PORTLAND DISTRICT
U.S. ARMY CORPS OF ENGINEERS

WILLAMETTE FISHERIES SCIENCE REVIEW

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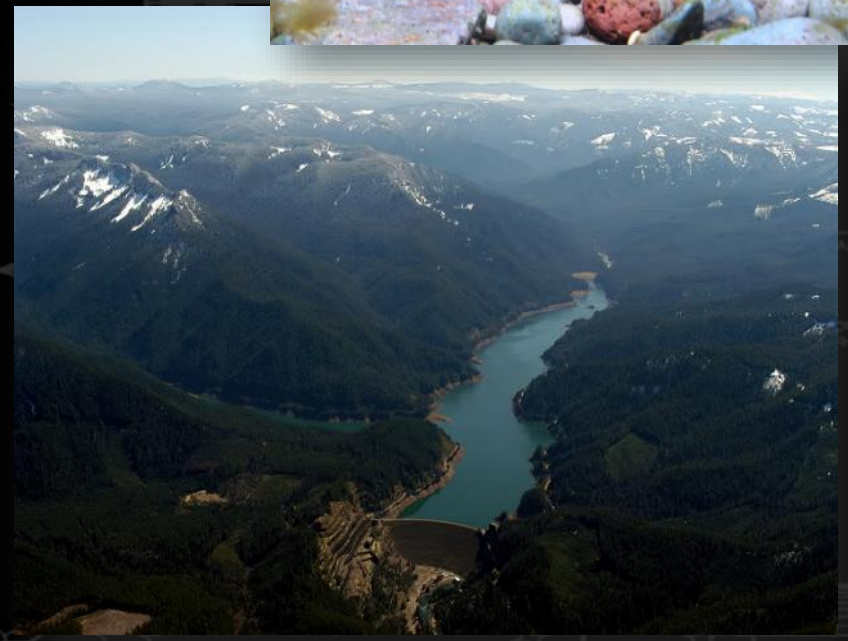
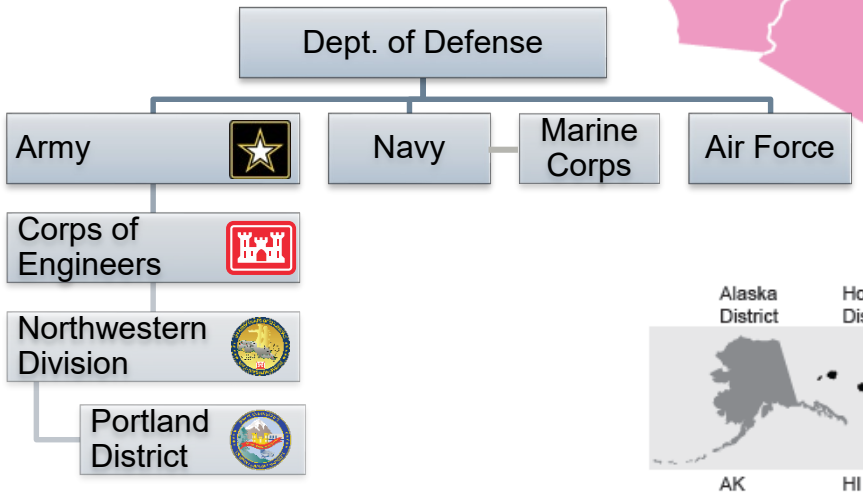
WELCOME!

