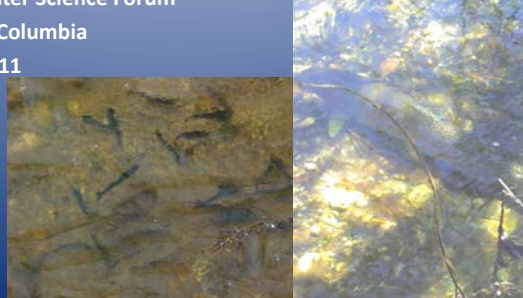


Habitat Rehabilitation in the Okanogan Sub-basin

Chris Fisher
Colville Tribes Fish & Wildlife

Osoyoos Lake Water Science Forum
Osoyoos, British Columbia
19 September 2011



OSHIP

(Okanogan Subbasin Habitat Improvement Project)

Habitat Rehabilitation and Protection to Reestablish or Strengthen Native Anadromous Fish Populations

What we do...

- Rehabilitation
 - Physical habitat improvement
 - Increase in flow
 - Changes in management
- Land acquisition
 - Protection of critical habitat
 - Rehabilitation opportunity
 - Supplementation opportunity



Okanogan River Basin currently supports: sockeye, summer chinook, summer steelhead (threatened)



Stream-type and ocean-type salmonids

Stream-type

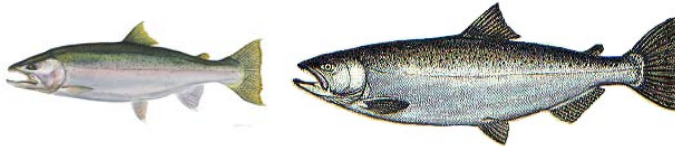
Juveniles 1+ years in freshwater

Lethal temp. 75°F¹

Ocean-type

Juveniles <1 year in freshwater

Lethal temp. 79°F²

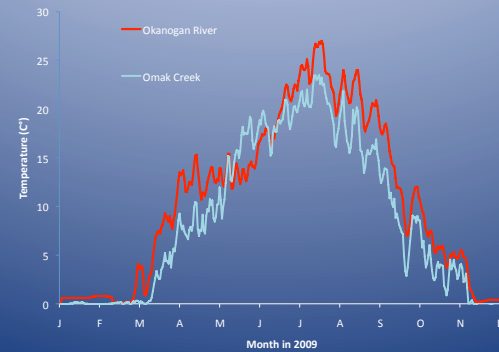


Steelhead

Summer Chinook

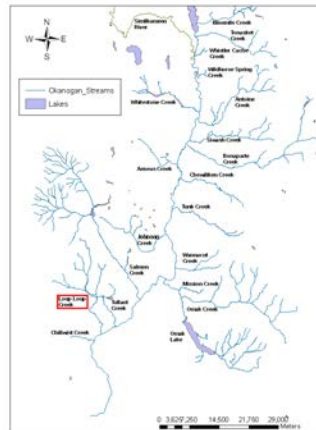
¹ Bell (1986)
² Brett (1952)

Water temperature comparison – Okanogan River & Omak Creek



Loup Loup Creek – Characteristics

- 69 square miles
- Confluence RM 17
- 2.2 miles accessible habitat
- Consistently colonized by steelhead



Future Fish Passage Barrier Removal- Loup Loup Creek

- Unimpeded access to spawning/rearing habitat

Perched Culvert (~ RM 0.1)

Possible Culvert Velocity Barrier (~ RM 0.2)





Culvert at Burdett Street (~ RM 0.1)



**Culvert (5' dia.) at ~ RM 0.25
(looking upstream)**



**Culvert (5' dia.) at ~ RM 0.20
(looking upstream)**

Loup Loup Creek



Diversion (RM 1.0)



Alevin from a de-watered redd

Loup Loup Creek
upstream of
diversion



Habitat Rehabilitation Plan

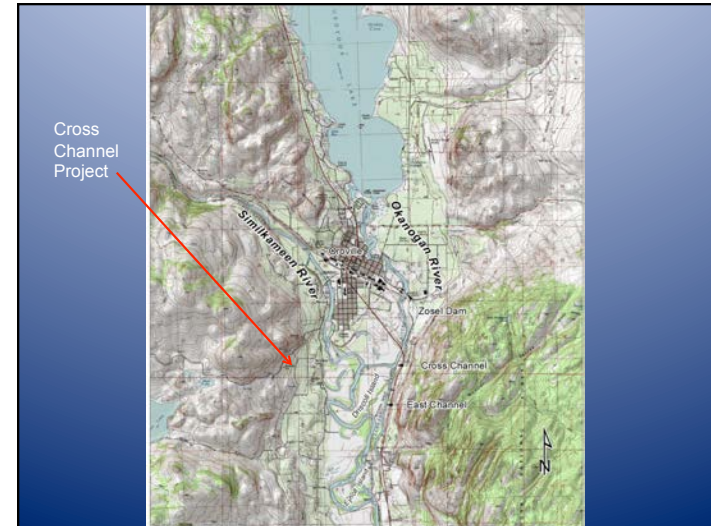
- Culverts replaced with bottomless box culverts – fall of 2011
- Long-term water lease – 2012 to 2031



Box culvert



Pump station



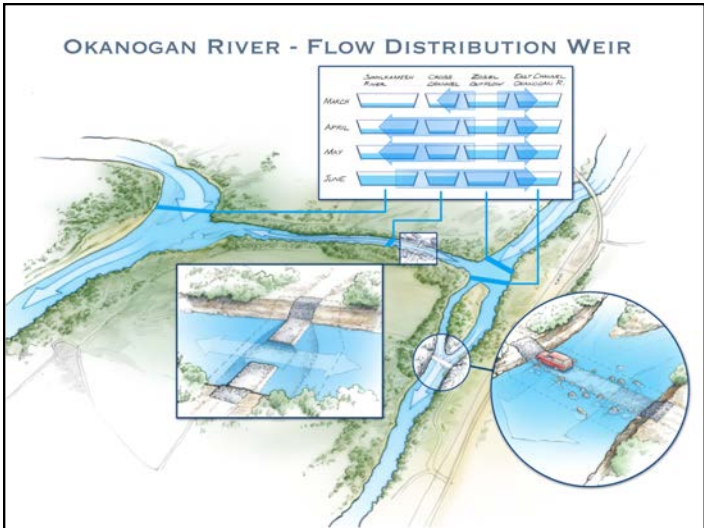
Cross Channel Project



Cross-channel project



April 16_09
242 cfs



McIntyre Dam – Oliver, British Columbia



Strategy

- Use funds from Bonneville Power Administration for assessments, project development and proposal submittals.
- Secure funds through the Mid-Columbia PUD's (Tributary and Habitat Committee Funds)



Overshot Gate: components



McIntyre Dam – September 2009



Riffle construction: increase pool depth



Augment Natural Riffle to Increase Depth, Reduce Jump Height from 4.3 to 3.4



Results

- Increase access to 4.4 miles of Okanogan River
- Provide access to 6.2 miles of Tributary Habitat
- Provide access to the outlet of Skaha Lake
- Secure ~ 1.3 million dollars from Grant PUD – NNI funds
- Access provided by September 1, 2009



McIntyre Dam –
over-shot gates
October 2010



Top view of overshot gate



Acknowledgements - *abbreviated*

- Bonneville Power Administration
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- Washington Department of Fish & Wildlife
- Helensdale Reclamation District
- Grant County Public Utility District
- Colville Confederated Tribes – Fish & Wildlife



Questions??



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