

# PORTLAND DISTRICT NAVIGATION SUPPORT TO THE NATION

Col. Helton, Portland District Commander  
Liza Wells, Deputy District Engineer  
Kym Anderson, Chief of Operations  
Northwestern Division, Portland District  
24-AUG-2022



U.S. ARMY



US Army Corps  
of Engineers®  
Portland District

# PORTLAND DISTRICT KEY LEADERSHIP



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2



Colonel Michael Helton  
Commander



Liza Wells  
Deputy District Engineer  
Program and Project  
Management



Kym Anderson  
Chief, Operations Division

# AGENDA



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3

Commander's remarks

USACE Overview / Structure

Portland District Navigation Mission

Critical Infrastructure Projects

Bipartisan Infrastructure Law/ Project highlights

Vessel Assets

Dredging and Disposal Operations

Columbia River Current Status

Environmental Sustainability Considerations



# U.S. ARMY CORPS OF ENGINEERS

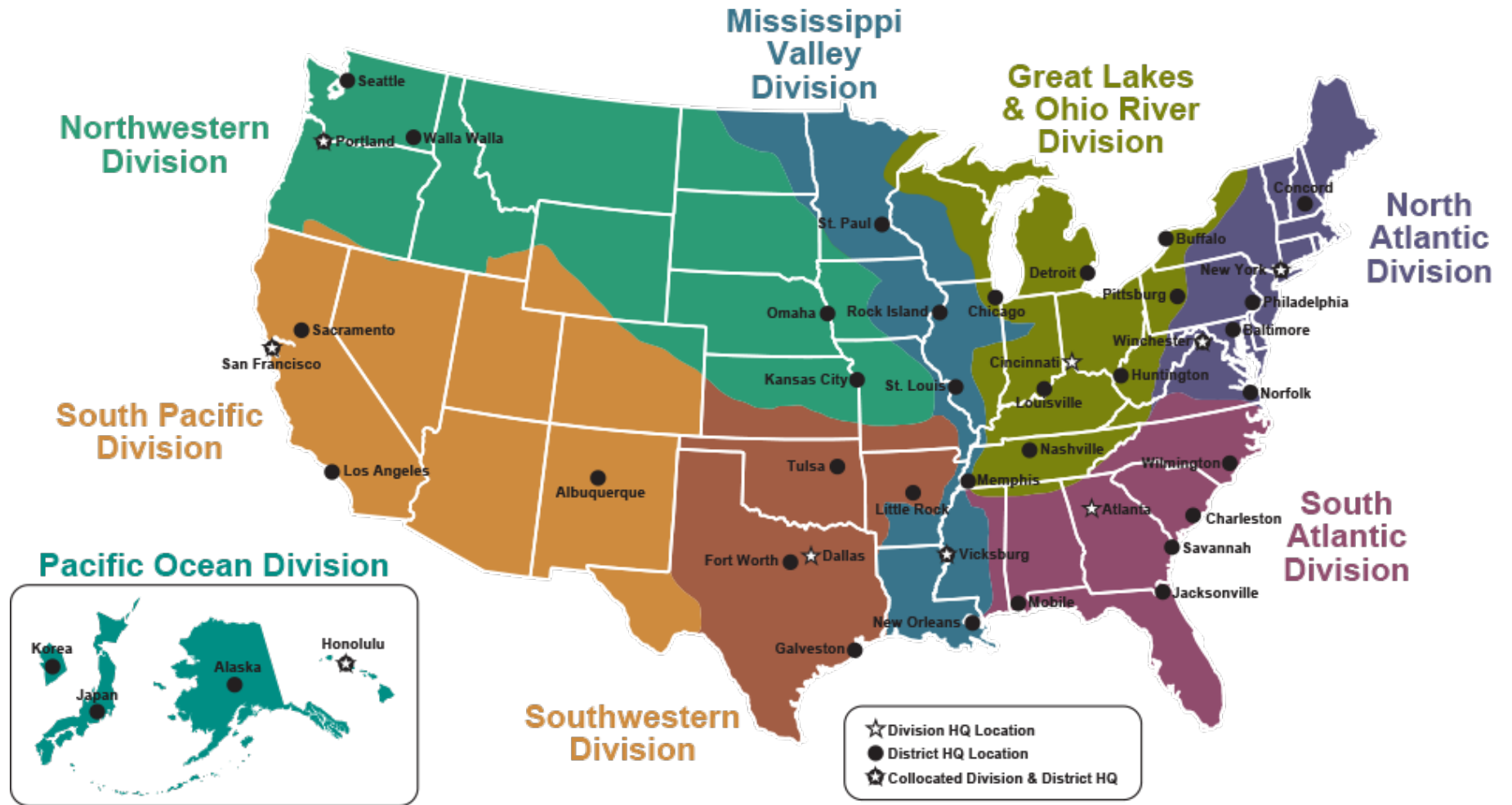


US Army Corps of Engineers  
Portland District

9 Divisions  
(supports over 100 countries)

43 Districts  
(U.S./Europe/Asia)

- NWD
- Portland
  - Seattle
  - Omaha
  - Kansas City
  - Walla Walla



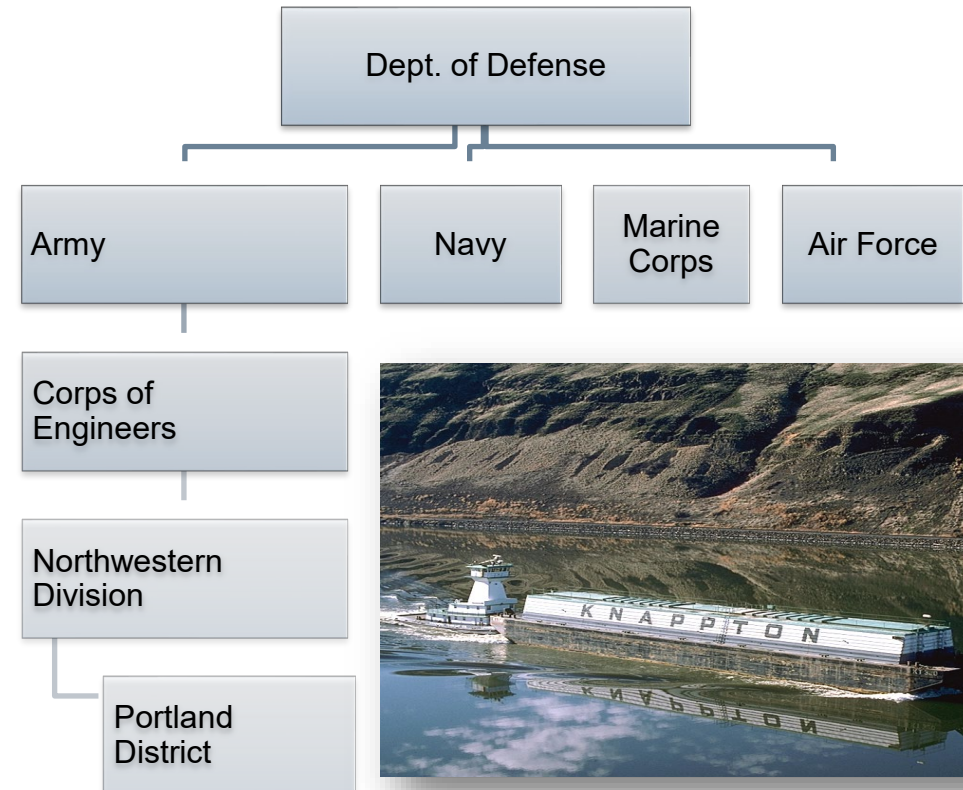
# MISSION

Mission: Provide vital public engineering services in peace and war to strengthen our Nation's security, energize the economy, and reduce risks from disasters.

- Civil Works (boundaries based on watershed)
- Military

USACE was established Mar. 6, 1802 as permanent branch of the Army.

Navigation was the first mission.



# PORTLAND DISTRICT MISSIONS & RESPONSIBILITIES



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6

Balance the region's competing needs for navigation, flood risk management, hydropower, fish and wildlife habitat, disaster recovery, irrigation and recreation.