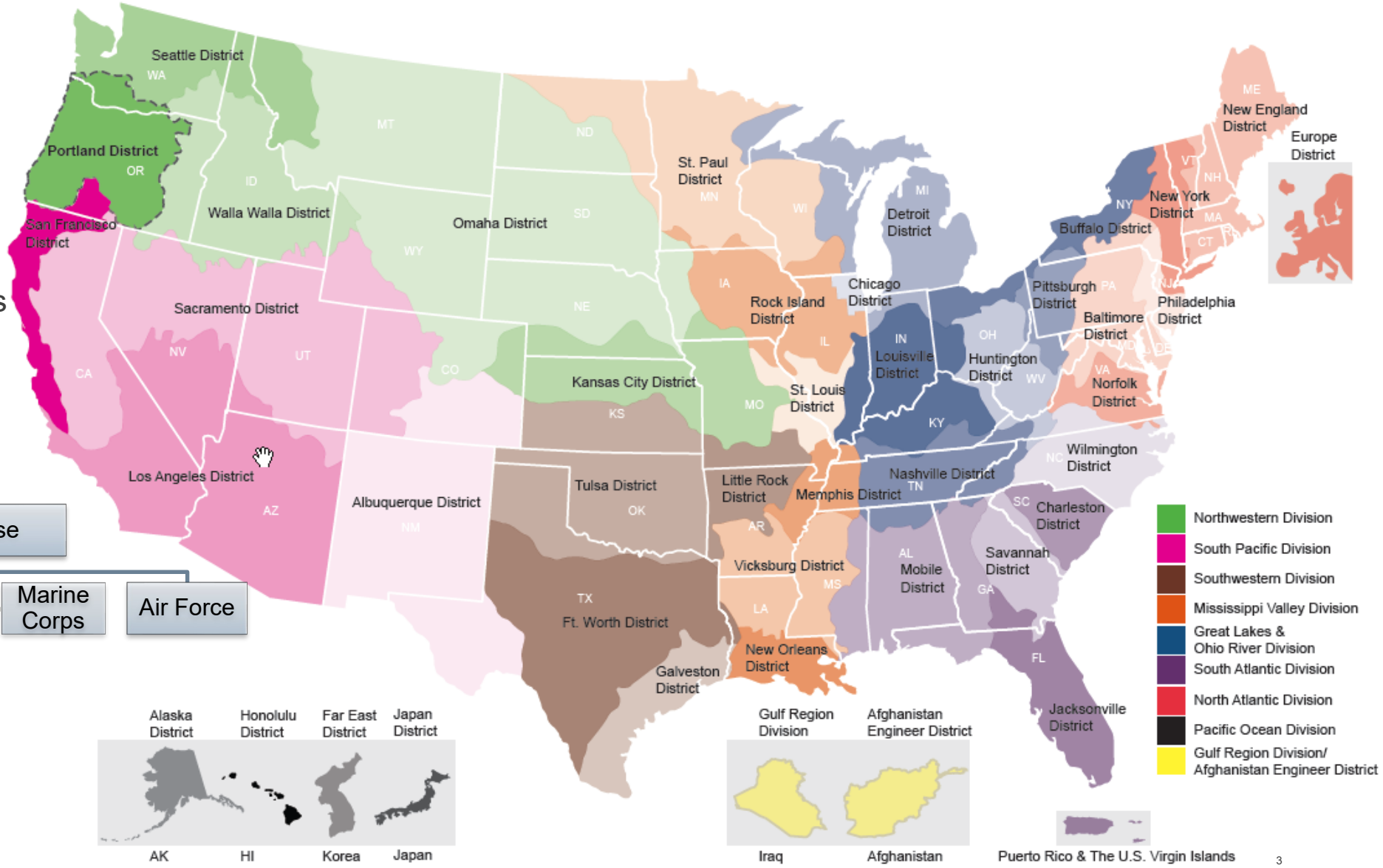


WHAT IS THE US ARMY CORPS OF ENGINEERS?

