

Dewatering Considerations for In-Water Work

A Contractor's Perspective



Types of cofferdams

- Super sack
- Sheet pile
- Double sheet pile
- Soldier pile
- Bin cell
- Porta dam
- Water bag
- Earth fill

SUPER SACK (SAVAGE RAPIDS)



SUPER SACK (LINK RIVER FISH LADDER)



Various Cofferdam systems

SINGLE SHEET PILE (ROW RIVER INTAKE)



SHEET PILE (SAVAGE RAPIDS DAM)



Sheet Pile – Minto Fish Ladder



SOLDIER PILE (SAVAGE RAPIDS)



SOLDIER PILE (SAVAGE RAPIDS)



SOLDIER PILE (SAVAGE RAPIDS)



Various Cofferdam systems

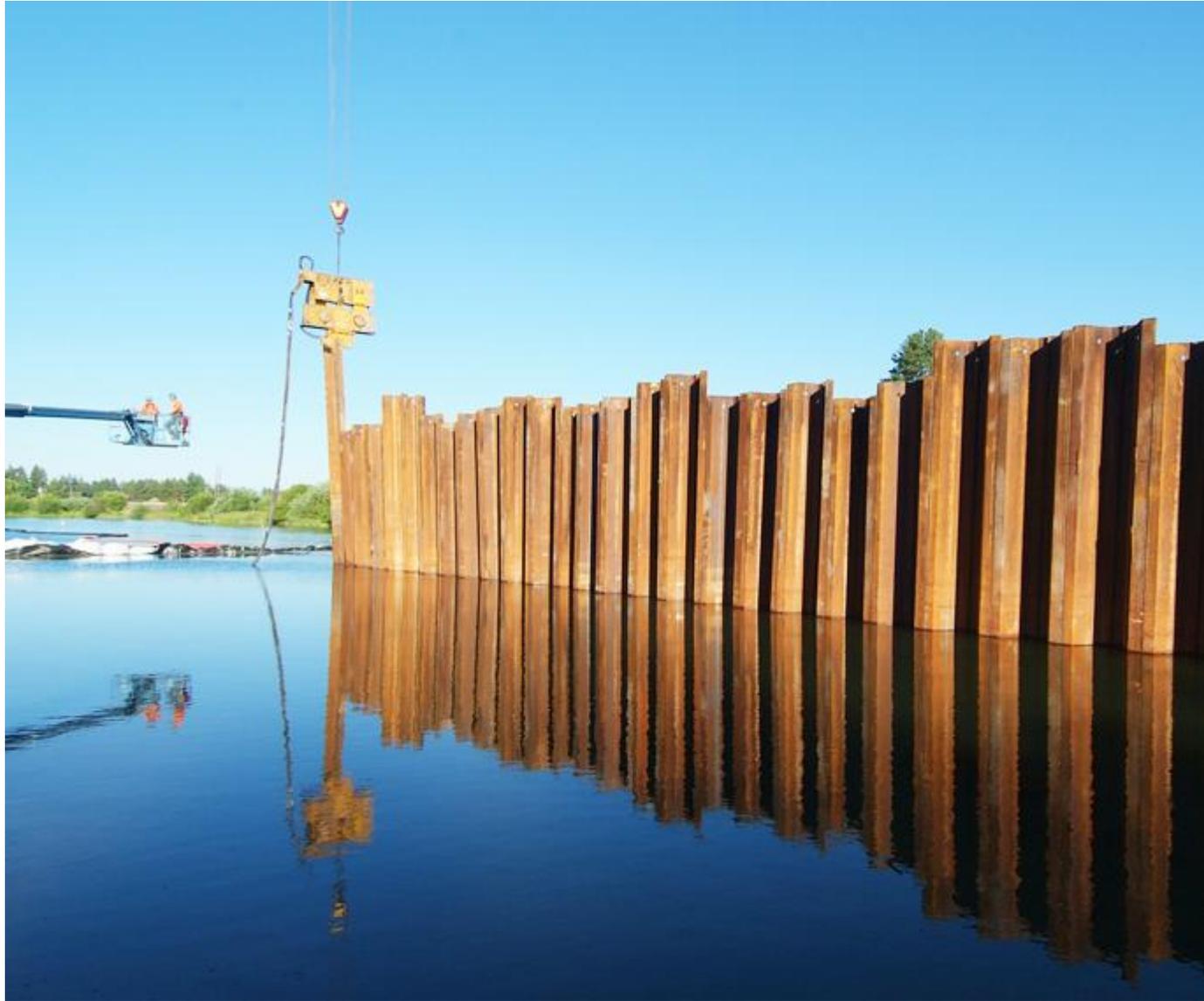
MINTO FISH LADDER (BIN CELL)



WATER BAG (CHILOQUIN DAM)



SHEET PILE (CHILOQUIN DAM)



EARTHEN FILL (GOLD RAY DAM REMOVAL)

