



US Army Corps of Engineers



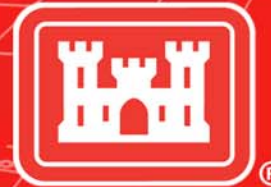
# Columbia River Basin TMDLs

Northwest Hydroelectric Association  
Annual Conference  
Portland, Oregon  
March 17 – 19, 2009

***Rudd Turner***  
U.S. Army Corps of Engineers  
Northwestern Division

# Columbia River Basin





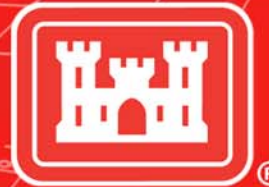
# Clean Water Act

- State actions with EPA approval
- Promulgate Water Quality Standards (WQS)
- Sect. 303(d) listing
- TMDL
  - ◆ Determine load allocations
  - ◆ Identify Designated Management Agencies (Oregon)
  - ◆ Develop implementation plan
  - ◆ Implement the TMDL and attain the WQS



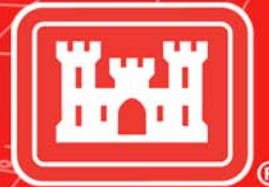
## Northwest TMDLs

- Columbia/Snake rivers (TDG) (3 TMDLs, 2002 & 2003)
- Applegate subbasin (temperature) (2004)
- Willamette River basin (temp, bacteria, Mercury) (2006)
- Willow Creek (temp & pH) (2007)
- Columbia/Snake rivers (temp) (preliminary draft 2003)
- Rogue River (temp) (draft 2008)
- Pend Oreille River (temp, TDG) (draft in prep)
- Green River (temp, DO) (draft in prep)



## Total Dissolved Gas

- TDG waiver (Oregon) and criteria adjustment (Washington) in effect to provide spring & summer spill for fish passage
- Limits: 115% forebay (WA) / 120% tailrace / 125% maximum
- Based on 12 hour averages in a day, with daily monitoring and setting TDG spill caps
- Year round (WA) or April – August (OR)
- Implement through an Adaptive Management Team (AMT)



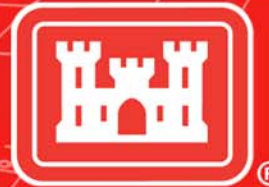
## AMT

- Nov '07 – Oct '08 meetings: need for 115% forebay limit
- Predicted impacts:
  - ◆ 0% - 3% TDG increase
  - ◆ +0.8% to -1.1% fish survival change at dams
  - ◆ possible increase in toxicity effects
- Oregon removed 115% limit from its waiver (Feb '09)
- Washington retained 115% limit in its criteria adjustment (Jan '09)
- Corps policy for multi-jurisdictional waters: operate to the more stringent standard if there are differences.



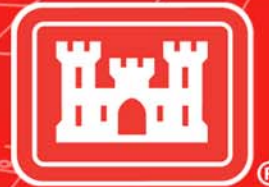
## WQS Attainment

- States revise WQS, often to be more stringent
- Federal dams have statutory authorities to exist and operate for multiple purposes
- Full attainment of state standards – feasible?
- Feasibility
  - ◆ Technological
  - ◆ Environmental
  - ◆ Economic



# WQS Attainment

- **Federal projects: Implement feasible actions to attempt to attain WQS**
- **Tools**
  - ◆ **Use Attainability Analysis (UAA)**
  - ◆ **Site specific criteria (SSC)**
  - ◆ **Variances**
  - ◆ **Compliance schedule**