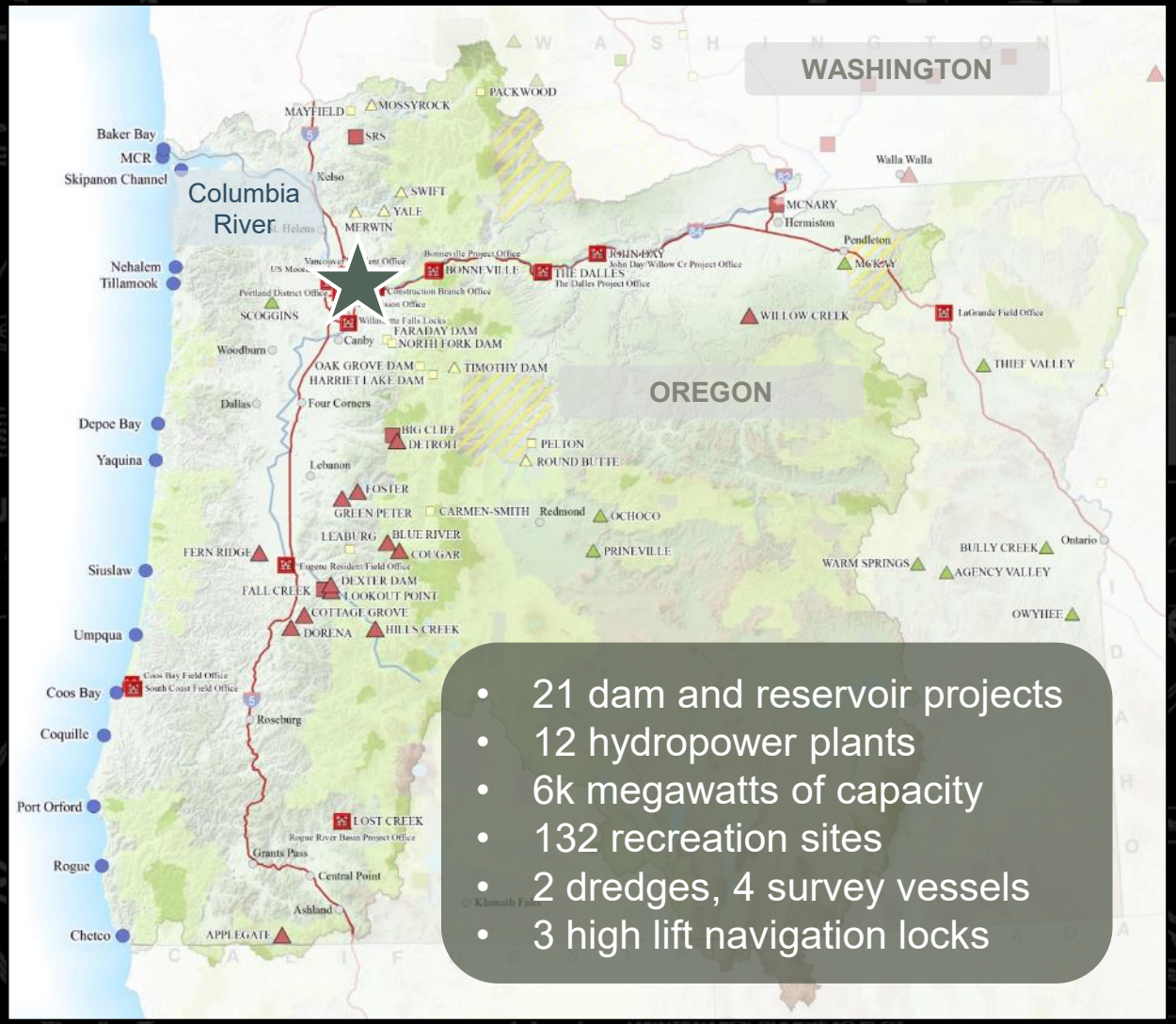
The Corps provides **engineering solutions** for our Nation's toughest challenges.

- **34,000** civilians and **350** military personnel
- In more than **130** countries
- **9 divisions**
- **43 districts** around the world





WHAT MAKES UP THE PORTLAND DISTRICT?