(AKA, juggling knives on a flaming teeter-totter)

## Civil Works District

- 1,487 Civilian employees
- 8 Military Officers
- 2 States, 4 Senators, 6 Representatives, 15 Tribal Nations



# NAVIGATION



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7

## Purpose

Provide safe, reliable, efficient, and environmentally sustainable waterborne transportation systems (channels, harbors, and waterways) for movement of commerce, national security needs, and recreation.



# PORTLAND DISTRICT NAVIGATION PROJECTS



## ● Navigation Projects

- 10 deep draft harbors
- 12 shallow draft harbors
- 12 coastal jetty structures
- 224 mi.-maintained waterways
- 3 high-lift navigation locks
- 2 dredges
- 6 survey vessels
- 162 employees, 3 office sites

# NAVIGATION RELATIONSHIPS



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9

- Ports: Commissions, Executive Directors, Staff
- USCG: Station, Sector and District Level
- Federal Delegation: D.C. and State Staffs
- Federal: NMFS, USFWS
- State of Oregon
- (Governor's Office; Economic and Community Development)
- Bar and River Pilots
- Pacific Northwest Waterways Association (PNWA)
- Columbia River Steamship Operators Association (CRSOA)
- USACE: Seattle, San Francisco, Los Angeles, Honolulu, and Alaska Districts



# CORPS' CIVIL WORKS APPROPRIATIONS (ENERGY & WATER DEVELOPMENT)



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- **Annual Appropriations**

- Usually Congress adds to PBUD
- Competition for funds

- **Funded by Account and Project**

- **Inland Waterways**

- Supports cost-shared construction
- Proceeds from fuel tax on barge fuel

- **Harbor Maintenance**

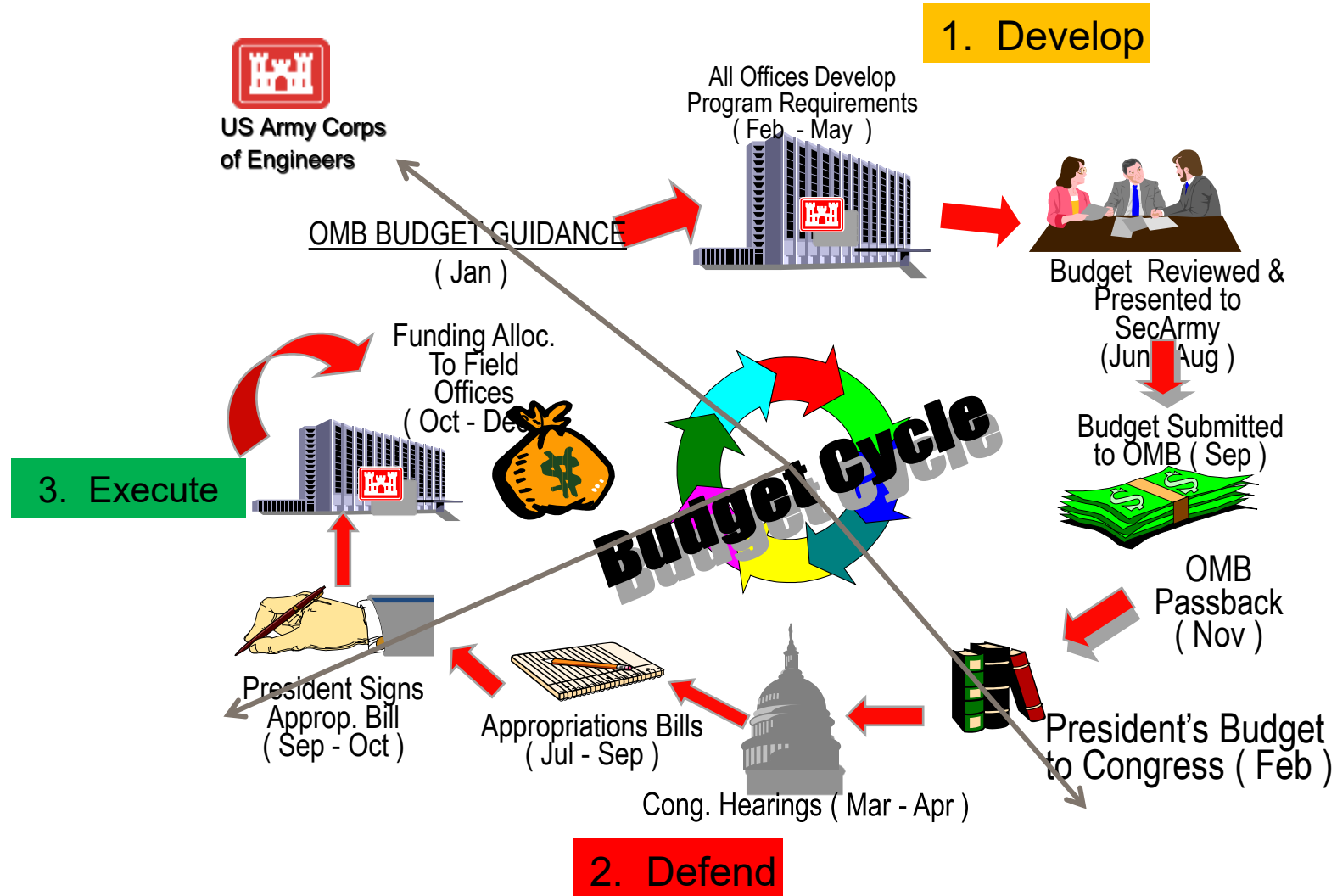
- Ports, Harbors, Deep Draft Channels
- Proceeds from taxes
  - Waterborne commercial cargo imports
  - Domestic cargo
  - Cruise ship passengers at federally maintained ports

- **Additional Funding**

- Supplemental Appropriations
- Earmarks
- “Funding Pots” / “Workplan”

<b>FY18</b>	<b>\$37.661 B</b>
• <i>Bipartisan Budget Act of 2018 (PL 115-123)</i>	\$17.398 B
• <i>FY18 Appropriations (PL 115-141)</i>	\$6.827 B
• <i>FY18 Carry-In (from appropriations prior to FY18)</i>	\$13.436 B
<b>FY19</b>	<b>\$10.256 B</b>
• <i>FY19 Appropriations (PL 115-244)</i>	\$6.998 B
• <i>Disaster Relief Act of 2019 (PL 116-20)</i>	\$3.258 B
<b>FY20</b>	<b>\$7.720 B</b>
• <i>FY20 Appropriations (PL 116-94)</i>	\$7.650 B
• <i>CARES Act (PL 116-136)</i>	\$0.070 B
<b>FY21 Appropriations (PL 116-260)</b>	<b>\$7.796 B</b>
<b>FY22</b>	<b>\$31.153 B</b>
• <i>Disaster Relief Supplemental Appropriations (PL 117-43)</i>	\$5.711 B
• <i>Infrastructure Investment &amp; Jobs Act (PL 117-58)</i>	\$17.099 B
• <i>FY22 Appropriations (PL 117-103)</i>	\$8.343 B

# CIVIL WORKS PROGRAM / BUDGET TIMELINE



# BIPARTISAN INFRASTRUCTURE LAW (2021)



BIL included funding for navigation infrastructure via investigations, Construction, Continuing Authorities Program, and Operations and Maintenance.

