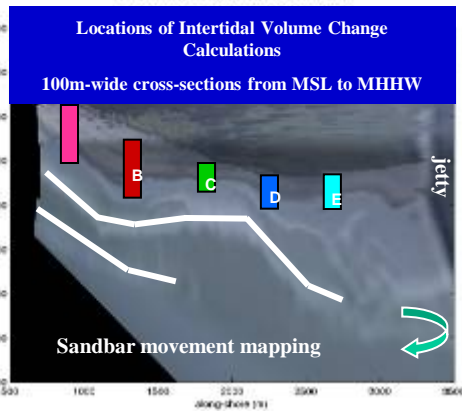
**● 2006 WORK**

- ◆ ARGUS CAMERA DATA COLLECTION**
- ◆ LONG TERM ENVIRONMENTAL CLEARANCES**
- ◆ INDEPENDENT TECHNICAL REVIEW**
- ◆ FUNDS EXCESS TO THIS YEAR'S NEEDS ARE PROGRAMMED FOR FY2007**



# Argus Beach Monitoring at North Head, Washington

Contractor: NorthWest Research Associates (NwRA), with support from Washington Dept. of Ecology and USGS-Menlo Park



South Jetty

North Jetty, 25 ft high

*Benson Beach*



Low Tide



25 ft wave



High Tide



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# Nearshore Beneficial Use Site – S of S Jetty

## Stakeholders– Lower Columbia Solutions Group Members

- Port of Astoria
- OR DLCD
- OR DSL
- OR DOGAMI
- Columbia River  
Channel Coalition
- Corps - RSM
- Port of Portland
- Port of Longview
- Port of Vancouver
- Port of Kalama
- Oregon Sea Grant
- Corps – MCR  
Project

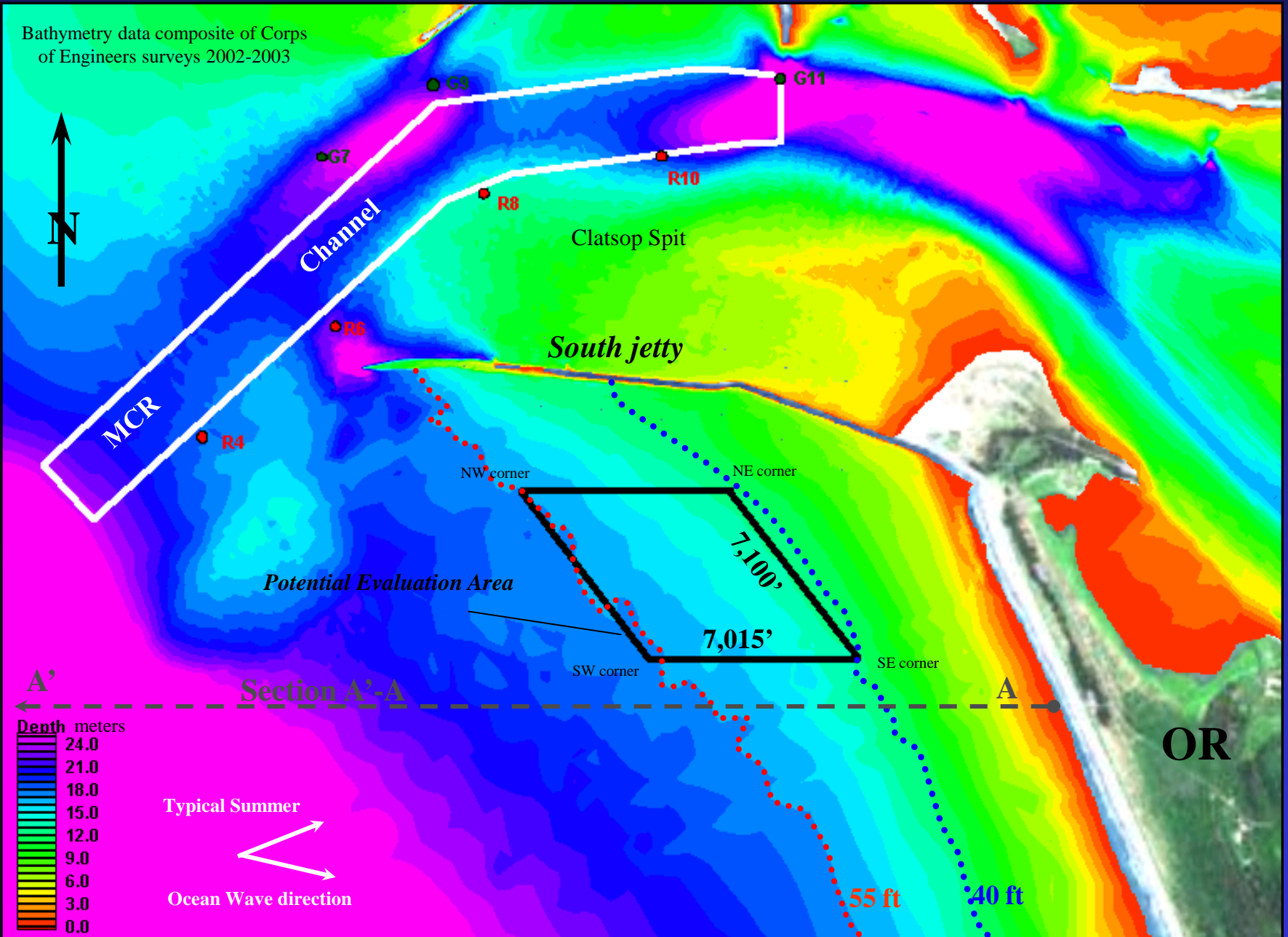


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# **SOUTH JETTY, CLATSOP SPIT OR RSM**

- **Purpose: Protect the South Jetty from adverse wave conditions**
- **FY 2005 – 35,000 cyds placed via Corps Hopper Dredge for a research project with monitoring funded by 11 groups including RSM (EPA Section 102 permit)**
- **FY2006 – Congressional addition under RSM for razor clam study and wave and sediment fate modeling to increase understanding as group prepares for larger project.**

Bathymetry data composite of Corps of Engineers surveys 2002-2003



“Nearshore Beneficial Use South of S Jetty Site”

South jetty

# Conducted 6 TEST DUMPS and Measured Bottom Deposition

Overall test site boundary based on area needed to perform six (6) non-overlapping test dumps. Various test dump scenarios are estimated to be 500 feet wide x 6,000 ft long, as shown by screened boxes.

A 500-ft buffer would be needed to prevent encroachment effects from neighboring test dumps.

*Potential Deposition Area for Enhanced Placement – Maximum length of each disposal run is to be 6,000 ft. Actual length of test dump disposal runs may be less than 6,000 ft; depending upon behavior of the material during disposal and natural variation in conditions that can effect the hopper dredge during disposal. The deposition rate of dredged material on the seabed will be reduced during the test dumps, by reducing the rate at which dredged material leaves the hopper dredge and/or by increasing vessel speed during disposal.*

6,000 ft placement run - maximum length

Placement length may vary; less than 6,000 ft

≈ 7,000 ft

60 ft

≈ 7,000 ft

40 ft



Figure 3

Test dumps would need to be run in East-West direction based on the need for the hopper dredge to maintain heading based on wave approach (hopper dredge typically needs to head into or follow the waves)



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# MCR RSM SUCCESSES AND CHALLENGES

- **Excellent collaboration developed with stakeholder groups**
- **Superb support from scientific community and state and federal agency personnel at all levels**
- **Authority and/or incremental funding is needed for placement when it is over the cost of the existing project**

# Questions ?

