

Small-scale Hydroelectric Generation

Environmental analysis and mitigation efforts; development scope, types of studies conducted, and typical requirements

Wednesday, May 16, 2007
Bend, Oregon

*Ken Homolka,
Hydropower Program Leader
Oregon Dept. of Fish and Wildlife*

Range of Hydroelectric Projects

- ❑ Non-FERC State Authorized Projects
 - ❑ Rural non-grid connected
- ❑ FERC Projects
 - ❑ Exemption issued
 - ❑ License issued

ODFW Review of Project Proposals

- ❑ Review of FERC or State application
- ❑ Review ODFW Fish and Wildlife Records
- ❑ Conduct Site Visit
- ❑ Confirm Presence of Fish Species
 - Anadromous Fish
 - Other Migratory Fish

Potential Environmental Issues

- ❑ Timing of Construction Activities
- ❑ Fish Passage
- ❑ Attraction Flows
- ❑ Pipelines and Canals
- ❑ Maintaining Flow Regime
- ❑ Ramping/Flow Fluctuation

Timing of Construction

ODFW has established specific in-water work periods to minimize impacts to fish

- ❑ Generally after fry emerge from the gravel and before adult fish start spawning
- ❑ Some basins with multiple species and complex life histories may not have specified periods
- ❑ ODFW will recommend specific timing and methods to minimize stream turbidity for permits
- ❑ Information on in-stream work periods can be found on ODFW's website

Fish Passage

- Upstream Passage
 - Licensing, relicensing, reauthorization, granting of new water rights are a “fundamental change in permit status” (ORS 509.580 to 509.645)
- Provide passage for native migratory fish



Fish Passage

Upstream Passage



Fish Passage

- ❑ Downstream Passage
 - ❑ ODFW will recommend or require fish screening or bypass devices to prevent fish from entering a diversion.



