

Guiding Principles	Project
All	Outreach and Environmental Review
All	Community Outreach, Meetings, Open Houses, SEPA Scoping
All	Programmatic Environmental Impact Statement
Instream Flow	IPID Instream Flow Improvement Project
Instream Flow	<u>Appraisal Evaluation / Alternatives Analysis</u>
Instream Flow	Appraisal Level Study (Dryden Alternative)
Instream Flow	Field Data Gathering (4 Icicle / 2 Peshastin Alternatives)
Instream Flow	Data Gathering from IPID (4 Icicle / 2 Peshastin Alternatives)
Instream Flow	Data Input to CAD (4 Icicle / 2 Peshastin Alternatives)
Instream Flow	Hydraulic Modeling (4 Icicle / 2 Peshastin Alternatives)
Instream Flow	Construction Cost Estimate (4 Icicle / 2 Peshastin Alternatives)
Instream Flow	Meetings (4 Icicle / 2 Peshastin Alternatives)
Instream Flow	QA/QC (4 Icicle / 2 Peshastin Alternatives)
Instream Flow	Report (4 Icicle / 2 Peshastin Alternatives)
Instream Flow	Expenses (4 Icicle / 2 Peshastin Alternatives)
Instream Flow	<u>Pre-Feasibility Fatal Flaws / Feasibility Study for Alternatives</u>
Instream Flow	Property Owner Coordination
Instream Flow	Evaluation of Peshastin Fish Passage/Habitat Benefits (Dryden Alternative)
Instream Flow	Topographic Surveys (Dryden Alternative)
Instream Flow	Geotechnical Review (Dryden Alternative)
Instream Flow	Project Management (Dryden Alternative)
Instream Flow	Detailed Pump Station Operations Analysis (Preferred Alternative)
Instream Flow	Property Owner Coordination (Preferred Alternative, if not Dryden)
Instream Flow	Topographic Survey (Preferred Alternative, if not Dryden)
Instream Flow	Geotechnical Review (Preferred Alternative, if not Dryden)
Instream Flow	Detailed Environmental and Permitting Review (Preferred Alternative)
Instream Flow	Feasibility Level Construction / O&M Costs (Preferred Alternative)
Instream Flow	Preparation of Feasibility Study / Project Management (Preferred Alternative)
Instream Flow	<u>Design / Construction / O&M (Preferred Alternative)</u>
Muni / Instream Flow	Eight Mile Lake Restoration / Expansion (1827', 2000', 2500' and 5000' levels)
Muni / Instream Flow	Bathymetric Surveys
Muni / Instream Flow	Assessment of Existing Storage Conditions
Muni / Instream Flow	Dam construction recommendations
Muni / Instream Flow	Inundation levels / features / areas
Muni / Instream Flow	Assessment of Existing Storage Conditions
Muni / Instream Flow	Identify and Evaluate Options for Increasing Storage
Muni / Instream Flow	Identify and Evaluate Options for Improving Operations
Muni / Instream Flow	Summarize Water Use and Benefits
Muni / Instream Flow	Preliminary Environmental Review and Permitting Fatal Flaw Analysis
Muni / Instream Flow	Prepare Appraisal Study Report
Muni / Instream Flow	Project Management, Coordination and Meetings
Muni / Instream Flow	<u>Pre-Feasibility Fatal Flaws / Feasibility Study</u>

Muni / Instream Flow	Design / Construction / O&M
Muni / Instream Flow / Irrigation	Alpine Lakes Automation, Optimization, Modernization
Muni / Instream Flow / Irrigation	Lake Recharge Evaluation
Muni / Instream Flow / Irrigation	Lake Optimization Evaluation
Muni / Instream Flow / Irrigation	Lake Optimization Evaluation
Muni / Instream Flow / Irrigation	Lake Automation Appraisal Study
Muni / Instream Flow / Irrigation	Lake Automation Feasibility Study
Muni / Instream Flow / Irrigation	Design/Construction
Irrigation / Instream Flow	IPID Comprehensive Plan
Irrigation / Instream Flow	Cascade Orchard Irrigation Company Comprehensive Plan
Passage / Tribal Fishery	LNFH Intake / Structure 2 / Structure 5 Option Analysis
Passage / Tribal Fishery	Sediment Transport and Hydrologic Modeling Study
Passage / Tribal Fishery	Structure 2 Passage / Structural Design Issues
Passage / Tribal Fishery	Structure 2 Mechanics and Radial Gates Upgrade
Passage / Tribal Fishery	Structure 5 Passage / Structural Design Issues
Passage / Tribal Fishery	Intake Passage / Structural Design Issues
Passage / Tribal Fishery	Boulder Field and IPID Diversion Fish Passage
Instream Flow / LNFH Ops	LNFH Improvement Projects
Instream Flow / LNFH Ops	Water reuse study for hatchery
Instream Flow / LNFH Ops	Effluent Pump Back for hatchery
Instream Flow / LNFH Ops	Wellfield Enhancement for hatchery
Instream Flow / LNFH Ops	Repair underground plumbing at LNFH
Instream Flow / LNFH Ops	LNFH Hatchery Flow Development Plan
Instream Flow / LNFH Ops	NOAA BiOp Decision
Instream Flow / LNFH Ops	LNFH Alternatives Analysis
Screening	Screening Projects
Screening	LNFH Screening Project
Screening	Cascade Orchard Irrigation Company Screening Project
Screening	IPID Screening Project
Habitat	Habitat Improvements / Lands Plan / Terrestrial Mitigation
Municipal	Instream Flow Rule Amendment