## Issues

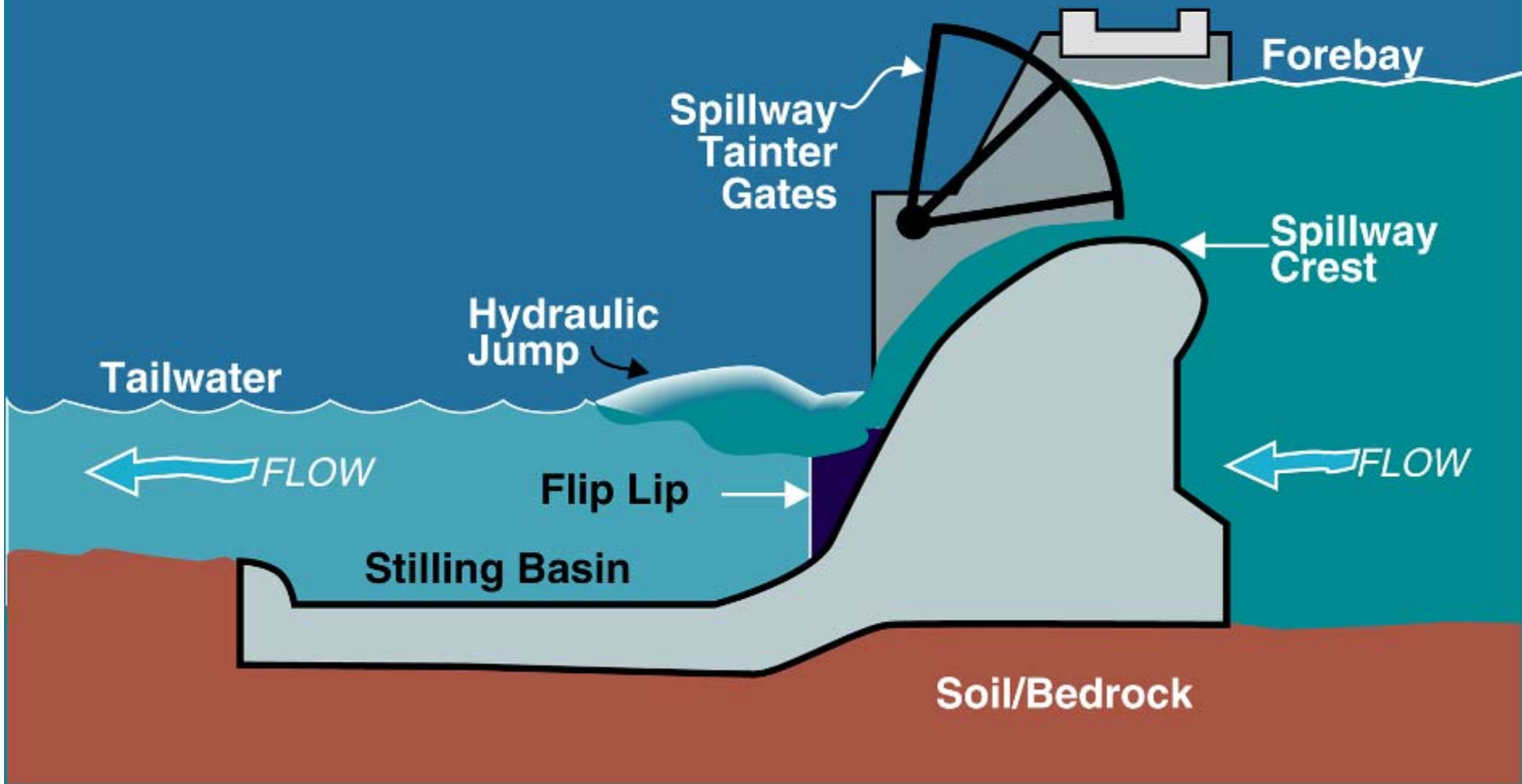
- CWA coverage when WQS cannot be fully attained
- State reluctance to process UAA, SSC, and other tools (cost, litigation risk)
- Methods to demonstrate feasible and non-feasible actions
- TMDL = Corps program to be resourced



## *Objective*

**Find a feasible approach to resolve  
state water quality standards  
attainment issues associated with  
Federal dams in the Northwest  
and  
provide for the congressionally  
authorized project purposes**

