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Columbia Estuary Ecosystem Restoration Program: Adaptive Management Strategy Report, Action Plan, and Synthesis Memorandum for Program Execution

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Outline

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- Adaptive management process
- Strategy report
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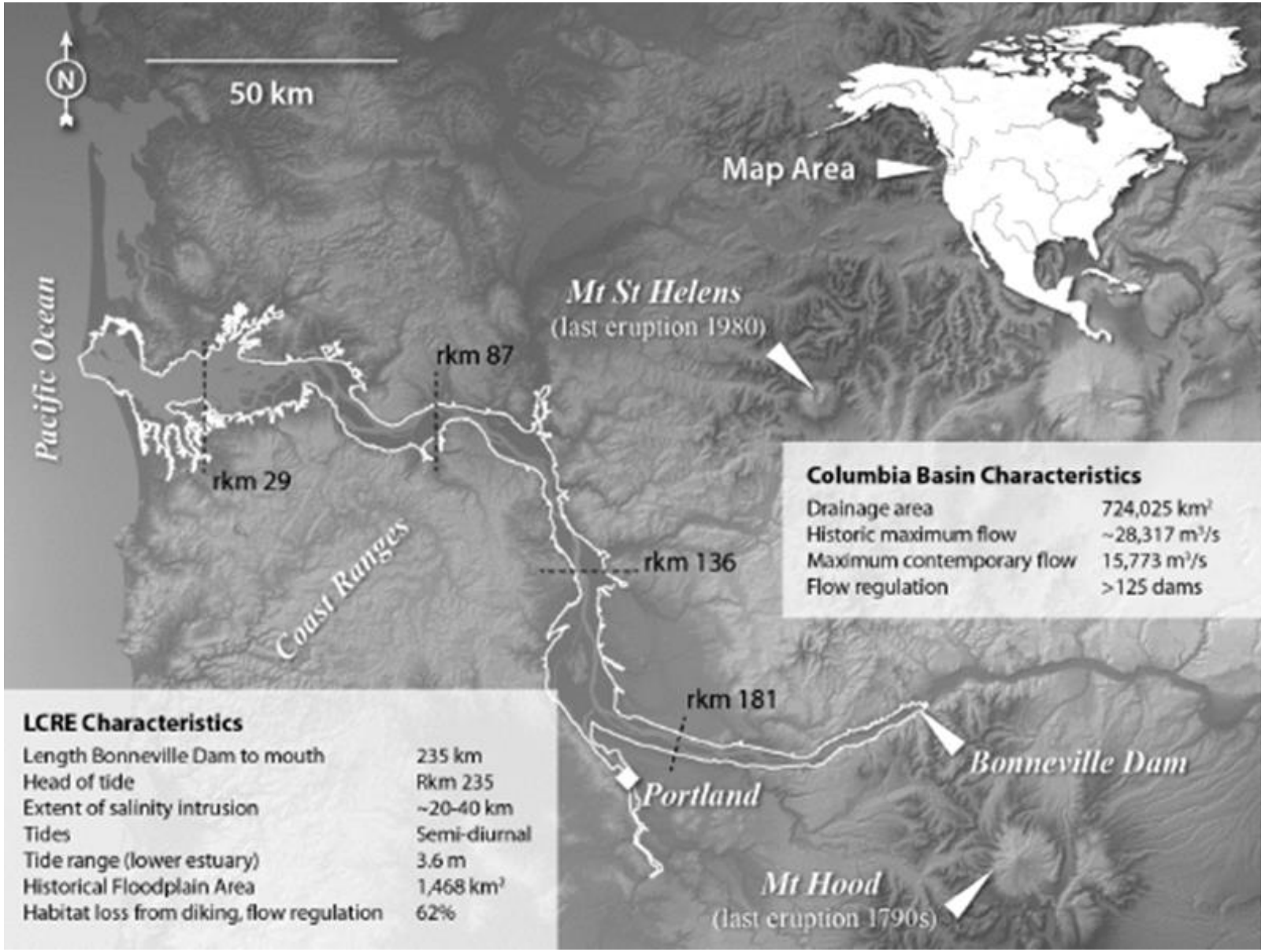
Study Area – Lower Columbia River and Estuary (LCRE)