## Columbia River System Funded Projects:

- Columbia River at the mouth – East Sand Island Pile Dike 5.15
- Columbia and Lower Willamette Rivers – additional FY23 maintenance dredging
- John Day Lock and Dam & The Dalles Lock and Dam – tainter valves design and initial increment for supply contract
- John Day Lock and Dam – replace navigation lock downstream bearing shoes

## *Other Navigation BIL funding for Portland District:*

- *Charleston Harbor (Port of Newport) - CAP Sec. 107 Navigation Improvements*
- *Depoe Bay - Seawall stability analysis*
- *Tillamook – South Jetty construction*



The Dalles Dam Navigation Lock



# MOUTH OF THE COLUMBIA RIVER (MCR) JETTIES



**South Jetty** Built 1885-1913; 6 miles long

**North Jetty** Built 1914-1917; 2 miles long

**Jetty A** Built 1938-1939; 1.6 miles long

Ensures reliable entrance for the \$22 billion Columbia-Snake System “Highway”

Columbia navigation system:

- No. 1 West Coast export gateway for the Nation’s wheat, lumber, soy, mineral and automobile
- More than 40,000 jobs are dependent on these trades
- Over \$900M in new infrastructure investment along the river since main channel deepened in 2010

[Source: FACT SHEETS - PNWA](#)

# MOUTH OF THE COLUMBIA RIVER JETTY REHABILITATION



Jetty A Stone Offloading



## Jetty A

Stone placement completed January 2017  
80,000 tons of armor stone placed  
Offload site removal and site restoration

## North Jetty

Completed 2020  
Approximately 120,000 tons of armor stone required

## South Jetty

Started stone placement for Season 3 of 5 on 5/21/22  
All stone placement expected to be complete September 2024

# COOS BAY NORTH JETTY REPAIR



- Originally constructed in 1894
- Jetty root (< STA 47+00) severely deteriorated and hasn't been repaired since original construction
- Jetty head last repaired in 1989 to STA 86+40
- Jetty trunk (STA 47+00 to STA 63+00) emergency/interim repairs in both 2003 and 2008
- Construction contract for repair of the head, trunk and root was awarded on 2/2/2022 for \$67.7M
- Work yet to start due to a contract protest;  
will proceed after bid protest remedy

## Construction Milestones:

- Mandatory Work Complete (Head): 10/31/2023
- Option Work Complete (Trunk & Root): 10/21/2024



# TILLAMOOK JETTY REPAIRS

## North Jetty:

- Stone placement completed 5/26/22
- Equipment demobilized 6/9/22



## South Jetty:

- Advertise contract 8/1/22
- Award contract 9/30/22
- Construction in 2023 through 2025



# ROGUE RIVER DREDGING

## Entrance Channel and Boat Basin Access Channel:

- YAQUINA unable to dredge the entrance for several years
- Shallow conditions and weather made dredging with YAQUINA and contractor unsuccessful in 2021
- Regrouped and strategized a way to accomplish the work for 2022
- Contractor mobilized to site and began dredging June 2022
- YAQUINA may work entrance as needed



# COLUMBIA-SNAKE RIVER INLAND WATERWAY



- Serves 36 ports
- 60% of U.S. wheat exports
- 485+ miles of navigable water
- Export/import traffic exceed \$22 billion annually
- Columbia-Snake River system supports 51 million tons of international trade and 40,000 local jobs



[Source: FACT SHEETS - PNWA](#)

# COLUMBIA BASIN NAVIGATION CHANNELS



Mouth of the Columbia River (MCR) entrance:

- 55' deep; 2,000' wide; 6 miles long
- *POC: Julia Keiter*

Lower Columbia River shipping channel (C&LW)  
Vancouver, WA to Pacific Ocean

- 43' deep; 600' wide; 103 miles long
- *POC Jessica Stokke*

Portland Harbor in the Lower Willamette River

- Maintained @40'; 12 miles long

Barge channel upstream of Vancouver, WA

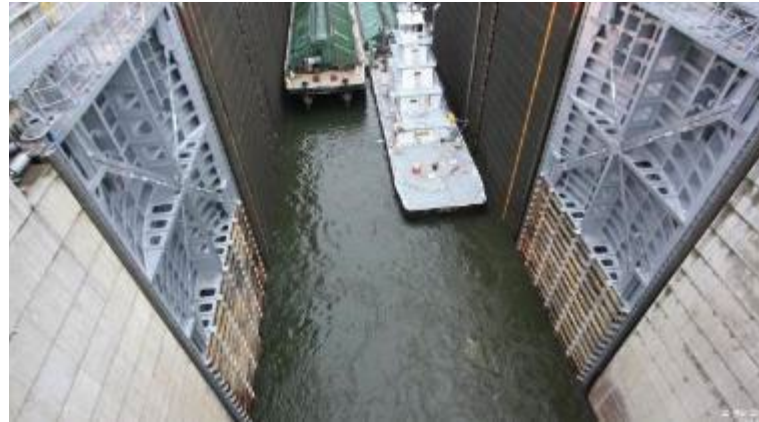
- Maintained @ 17'



# HIGH-LIFT NAVIGATION LOCKS ON THE COLUMBIA RIVER



**Bonneville Lock**  
Length: 676 feet  
Max Lift: 90 feet

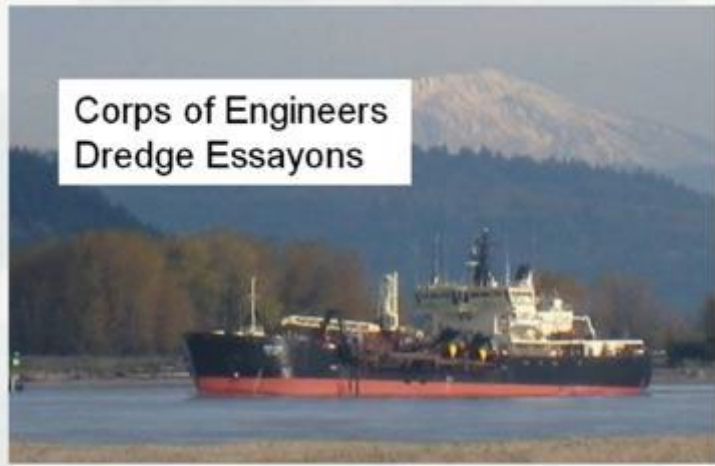


**The Dalles Lock**  
Length: 650 feet  
Max Lift: 90 feet



**John Day Lock**  
Length: 650 feet  
Max Lift: 113 feet  
(Highest in the Nation)

# PORTLAND OWNED DREDGES AND CONTRACT DREDGES



Essayons - 350' long / Yaquina - 200' long

**4** dredges working together to maintain the 43-ft deep Columbia River navigation channel every year.

**10** million cubic yards of sand dredged annually Entrance channel + River channel

**700** miles of navigation channel in the Pacific Northwest maintained by Essayons and Yaquina



# SURVEY BOATS

<https://www.nwp.usace.army.mil/Missions/Navigation/Vessels/>



Corps survey vessels support multiple districts, the U.S. Navy and the U.S. Coast Guard.

- The Redlinger and The Elton - both 59'5" long
- The Graham - 25' long
- The Hopman - 22' long
- Patterson  
(Coos Bay)



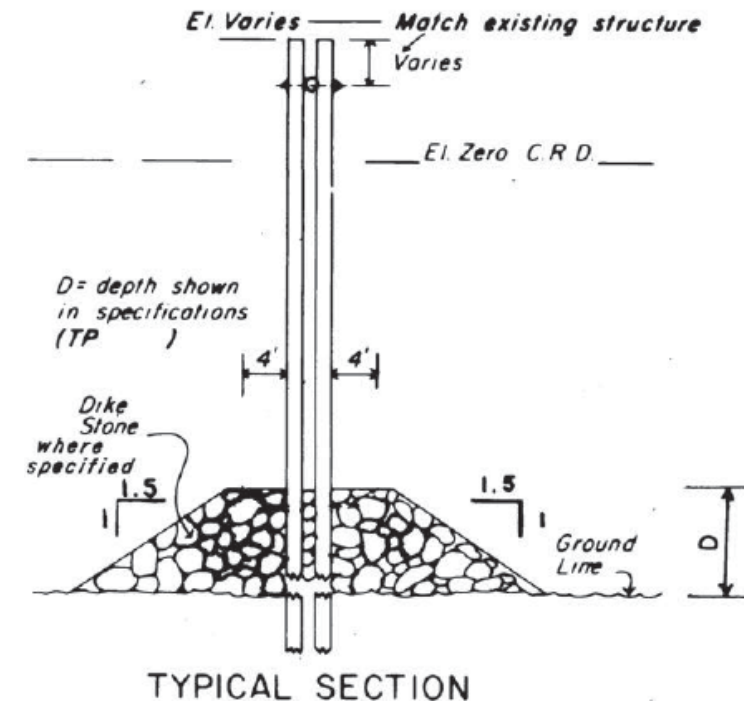
**Hopman and Graham**



**Elton and Redlinger**

# NAVIGATION FEATURE: PILE DIKES

- Over 200 pile dikes in the Columbia River
- Stone at base of pile dikes to protect against scour
- Damaged pile dikes may be missing tall king “marker” piles
- May not be visible at high water



Pile dikes are sometimes referred to as “wing dams.”