# Cross Section of Spillway Tainter Gates & Flip Lip

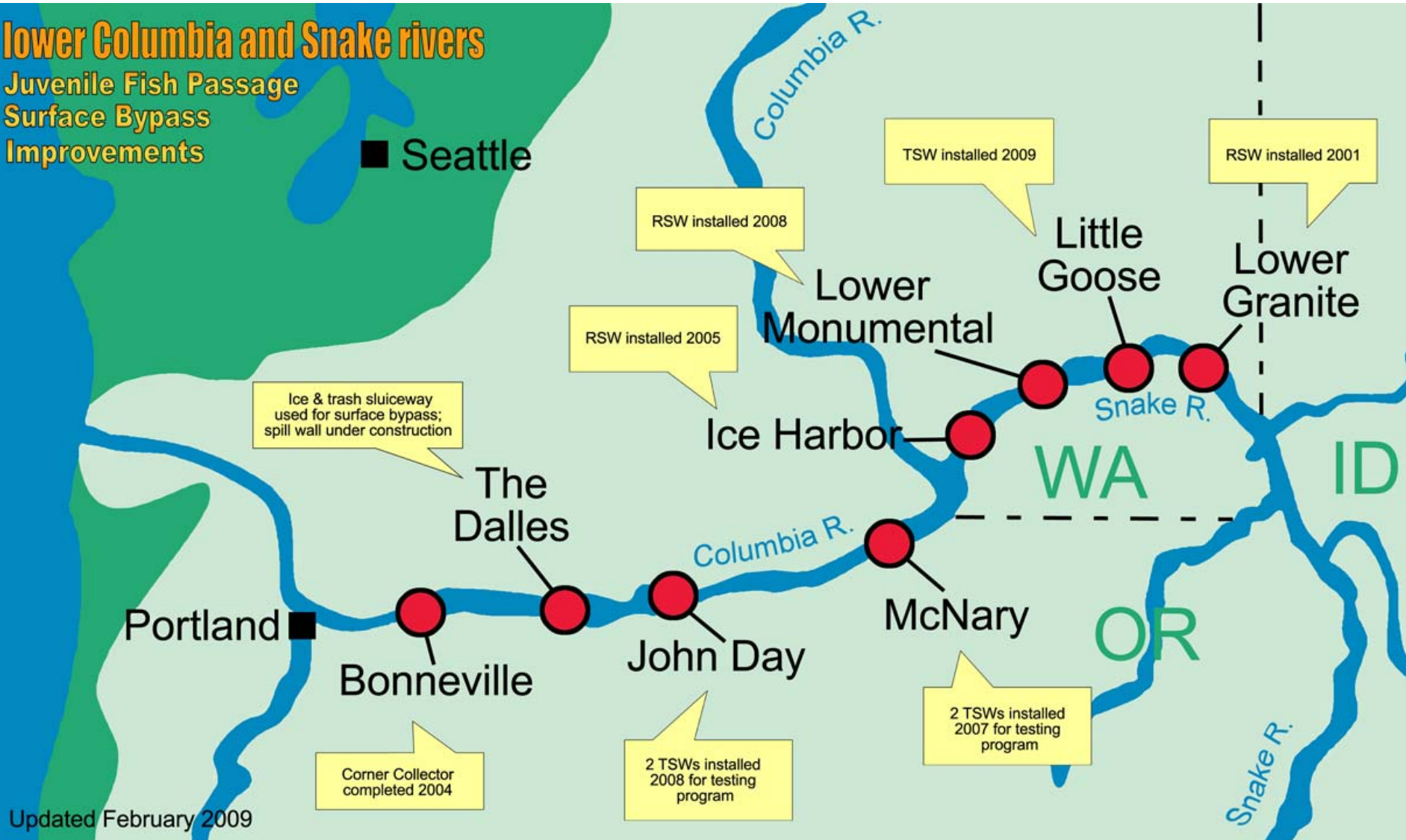