1. Funders: Potential project funders could include [Office of Columbia River \(OCR\)](#), [Priest Rapids Coordinating](#)
 2. Project Managers: Potential project managers could include Chelan County, Trout Unlimited, Washington
- Source documents: OCR signed grant, County/Aspect signed contract, Forsgren/TU unsigned proposal 10-7-21

Icicle Workgroup Master Scope of Work and Budget

Draft on 12/06/2013

Funder ¹	Project Manager ²	Contractor	Schedule
OCR	County	Aspect/Anchor	2013-2015
Unfunded	Not identified	Not identified	2014-2015
OCR	County	Anchor	January 2012
PRCC	TU	TU	April 2014
PRCC	TU	Forsgren	April 2014
PRCC	TU	Forsgren	April 2014
PRCC	TU	Forsgren	April 2014
PRCC	TU	Forsgren	April 2014
PRCC	TU	Forsgren	April 2014
PRCC	TU	Forsgren	April 2014
PRCC	TU	TU/Forsgren	April 2014
PRCC	TU	Forsgren	April 2014
OCR	County	Aspect/Anchor	June 2014
OCR	County	Aspect/Anchor	June 2014
OCR	County	Aspect/Anchor	June 2014
OCR	County	Aspect/Anchor	June 2014
OCR	County	Aspect/Anchor	June 2014
Unfunded	Not identified	Not identified	TBD
Unfunded	Not identified	Not identified	TBD
Unfunded	Not identified	Not identified	TBD
Unfunded	Not identified	Not identified	TBD
Unfunded	Not identified	Not identified	TBD
Unfunded	Not identified	Not identified	TBD
Unfunded	Not identified	Not identified	TBD
Unfunded	Not identified	Not identified	TBD
PRCC	TU	Gravity	December 2013
PRCC	TU	Forsgren	June 2014
PRCC	TU	Forsgren	June 2014
PRCC	TU	Forsgren	June 2014
OCR	County	Aspect/Anchor	June 2014
OCR	County	Aspect/Anchor	June 2014
OCR	County	Aspect/Anchor	June 2014
OCR	County	Aspect/Anchor	June 2014
OCR	County	Aspect/Anchor	June 2014
OCR	County	Aspect/Anchor	June 2014
OCR	County	Aspect/Anchor	June 2014
Unfunded	Not identified	Not identified	TBD

Unfunded	Not identified	Not identified	TBD
OCR	County	Aspect/Anchor	June 2014
OCR	County	Aspect/Anchor	June 2014
Reclamation	LNFH	TBD	pending
OCR	County	Aspect/Anchor	June 2014
Unfunded	Not identified	Not identified	TBD
Unfunded	Not identified	Not identified	TBD
Unfunded	Not Identified	Not Identified	
Unfunded	Not Identified	Not identified	
OCR	County	Interfluv	
Unfunded	Not Identified	Not identified	
Reclamation	LNFH	TBD	TBD
Unfunded	Not Identified	Not identified	
Reclamation	LNFH	Not identified	TBD
SRFB	TU	TBD	
Reclamation	LNFH	TBD	pending
Reclamation	LNFH	?	
Unfunded	Not Identified	Not identified	
Reclamation	LNFH	TBD	FY2015
Reclamation	LNFH	TBD	June 2014
USFWS	LNFH	TBD	February 2014
Reclamation	LNFH	TBD	FY2014
Reclamation	LNFH	TBD	FY2014-2016
Unfunded	Not Identified	Not identified	
Unfunded	Not Identified	Not identified	
Unfunded	Not Identified	Not identified	
Unfunded	Not Identified	Not identified	

g Committee (PRCC), **Salmon Recovery Foundation Board**, direct Legis
Water Trust, Yakama Nation, Colville Confederated Tribes, LNFH, Cons

013, Gravity/TU unsigned/undated proposal.