# COLUMBIA RIVER PILE DIKE REPAIRS



## Challenge to Pile Dikes

- Most constructed from the late 1800s to the 1930s
- Many systems degraded, in need of repair

**Routine Maintenance** - 68 King Piles to be replaced Oct-Nov 2020, RM 41-136

## Major Work initiated on six key pile dike systems

Sand Island

Baker Bay

Miller-Rice Islands

Cottonwood Island

Skamokawa Reach at Price Island

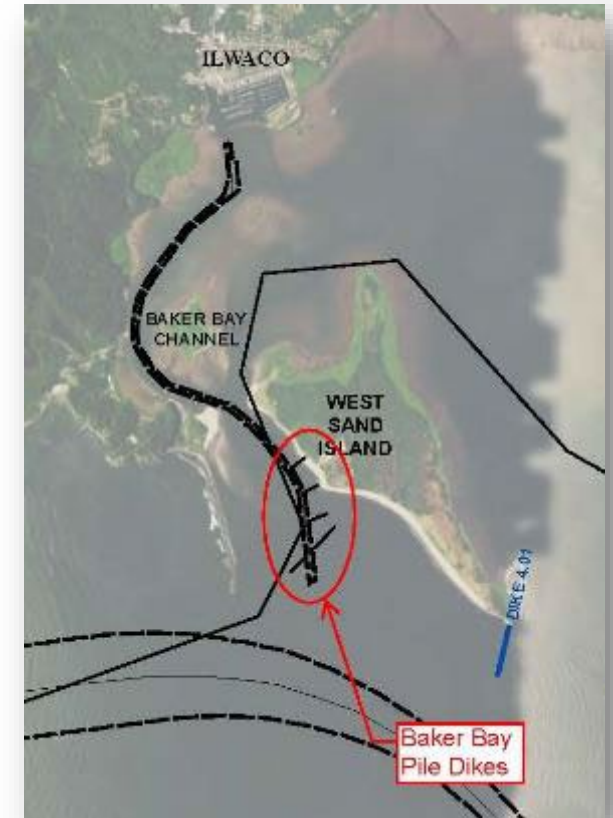
Washougal Turn

### Sand Island

- FY21: Engineering and design
- FY22: Award construction contract(s)

### Baker Bay

- FY21-22: Engineering and design
- FY23: Award construction contract(s)



CONDITION IN 1991

SAND ISLAND PILE DIKES

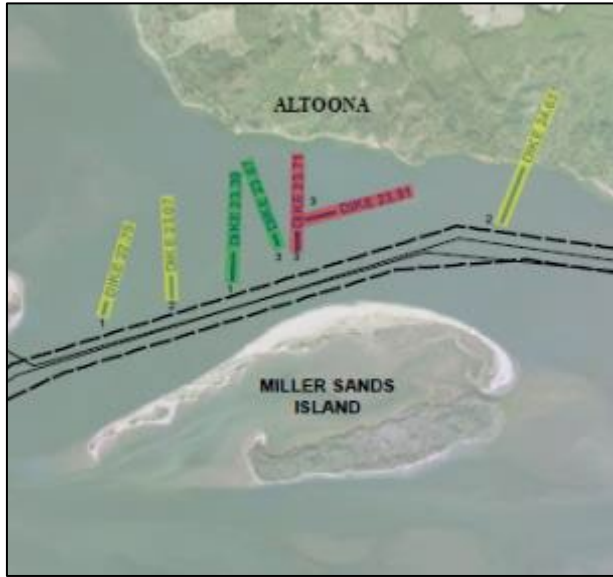


PRESENT CONDITION

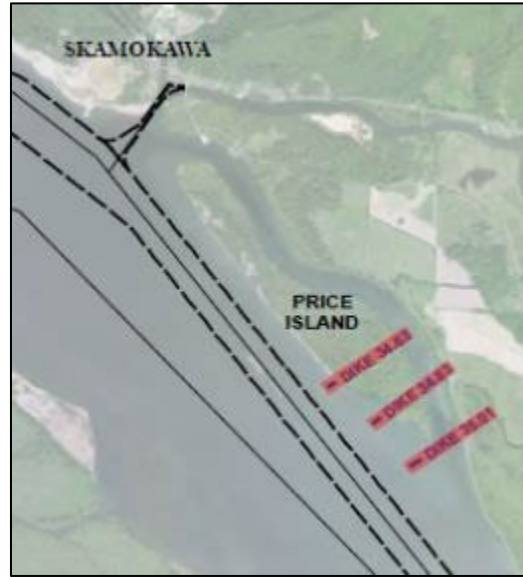
Note: All schedules are subject to appropriations

# COLUMBIA RIVER PILE DIKE REPAIRS

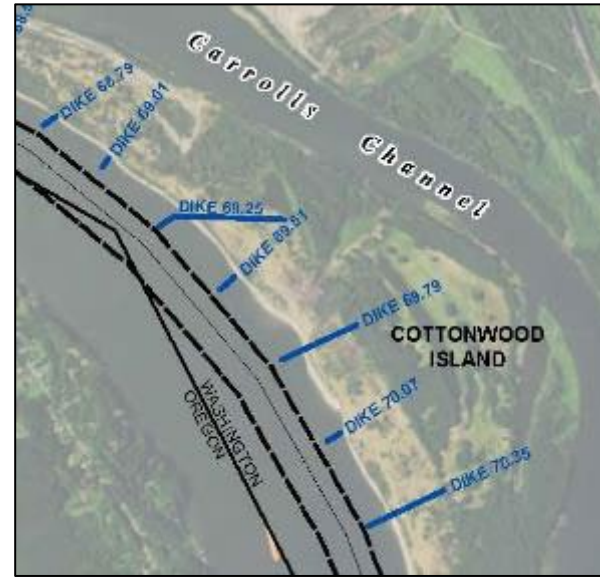
## Miller-Rice Islands



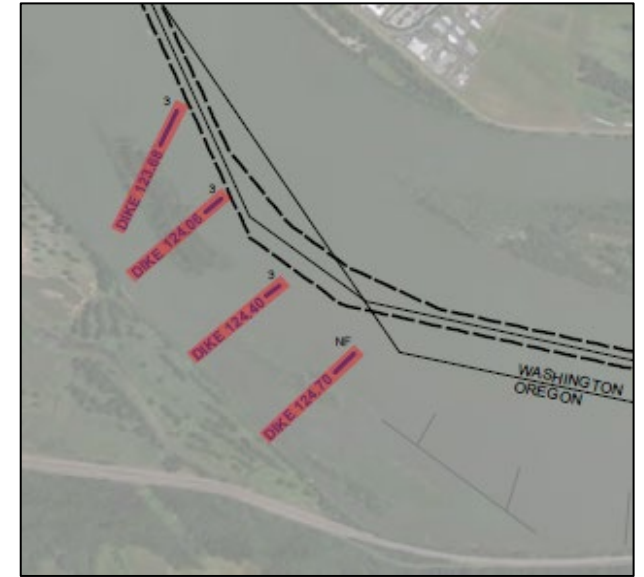
## Skamokawa Reach at Price Island



## Cottonwood Island



## Washougal Turn



- FY21: Engineering and design
- FY23: Award construction contract Cottonwood (subject to appropriations)
- FY23: Award construction contract(s) for Miller-Rice, Skamokawa, Washougal (subject to appropriations)



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26

# SHIP STERN BUOYS (PATON)

USACE owns and maintains (8) ship stern mooring buoys in designated USCG anchorages.