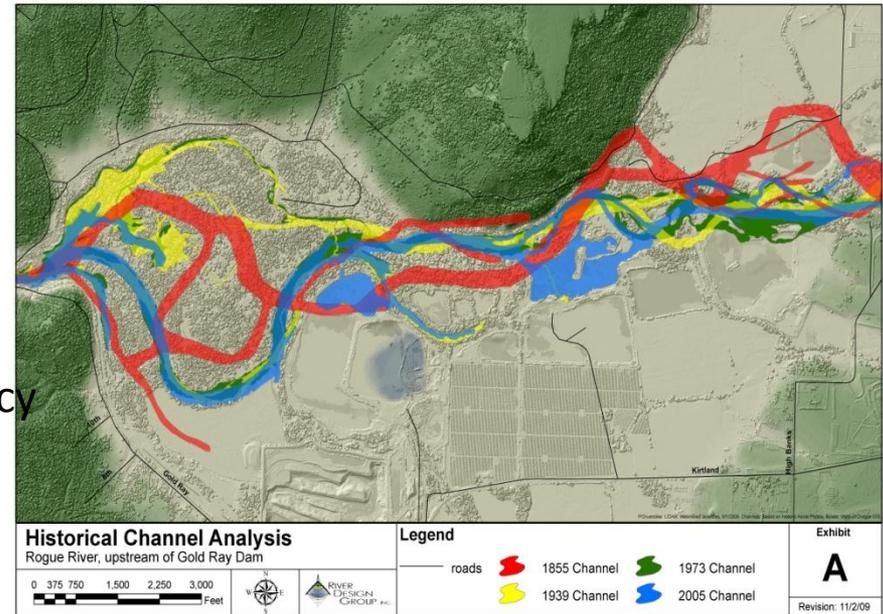


EARTHEN FILL WITH LINER (KLAMATH FALLS A CANAL)



In-Water-Work Permit Applications

- Contractor involvement
 - Construction methods
 - Work plan development
 - Turbidity and Monitoring Requirements
 - Agency collaboration
 - Contractor/Owner/Permitting Agency
 - Working together through permit application process.



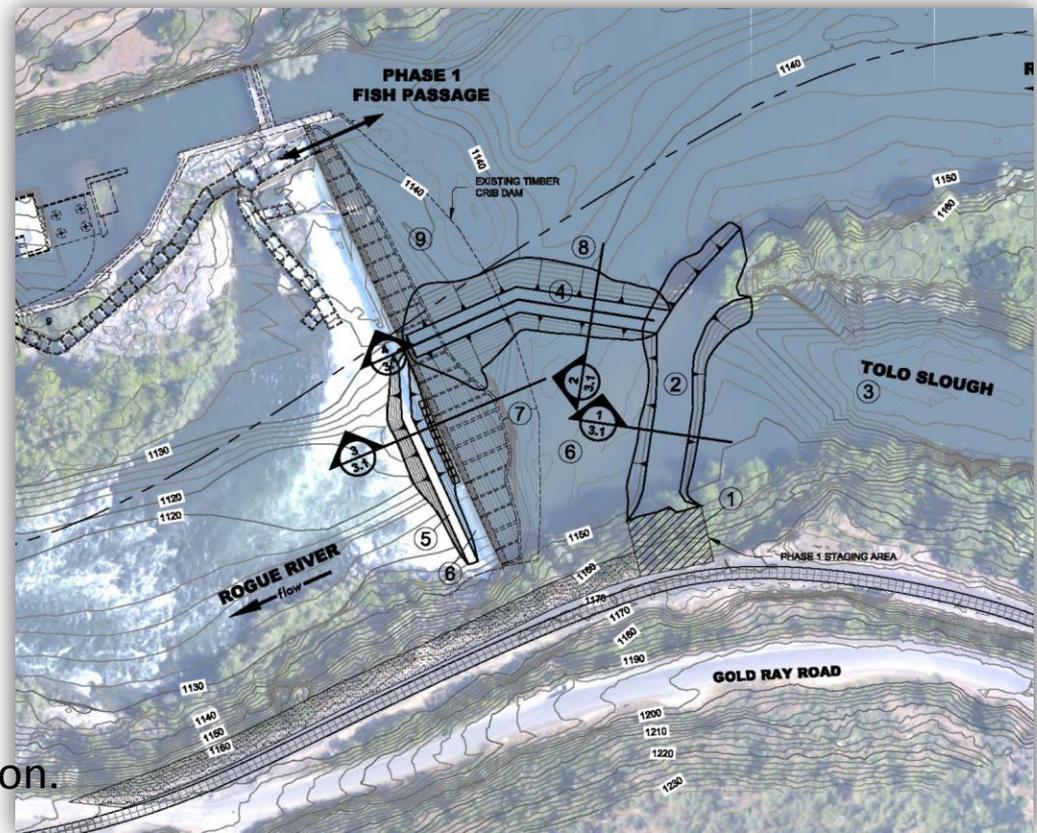
Site Staging Plan Development

- Location of electrical utilities in proximity to work area.
- Proximity of refueling areas to sensitive areas and plans for containment
- Erosion control BMPs vs. containment of waterway



Cofferdam Design / Conceptual Development

- Foundation characteristics
 - Stability
 - Porosity
 - Anchorage
- Ground water behind cofferdam
- Surface water
 - Seasonal streams
 - Historical precipitation
- Design options, contingencies and adaptability of the system for unforeseen conditions in construction.



Care and Diversion of Water Plan Development

- Environmental Impacts
 - Identify discharge points
 - Qualify types of discharge
- Isolation of construction water
- Develop treatment plans
- Plan for Turbidity



Unwatering Cofferdam

Care and Diversion of Water Plan Development

- Direct return to river discharge for unwatering/ isolated dewatering
- Upland discharge of construction water for treatment/disposal
- Fish passage/Fish protection
 - Fish Screens on pumps
 - Fish Salvage operations



Dewatering Temporary Cofferdam

Alternate Procurement Methods

- CM/GC
- Design/Build
- Negotiated firm fixed price
- Pre-qualification



Goals

- Increase efficiency of project from design through construction
- Minimize risk
- Have fun









Lessons Learned

- Give Contractor as much time as possible to plan out in-water work.
- In-water work can require all project resources. Schedule accordingly
- Long hours can impact safety and productivity
- The In-water work window goes quickly
- Dewatering can be more than expected. More pumps more power
- Have contingency plans for unexpected leaks
- Provide room for secondary containment
- For cofferdams expected to last the winter plan for worst case water levels
- Many times a small temporary cofferdam is needed to install the permanent one