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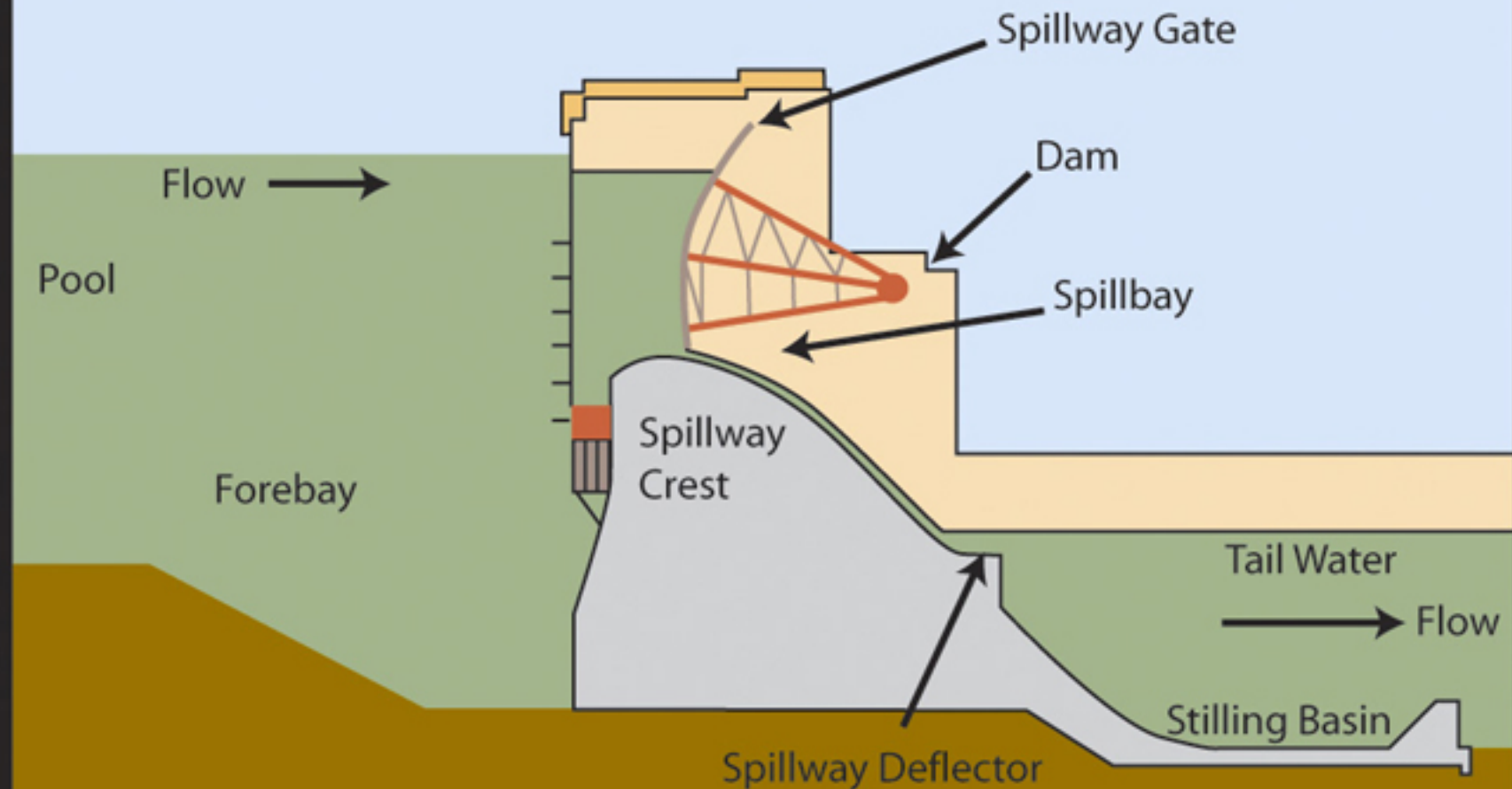