- 2 - Rainier near Longview, WA
- 1 - Prescott, just upstream of Rainier
- 1 - Sandy Island near Kalama, WA  
(damaged but functional)
- 4 - near Vancouver, WA



# COORDINATION ON HAZARDS TO NAVIGATION



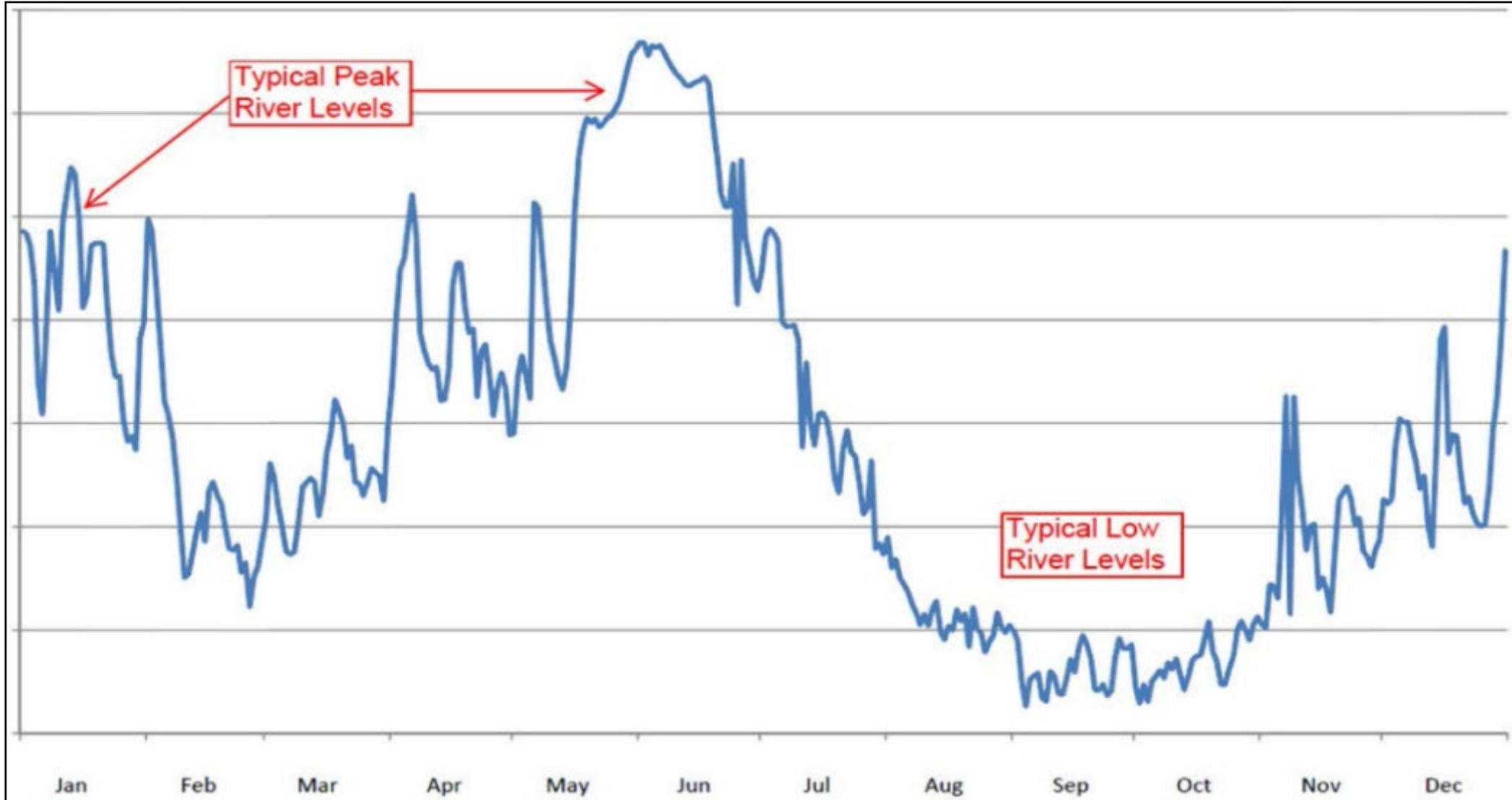
USACE and USCG consults on lead agency on sunken vessels/hazards.

- Owner is contacted and responsible for removal of hazard
- If owner not be located, USACE evaluates factors supporting removal/other applicable authorities to determine feasibility
- USACE has discretionary authority to remove vessels from Federal navigation channels (per 33 CFR 245.20)
- USACE removal may occur, if warranted/approved thru HQ
- USCG is lead for marking obstructions and may have authority to remove such obstructions not addressed by USACE



*USACE POC: Casey O'Donnell (503) 437-5824*

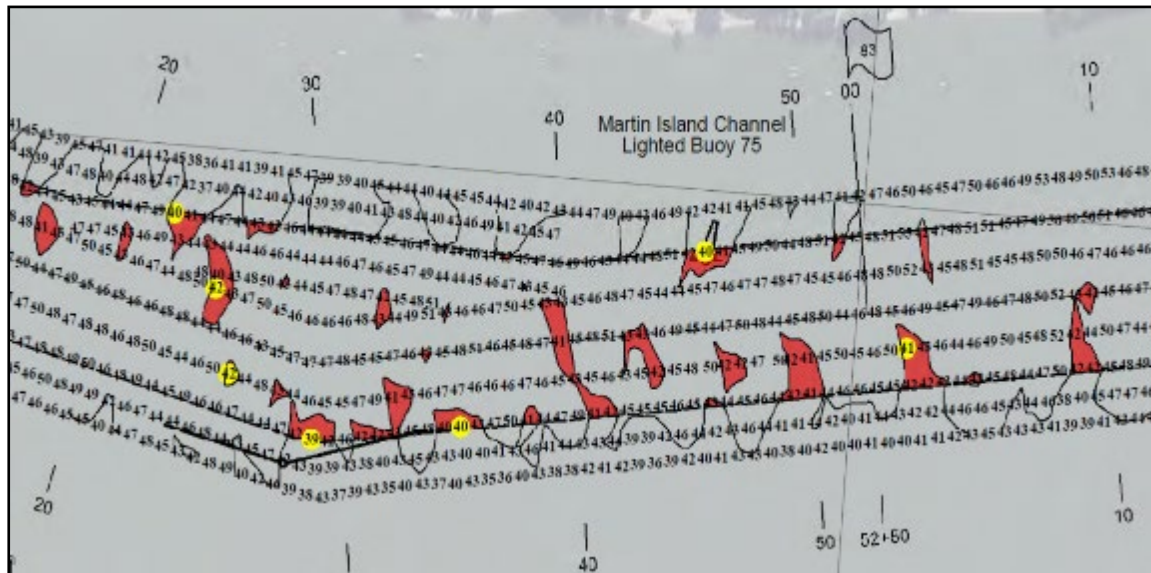
# TYPICAL COLUMBIA RIVER LEVELS



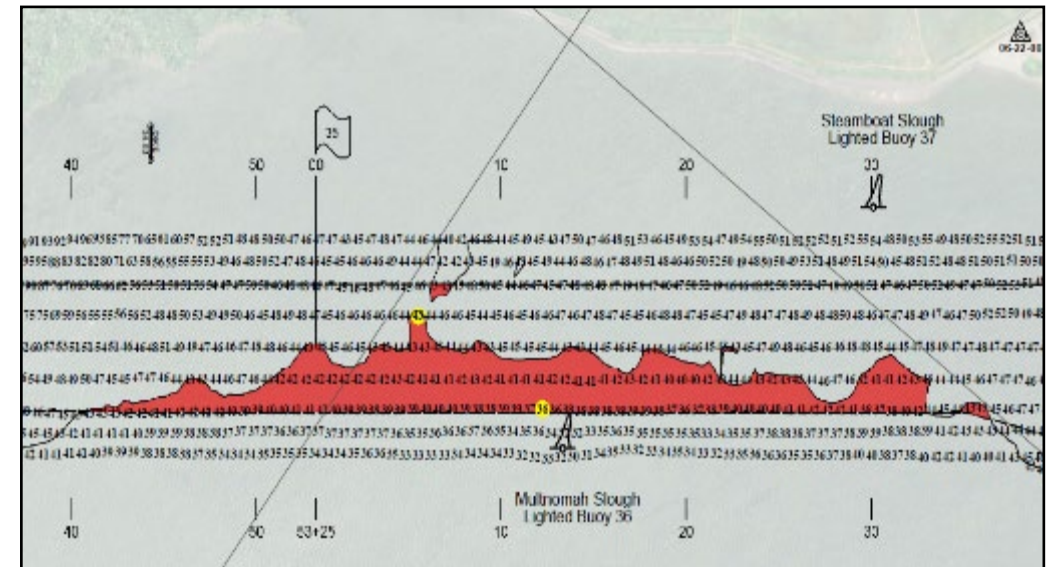
# COLUMBIA RIVER SHOALING

<https://navigation.usace.army.mil/Survey/Hydro>

- Shoaling in forms of sand waves or cutlie – often intermittent
- Check approx. every two weeks with USCG Pilots on concerns
- Surveys conducted monthly