Background

- 13 salmon and steelhead stocks in the Columbia River basin are listed as threatened or endangered under the Endangered Species Act.
- All 13 stocks migrate through the LCRE to the Pacific Ocean as juveniles, a critical and potentially limiting stage in the life cycle.
- A high percentage of shallow water habitats in the LCRE have been lost through flow alterations and diking.
- Restoration of LCRE habitats for juvenile salmonids and is underway in earnest.

CEERP Goal and Objectives

- The Bonneville Power Administration (BPA) and U.S. Army Corps of Engineers (Corps) jointly established the Columbia Estuary Ecosystem Restoration Program (CEERP) to implement ecosystem restoration actions and research, monitoring, and evaluation (RME) in the LCRE in response to various requirements, mandates, and authorities.
- **Goal**: Understand, conserve, and restore ecosystems in the lower Columbia River and estuary (LCRE).
- **Objectives**:
  - increase the capacity and quality of estuarine and tidal-fluvial ecosystems
  - increase the opportunity for access by aquatic organisms to shallow-water habitats
  - improve realized functions for juvenile salmon
- The intent is to spend taxpayer and ratepayer dollars as effectively as possible to make progress toward achieving CEERP's goals and objectives and assist in recovery of ESA-listed salmon and steelhead.

Primary Restoration Actions

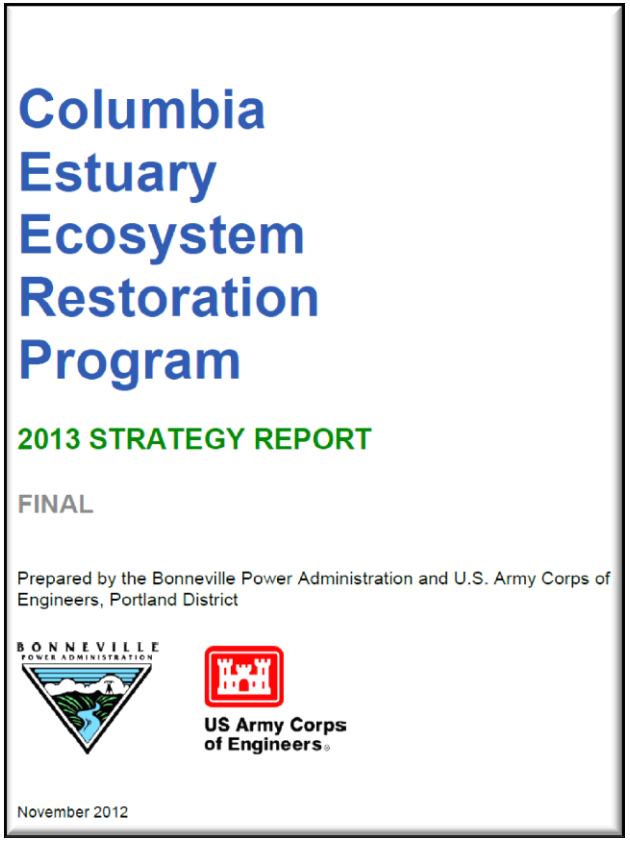
- Restore hydrologic connections between main stem and floodplain.
  - Dike breaches
  - Culvert replacements
  - Tide gate improvements
- Create and/or enhance shallow-water habitat.
  - Beneficial use of dredge material
  - Channel excavation
- Remove invasive plants and reestablish native vegetation.