## Lower Columbia and Snake rivers Juvenile Fish Passage Surface Bypass Improvements

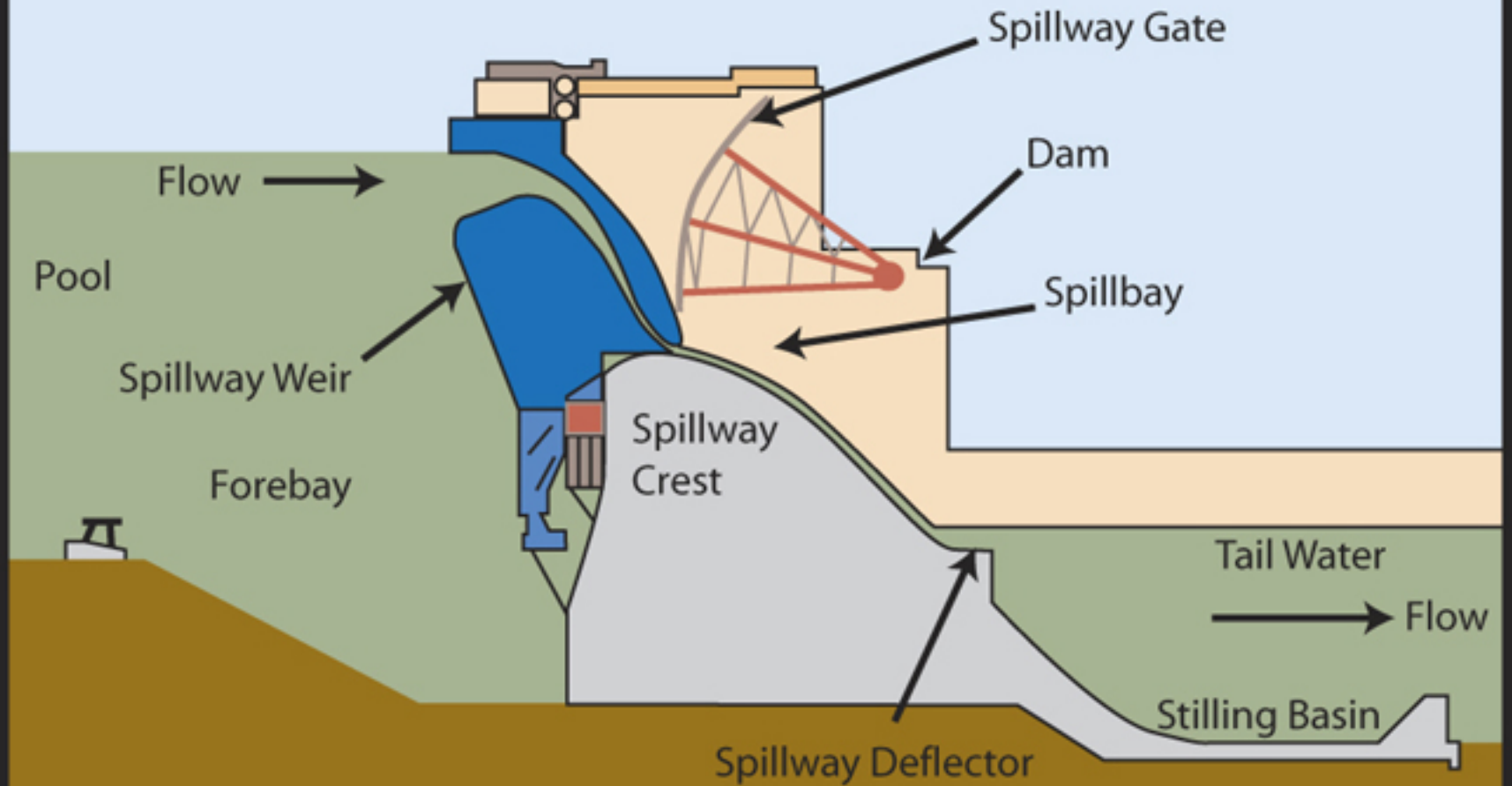


Updated February 2009

# Without Spillway Weir



# Spillway Weir in Operating Position





## Ice Harbor RSW Construction

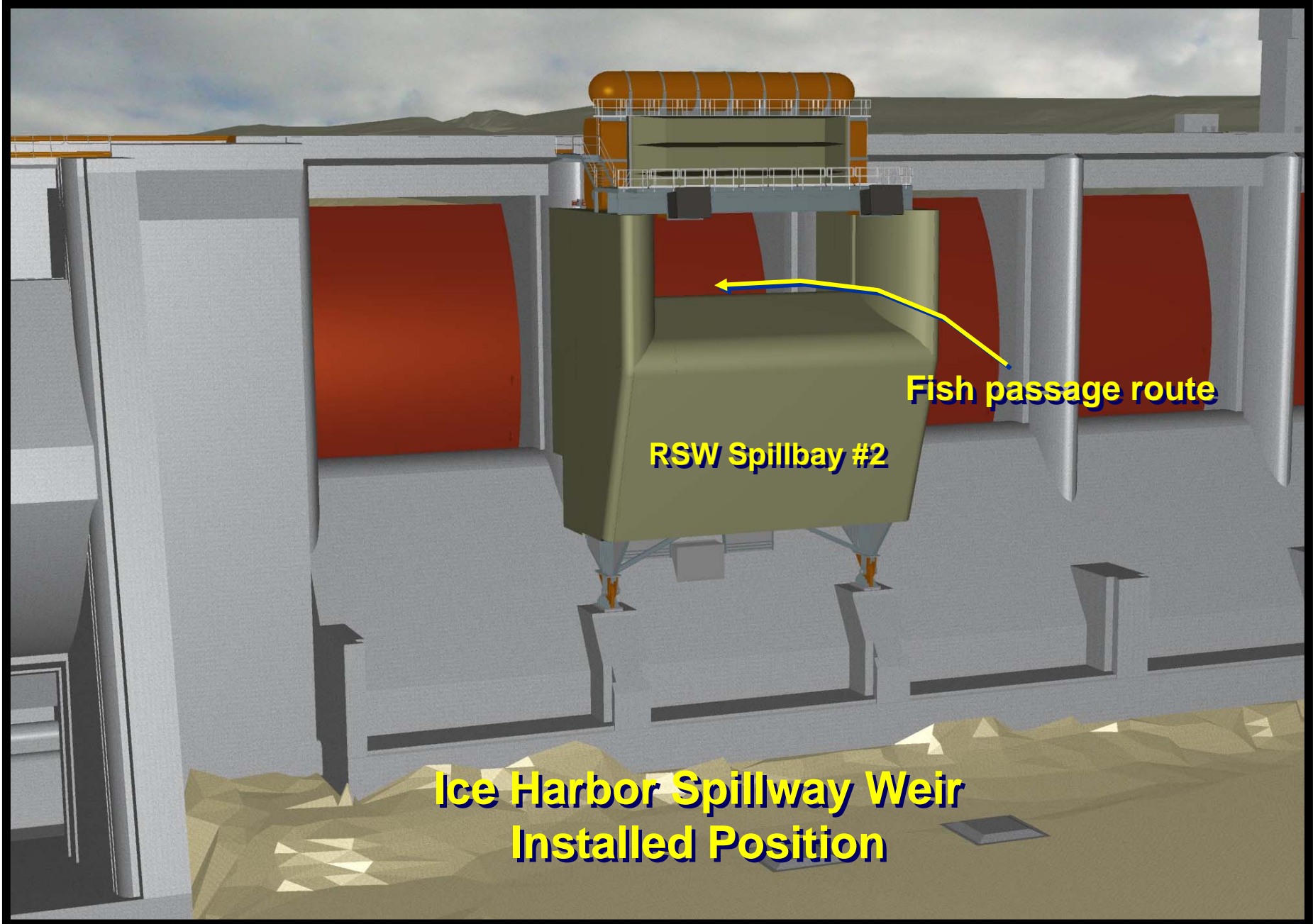


Thompson Metal Fabrication  
Vancouver WA  
February 12, 2005

# Ice Harbor Spillway Weir



**Removed Position**  
(during major flood events)



**RSW Spillbay #2**

**Fish passage route**

**Ice Harbor Spillway Weir  
Installed Position**



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## McNary Spillway Weirs



**QUESTIONS??**