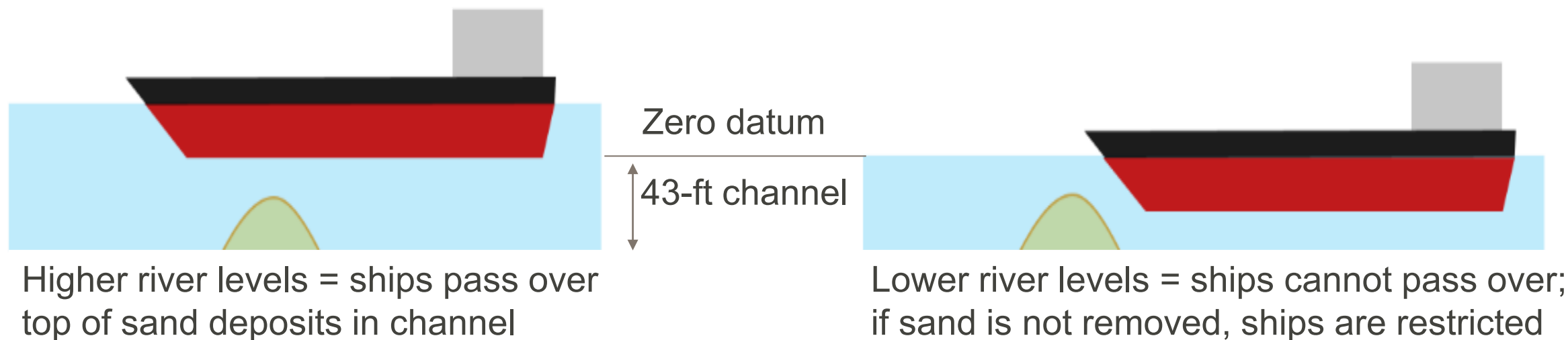
Sand wave shoaling



Cutline, continuous shoaling

# REMOVE SHOALS BEFORE LOW WATER

- Zero Columbia River datum is approx. minimum discharge from Bonneville Dam
- Authorized navigation channel depth is 43 feet below zero datum
- Tidal range = about 0 to 8 feet above zero datum near the river mouth
- Annual river flow range = about 0 to 12 feet above zero datum at Vancouver, WA



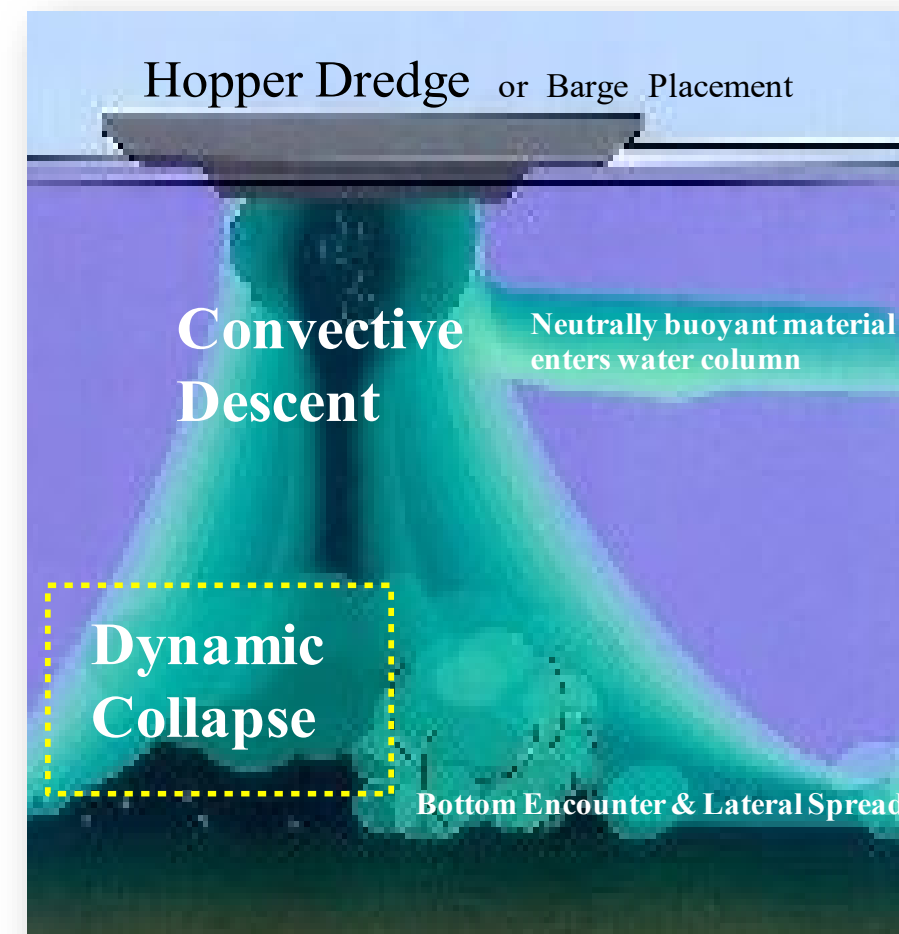
NOT TO SCALE

# WHERE DOES THE DREDGED MATERIAL GO?



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31





- CUOPS
- Current Lock Status
- USCG Port Status
- Coastal Channel Availability
- eHydro Surveys
- Missouri River
- USACE/Contractor Vessels
- CUI - ICHDMG
- RSM**
- Relative Risk Closure
- Harbors Statistics
- River Statistics
- ☰

- Summary**
- About this Application

## Filters

To **CLEAR** all filters, press **F5**

FY Date Range  
1998 - 2022

Division(s)

- All Divisions
- LRD
- MVD
- NAD
- NWD**
- POD
- SAD
- SPD
- SWD

District(s)

Show All

Navigation O&M Projects

All Projects

Placement Category

- Both**
- Beneficial Use Only
- Disposal Only

Placement Type

All Placement

Data last updated 6/6/2022

BU = Beneficial Use D = Disposal

Dredge Events  
**2,544**

Total Volume  
**325.2M cy**

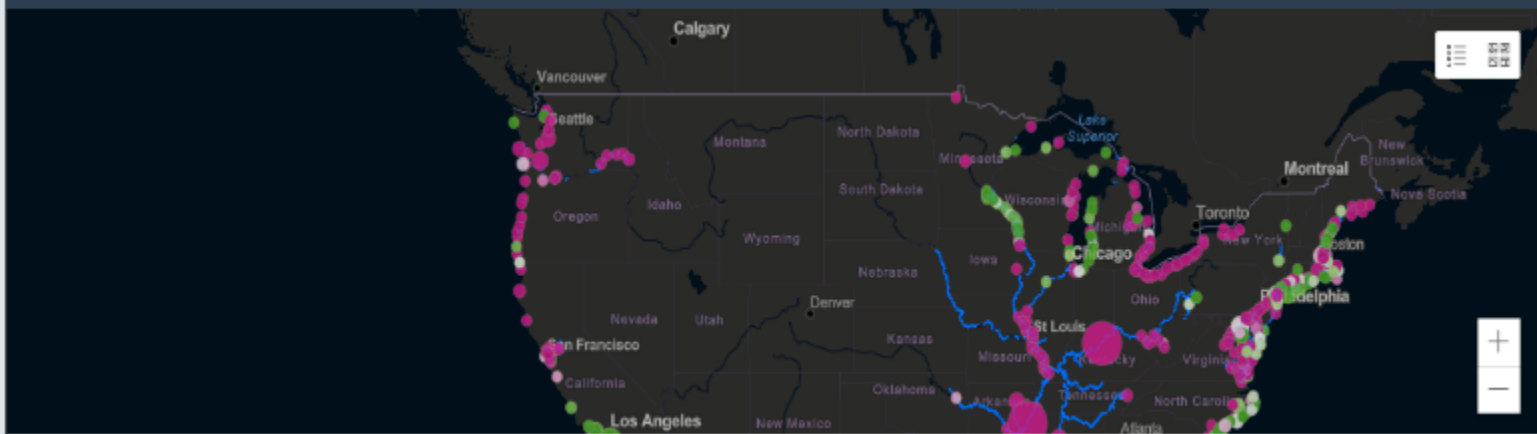
Beneficial Use  
**21%**  
69.57M cy of 325.2M cy

