

# Compliance and monitoring of fish passage structures beginning with construction.



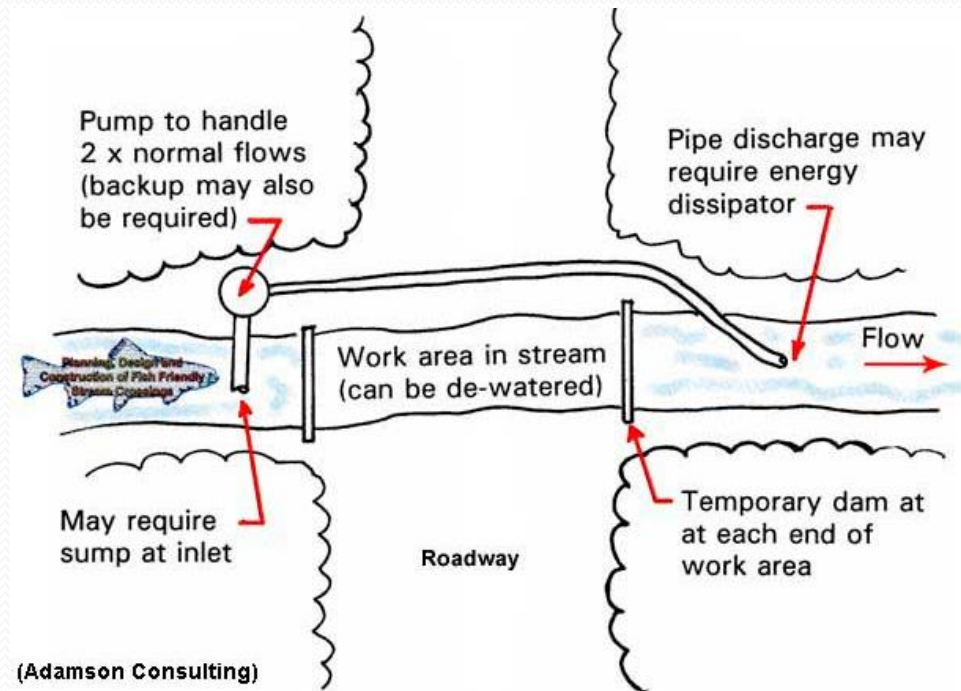
# Pre Construction Meeting

- Included Project Engineer, Construction Contractor and Inspectors.
- Review design drawings.
- Discuss site logistics.
- Staging area.
- Proper materials.



# Site Isolation

- Diversion should be sufficient to handle 2 year peak flow or greater.
- Type of bypass
  - Gravity or pump diversion.
  - Proper intake screen.
  - Reduce scour at outlet.



# Timing requirements and fish safety



- July 15 - September 30
- WDFW biologist reference two state pamphlets for guidance in determining in-water work window.
- Can differ from NOAA and USFWS.
- Know fish species present and life stage.
- Have a fish removal and exclusion plan.

# Sediment Control



- Minimize removal of vegetation
- Use proper erosion and sediment control devices
- Clean work equipment
- Sediment concerns
  - Cofferdam
  - Bank trampling and compaction
  - First flush impacts

# Importance of Compliance and Monitoring

- Biological
  - Habitat complexity and our uncertainties about physical and ecological behaviors.
- Structural
  - Measure effectiveness through wide range of changing conditions.
  - Identify maintenance and project repair needs.
  - Provide data on why techniques and practices work or fail.
- Legal
  - Culvert Court Case
  - State Fish Passage Laws (RCW 77.57.030 and WAC 220-10-070)
- Fiscal
  - \$2.45 billion on 977 state-owned barrier culverts in western WA.

# The First Step in Compliance

- Hydrologic Code Rules adopted in 1983.
  - Regulatory mechanism to protect fish life and habitat from impacts of hydraulic projects.
- Hydraulic Project Approval (HPA) permit.
  - Primary fish habitat protection law in Washington State.
  - Regulated activities: bank protection, dredging, fish passage corrections, flow control structures, etc.
  - Provide consistency throughout state.
  - Adapt to changing conditions over time.

# Hydrologic Project Implementation Monitoring

- Determine whether permits contain correct provisions and specifications.
  - Is the correct design and structure used?
  - Must have properly trained biologist issuing the HPA.
  - Improve operator/landowner education.
- Determine level of permittee compliance with HPA.
- Verify critical elevations
  - Is the culvert set at the correct elevation and alignment according to design?
  - Verify grade controls, footings, log placements, and any other critical components.



# Hydrologic Project Effectiveness Monitoring

- Determine whether compliant projects are protecting habitats.
  - Protection of habitat structures, functions and processes.
  - Protecting abundance and productivity of fish species over time.
- Determine relationships between “ineffective” compliant projects and variables describing project design and environmental conditions.
- Identify opportunities to improve protection of and avoid negative impacts to fish life and habitats.



# Common mistakes



- Wrong streambed material type and placement
- LWD installed incorrectly
- Incorrect or damaged materials delivered/used
- Wrong stream alignment of the culvert
- Incorrect culvert size

# Where WDFW is now?

- Washington Department of Transportation compliance checks and monitoring
  - Spawner surveys
- Implementation monitoring on HPAs issued since Oct.1, 2012.
  - 14 stream simulation, 16 no slope design, 7 unknown/other
- Future plans to do effectiveness monitoring.
  - Currently working on study design.



# Question?