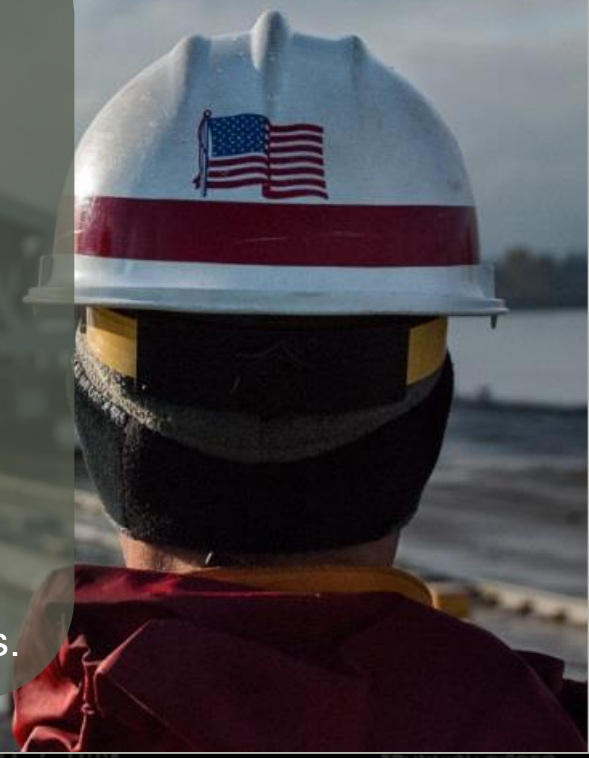


- 21 dam and reservoir projects
- 12 hydropower plants
- 6k megawatts of capacity
- 132 recreation sites
- 2 dredges, 4 survey vessels
- 3 high lift navigation locks

We are 1,500 civilians and 6 military officers.

We are…

- mechanical engineers.
- civil engineers.
- structural engineers.
- electrical engineers.
- geologists.
- hydrologists.
- biologists.
- archeologists.
- ecologists.
- And many, many others.



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OUR MISSION & BUSINESS LINES

Providing Engineering Expertise

Technical Centers of Expertise

- Hydroelectric Design Center
- Welding & Metallurgy
- Roller Compacted Concrete

HDC

Nationally-Recognized Knowledge and Experience

- Coastal engineering and computational fluid dynamics (CFD) modeling
- State-of-the-art hydrographic survey work
- Climate change studies
- Ecosystem restoration of aquatic habitat
- Fish passage planning and design at both run of river and high head dams

Navigation

Water & Flood Risk Management

Hydropower

Environmental Stewardship

Recreation

Regulatory

Emergency Management

International & Interagency Support

Tribal Coordination

PURPOSE OF WFR: RESEARCH TO INFORM ACTIONS

ADDRESS EFFECTS OF WILLAMETTE OPERATIONS ON ENDANGERED FISH

- Since 2008, ~$100M invested (average $9M annually)
- Willamette Fisheries Science Review, annually since 2010

- 2019 meeting highlights:
  - Emerging research: copepod effects on juvenile Chinook salmon
  - Updates: Cougar & Detroit downstream passage designs
  - New Foster spill weir year-1 results
  - Middle Fork fish passage research plans; reservoir survival estimates
  - Tools for refining flow and temperature management