**400**  
BU Events

Disposal  
**79%**  
255.64M cy of 325.2M cy

**2,144**  
Disposal Events

### Project Rollup - % BU vs Avg Event Volume

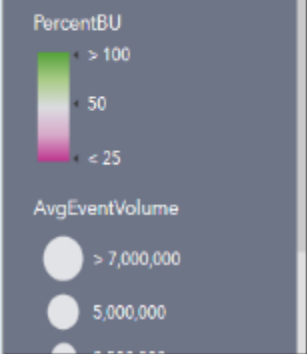


Esri, Garmin, FAO, NOAA, USGS, EPA | USACE | US Army Corps of Engineers | US Army Corps of Engineers, Mobile District Spatial Data Branch & ERDC/CHL Powered by Esri

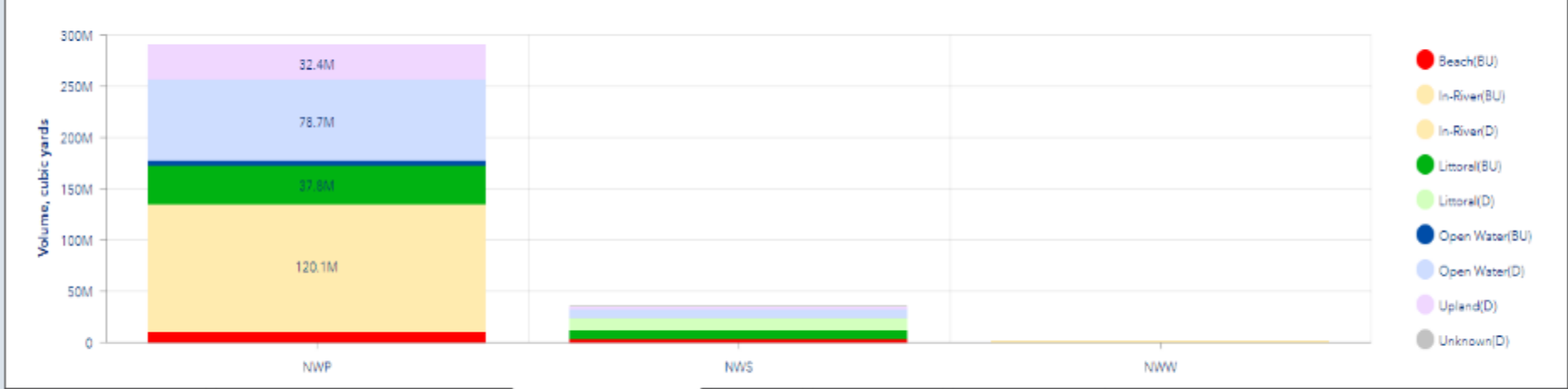
- Map
- Project Summary**

O&M Projects\*  
**34**  
\*Not filtered by Date or Placement

### Project Summary

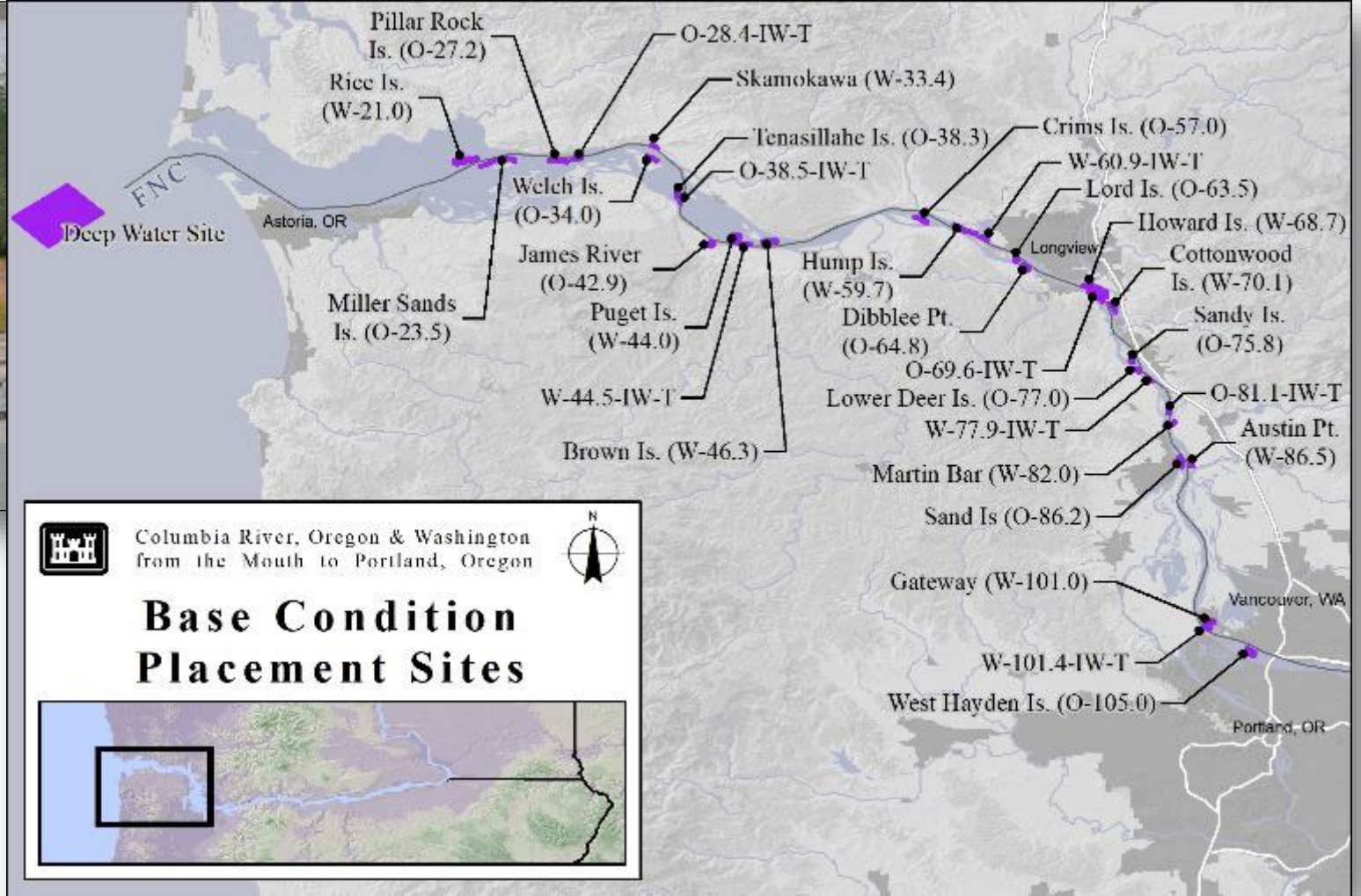


### Total Placement, by District



- Placement Summary
- Volume/Year
- % BU/D by Year
- Placement by District**
- #Events
- #Events/Year
- All Event Details