Adaptive Management Process

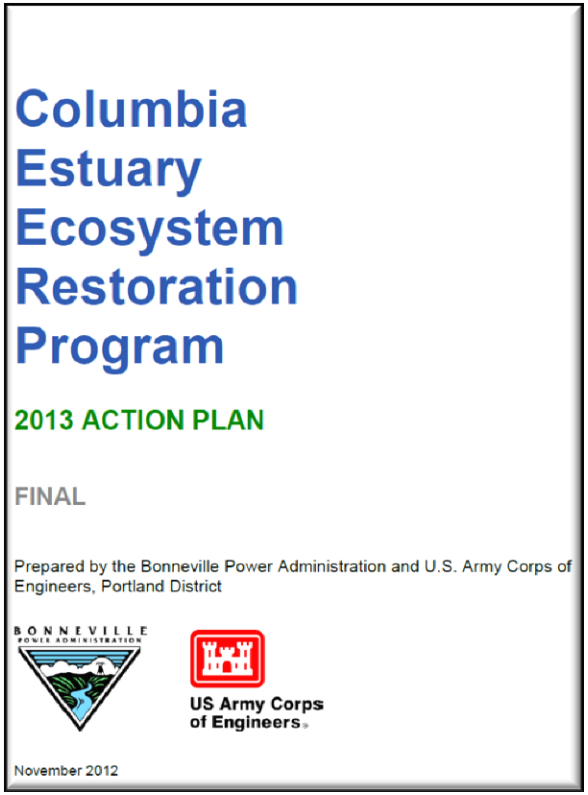
- The CEERP is conducted within a formal adaptive management process that includes three main annual documents that are developed by BPA and USACE.
- The **Strategy Report** contains strategies for prioritizing and implementing restoration and RME actions which are subsequently outlined in the companion **Action Plan**.
- The results of these actions are evaluated in the **Synthesis Memorandum**, which in turn is used adaptively in the next Strategy Report.

Strategy Report

- Purpose: Establish the strategic, scientific basis for the ecosystem restoration and associated research, monitoring, and evaluation (RME).
- Approach: Use multiple sources of information to develop restoration and RME strategies.
- Key outcome: CEERP applies an ecosystem-based approach to restoring, enhancing, or creating ecosystem structures, processes, and functions in the estuary, and perform RME to assess the effectiveness of these actions, while building basic understanding of LCRE ecosystem functions.
- Management application: Provides the scientific foundation for CEERP restoration and RME actions.



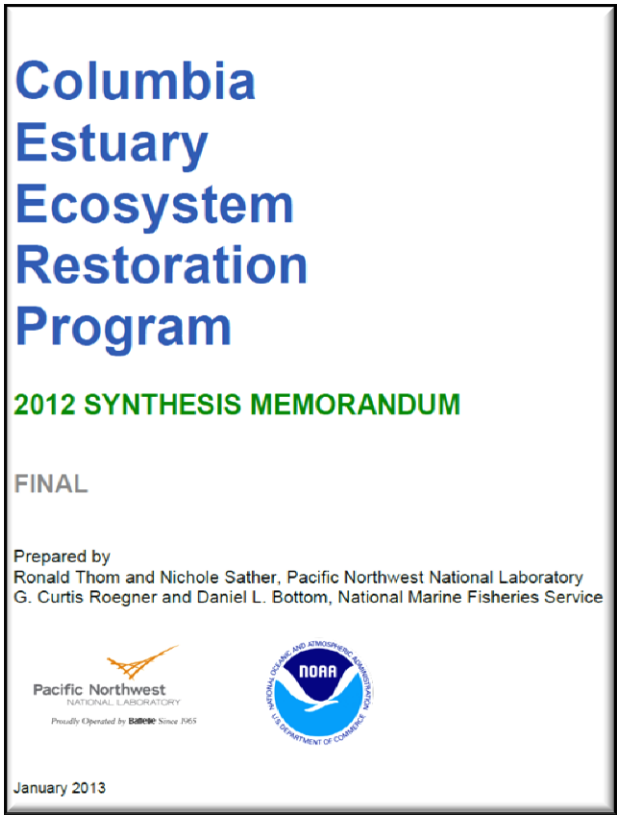
Action Plan



- Purpose: Document plans to execute habitat restoration projects and RME activities.
- Approach: Apply the strategies outlined in the Strategy Report within a decision framework to prioritize actions.
- Key outcomes:
  - Prioritized list of restoration projects by construction year (routinely updated)
  - Prioritized list of RME activities
  - Design and commitment to programmatic infrastructure
- Management application: Serves to organize, guide, and communicate restoration and RME plans.