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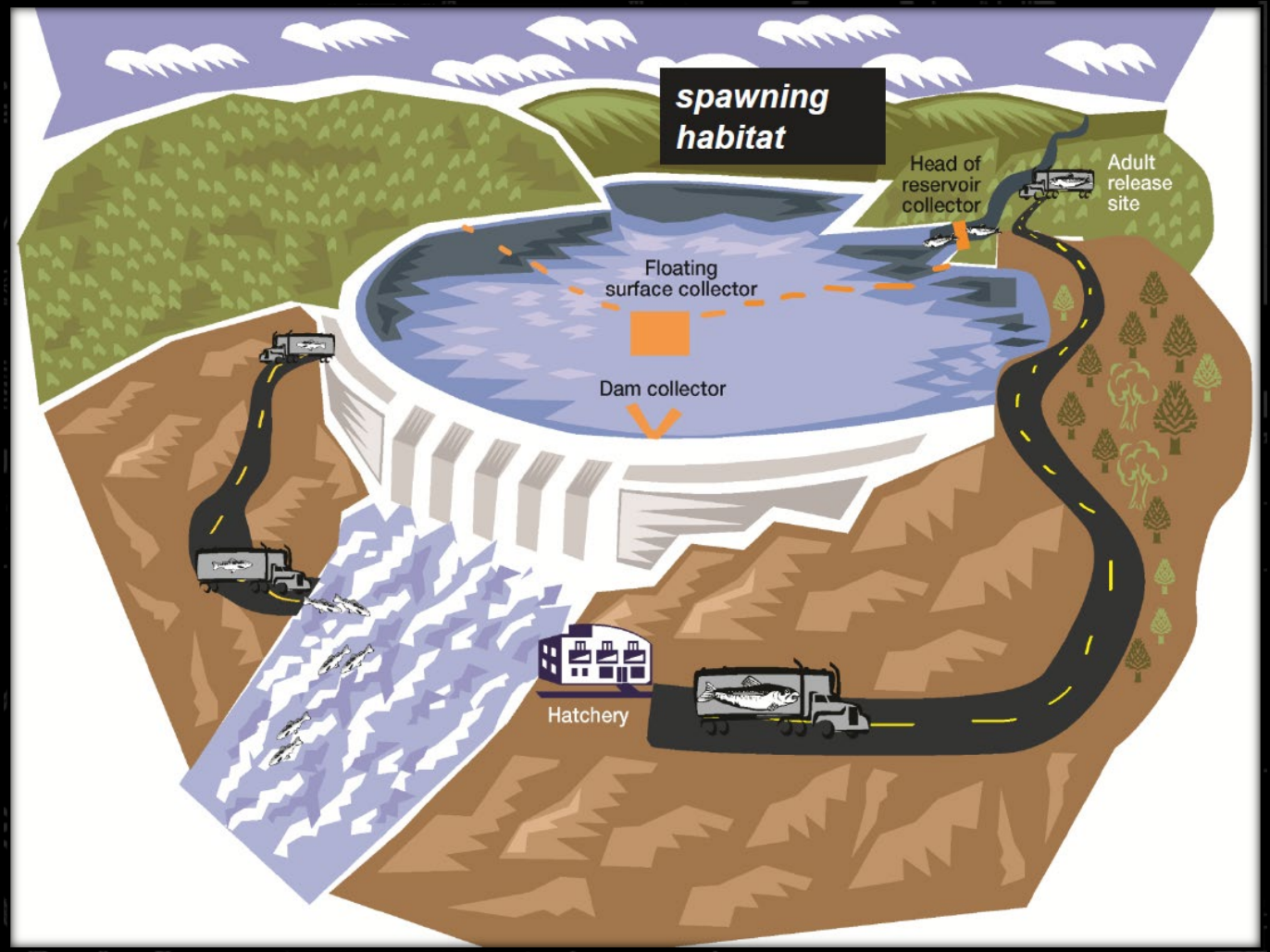
PURPOSE OF WFR: ADDRESS EFFECTS OF WILLAMETTE OPERATIONS ON ENDANGERED FISH



A *Lifecycle Approach* to re-establish fish above dams, and improve conditions downstream

- Upstream fish passage
- Downstream fish passage
- Flow and water temperature management
- Hatchery management
- Habitat improvements

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RECENT ACCOMPLISHMENTS

Passage for endangered fish

Minto Adult Fish Facility (2012)

Foster Adult Fish Facility (2014)

New Spill Weir, Foster Dam (2018)

Fall Creek Adult Fish Facility (2018)

Cougar Adult Fish Facility (2010)

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QUESTIONS