# DISPOSAL SITES



# ENVIRONMENTAL BMPS AND SUSTAINABILITY



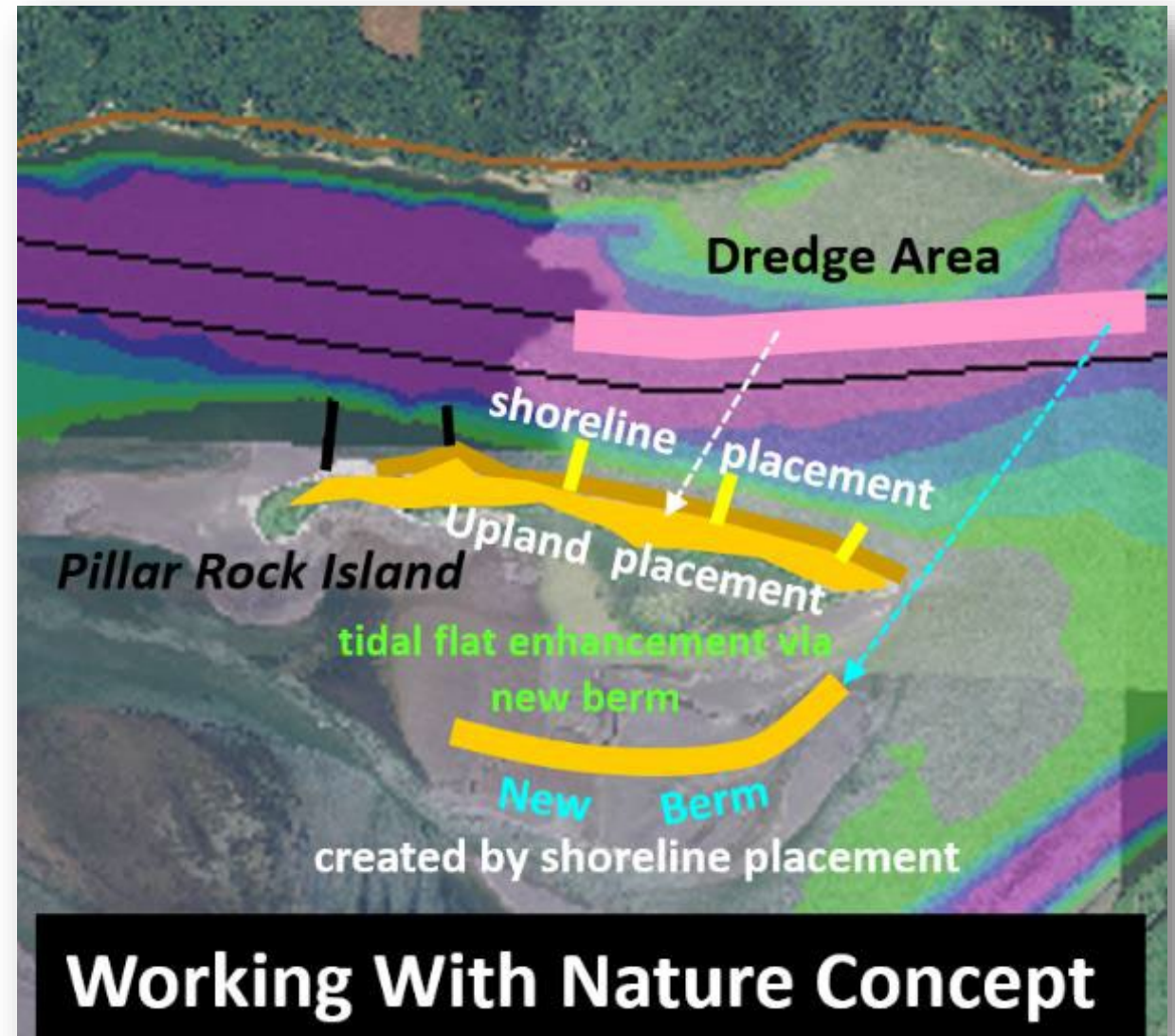
Dredge fleet Tier 3 Engines

Dredge schedules minimize impact to ESA-listed species like salmon.

Best management practices include:

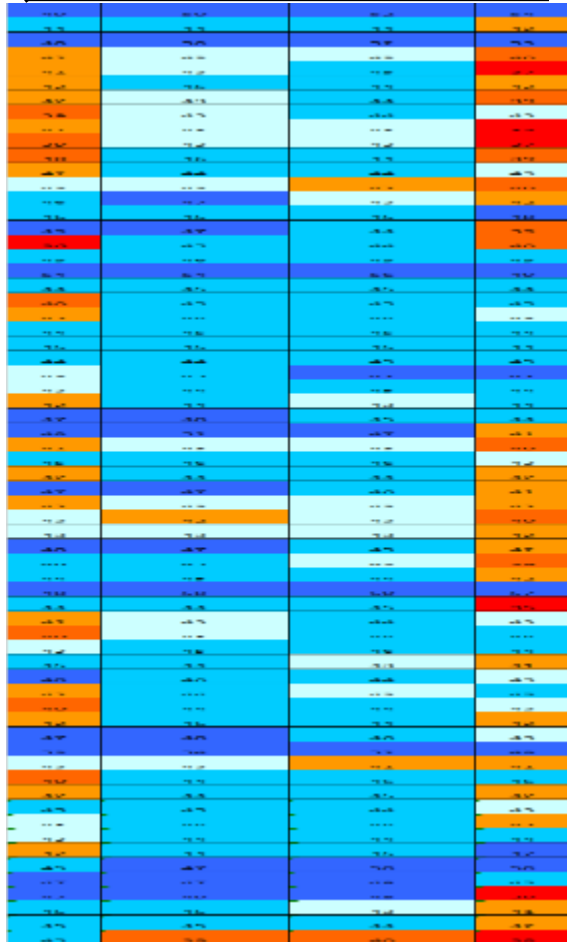
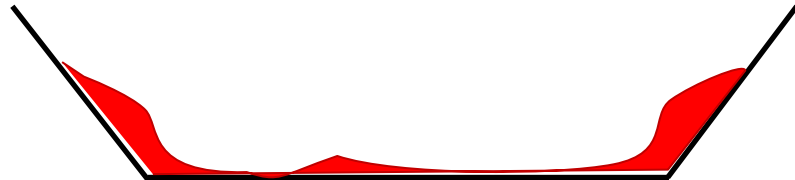
- minimizing turbidity (suspended sediment that reduces visibility for fish)
- placement locations to minimize impacts to birds
- uses environmentally friendly materials when possible

Beneficial use of dredged material to enhance habitat for fish and birds and reduce future maintenance dredging.



**Working With Nature Concept**

# COLUMBIA RIVER NAVIGATION CHANNEL CONDITION



Astoria

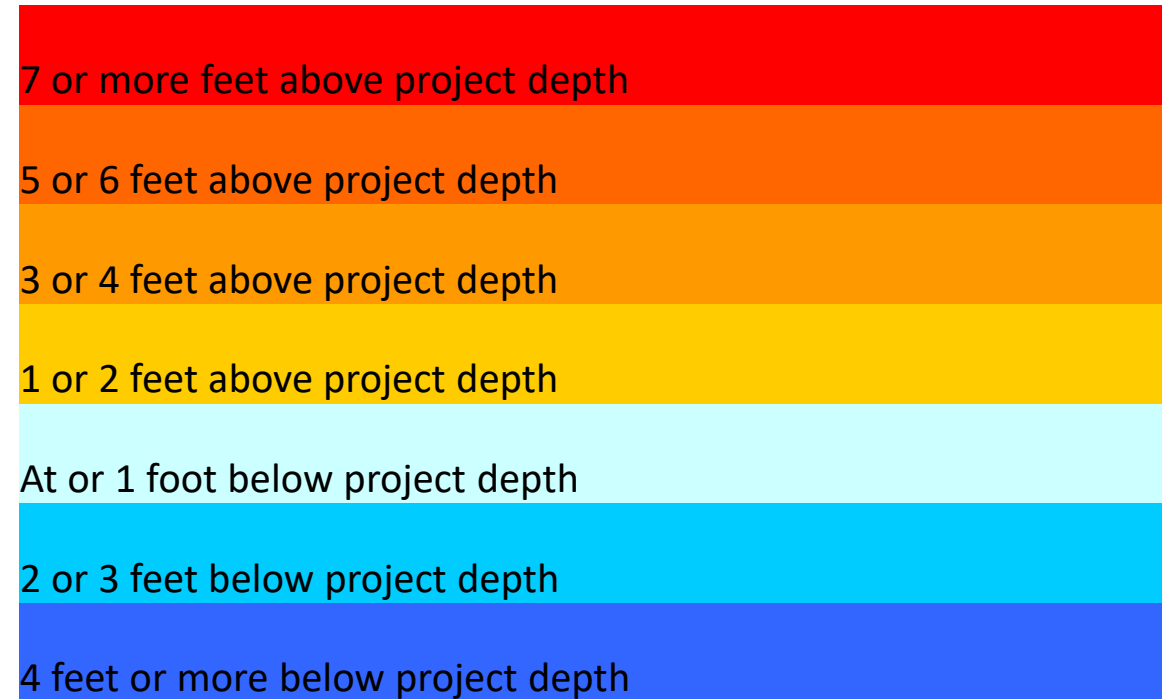
Longview

Kalama

Portland &  
Vancouver

Update: 8-AUG-2022

Almost finished!



# QUESTIONS?

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THANK YOU!

Follow us on social media [@PortlandCorps](#) and online: <https://www.nwp.usace.army.mil>