Fish Passage

Downstream Passage



Attraction Flows

- ❑ Migratory fish can be attracted to project discharges



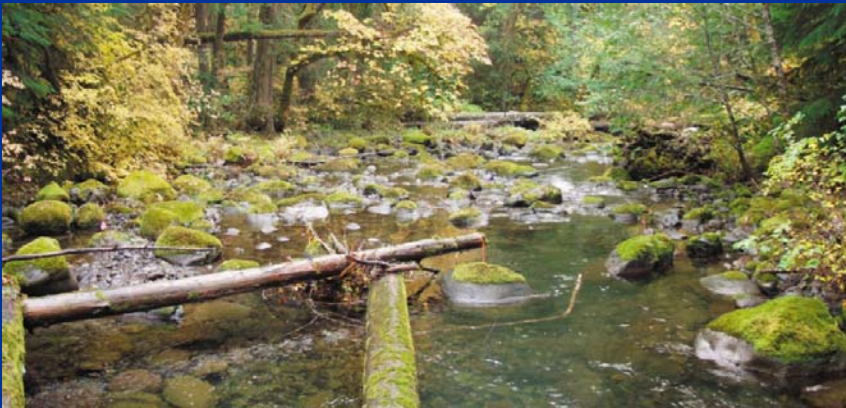
Pipelines and Canals

Erosion and wildlife connectivity



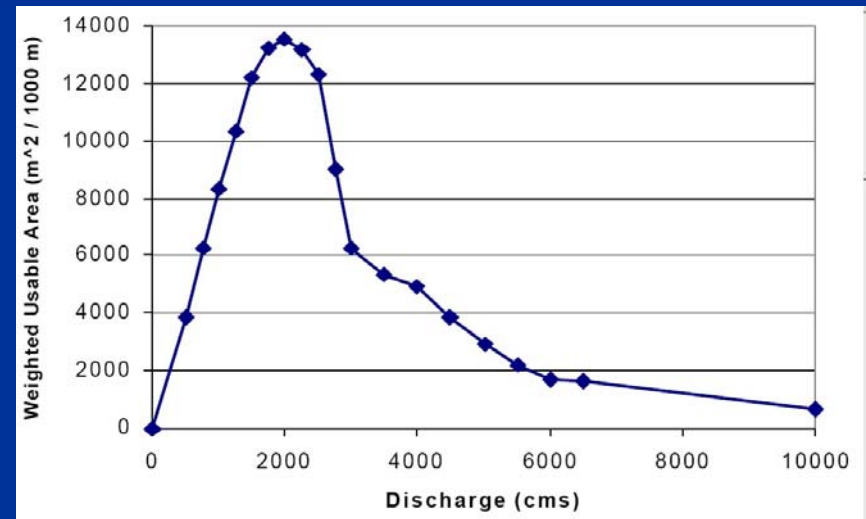
Maintaining Flow Regime

Diversion of flow can result in substantial reduction of stream flow affecting fish passage, spawning, holding, and rearing



Maintaining Flow Regime

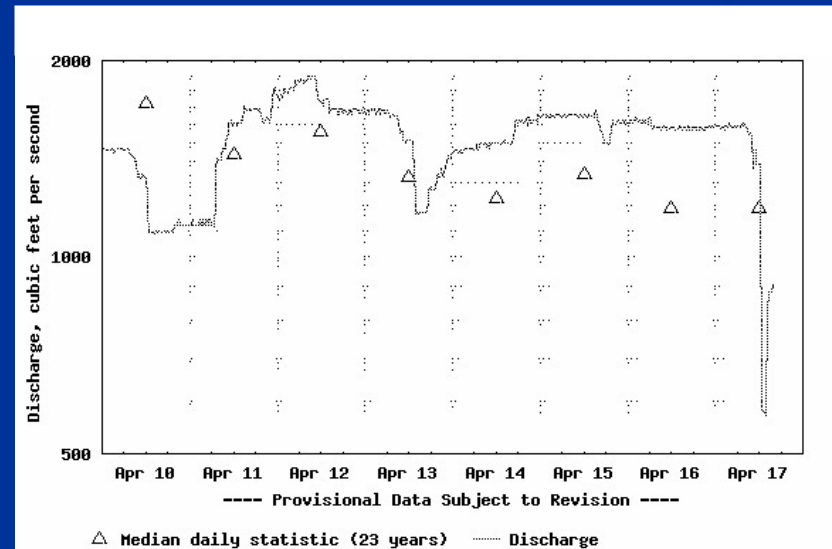
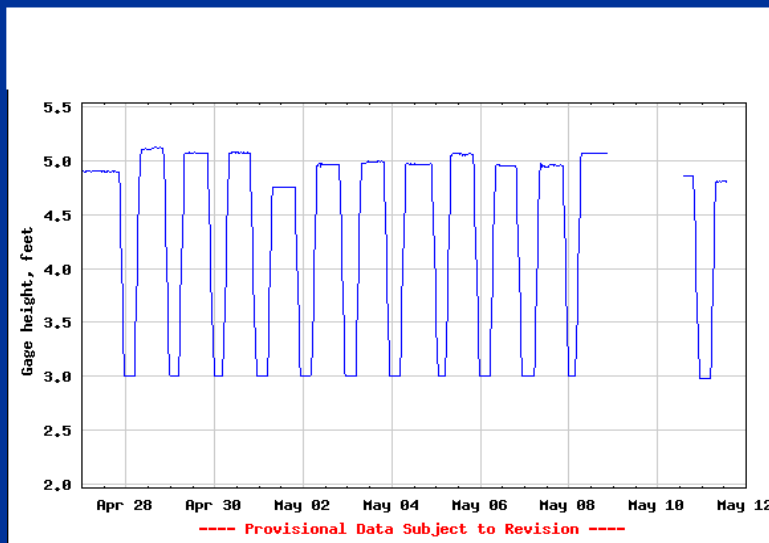
Conduct appropriate flow study to determine the relationship between flow and fish habitat



Ramping/Flow Fluctuations

□ Peaking operation

□ Emergency/Maintenance



Other Considerations

- ❑ Number of Projects in Basin/System
- ❑ Size of Stream
- ❑ Presence and status of fish and wildlife species

End