Task Description	Task Budget
Coordinate outreach meetings, Open Houses, and SEPA Scoping	\$71,000
Prepare a PEIS for Integrated Project List	\$129,000
Completed, see Appraisal Study, PID Pump Exchange Project	\$90,000
Walking, GPS'ing canal locations	Unknown
Collection of IPID records (maps, reports, records)	\$7,705
GPS data and records input into CAD for hydraulics modeling	\$12,420
Hydraulics model to estimate pump station sizing and canal-to-pipe options	\$75,568
Opinion of preliminary probable costs based on schematic design and unit pricing	\$13,090
Based on 160 hours of meetings	\$28,800
Internal QA/QC	\$9,522
TU (non-technical sections) / Forsgren (technical sections)	\$18,400
Project expenses	\$4,445
Fatal flaw analysis around access, easements, & alignments for affected property	\$9,000
Update instream flow / IPID pumping records from Appraisal Study, fisheries interest coordination	\$22,000
Survey of pump station site & pipe alignment, river level rating curve, bank info	\$17,000
Test pits & borings at pump station location, soil characterization on alignment	\$48,000
Project management	\$4,000
Define pump station flow rate, timing, duration, and integration with IPID demand	TBD
Define fatal flaws of key property owners	TBD
Survey of pump station site & pipe alignment, river level rating curve, bank info	TBD
Test pits & borings at pump station location, soil characterization on alignment	TBD
Detailed project-level environmental review, under PEIS umbrella	TBD
Develop feasibility level costs for funding and financial evaluation	TBD
Develop feasibility level costs for funding and financial evaluation	TBD
Design, construction, and O&M dependent on preferred alternative	\$4M to \$9M
Map lake volume, GPS dam & topography, inundated features for 4 lake levels	Unknown
Evaluation of existing dam conditions, current operating level / features	\$X
Estimate dam height, length, configuration for 4 lake levels	\$X
Estimate land affected, recreational facilities/habitat/trees for 4 lake levels	\$X
Evaluation of existing dam operating conditions, structural limitations, inundated areas, Wilderness Boundary	\$28,000
Evaluate structural, inlet, and outlet modifications for the 4 lake levels	\$11,000
Evaluate timing and release options for IPID needs, and Icicle Guiding Principles	\$10,000
Summarize instream and out-of-stream opportunities (water year dependent)	\$15,000
Preliminary project-level environmental review, under PEIS umbrella	\$12,000
Prepare appraisal level report	\$24,000
Project management, coordination, and meetings	\$10,000
Fatal flaw analysis, feasibility study	TBD

Design, construction, and O&M dependent on preferred alternative	TBD
Evaluate recharge for 7 lakes for historical and climate-change-induced water years (2020, 2040, 2080) for 10%, 50%, 90% exceedance probabilities	\$30,000
Model different operating regimes to yield optimal drawdowns for each lake, and estimate water supply benefits versus refill risk	\$45,000
Evaluation of opportunities for automation of Snow and Nada Lakes (partially funded)	\$2,000,000
Evaluate the feasibility of automating lake discharge remotely	\$45,000
Fatal flaw analysis, feasibility study	TBD
Design and construction	TBD
Update 20 year old plan for IPID operating conditions, infrastructure analysis, conservation opportunities, capital financing	\$100,000
Develop plan for Cascade Orchard operating conditions, infrastructure analysis, conservation opportunities, capital financing	\$70,000
Evaluate impacts to hatchery operations, tribal fishery, existing habitat, and private property for various flow volumes between natural / hatchery channels	\$10,000
Evaluate improvements to Structure 2 for various flow scenarios	\$X
Upgrade Structure 2 mechanics and radial gates	\$200,000
Evaluate improvements to Structure 5 for various flow scenarios	\$X
Evaluate improvements to the LNFH Intake for various flow scenarios (\$500,000 funded, \$50,000 additional budgeted/requested by LNFH currently)	\$550,000+
Develop preliminary designs for Boulder Field / IPID Dam from 2013 Fish Passage Assessment	\$179,000
Evaluate water reuse conservation opportunities at the hatchery (partially funded)	\$3,600,000
Evaluate effluent pump back opportunities at the hatchery	\$X
Evaluate opportunities for additional wells to supplement hatchery supply in lieu of surface water	\$X
Repair underground plumbing at LNFH	\$1,500,000
Evaluation of potential flow targets/flow management based on USFWS IFIM	\$X
Decision on flow, passage issues at LNFH	\$X
Alternatives and Cost/Benefit Analysis for LNFH	\$500,000
Update screens at LNFH (\$1M NEPA funding for LNFH Screen in place)	\$1,000,000+
Update screens at Cascade Orchard	\$X
Update screens for IPID	\$X
Habitat improvements in natural channel, potential land acquisition to offset impacts	\$X
Modify the instream flow rule to change the reserve in the Icicle basin from the interim level of 0.1 cfs to the final level of 0.5 cfs	\$X

lative Appropriations, **Bureau of Reclamation**, and others.

ervation Districts, and others.