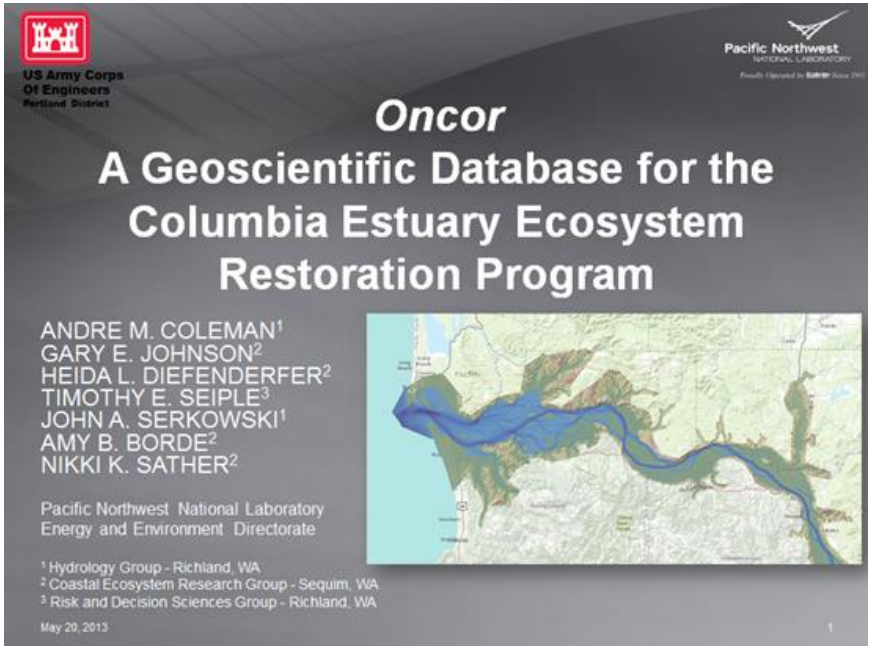
Synthesis Memorandum

- Purpose: Synthesize and evaluate information relevant to juvenile salmon ecology with emphasis on application to LCRE ecosystem restoration.
- Approach: Compile and review all available scientific literature on the subject.
- Key outcomes:
  - Contemporary patterns of juvenile salmon habitat use and factors or threats potentially limiting salmon performance
  - Assessment of whether restoration actions are improving the performance of juvenile salmon
  - Status of LCRE ecosystem conditions
- Management application: Used to adjust and update restoration and RME strategies.



Infrastructure

- Coordination processes
  - USACE's Anadromous Fish Evaluation Program
  - Estuary Partnership's Science Workgroup
- Information Exchange and Dissemination
  - Biennial Columbia River Estuary Conference
  - Special Workshops
  - Technical reports and journal articles
- Data management and sharing
  - *Oncor*
  - Cbfish.org



Conclusions

- The adaptive management process has become institutionalized at BPA and USACE (Portland District).
- The CEERP documents have been effective at conveying program activities and rationales behind them to other stakeholders, interested parties, and managers.
- The CEERP effort is helping achieve:
  - Prudent use of taxpayer and ratepayer dollars
  - Support for cost share partners
  - Fulfillment of requirements in the Biological Opinion on operation of the Federal Columbia River Power System
  - Application of sound engineering and science to the ecosystem restoration effort
- At this early stage (~10 y), the available data indicate the CEERP is having a beneficial effect on ecosystems of the lower Columbia River and estuary and the juvenile salmonids that inhabitat them.

Subsequent Presentations

Simenstad
Landscape Planning Framework for Restoration and Protection of Juvenile Salmon Habitat using the Columbia River Estuary Ecosystem Classification

Thom
The Expert Regional Technical Group for Ecosystem Restoration

Doumbia
Columbia Estuary Ecosystem Restoration Program: Integrated Approach for Habitat Action Effectiveness Monitoring and Research

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