

Icicle Workgroup Master Scope of Work and Budget

Draft on 09/26/2014

Guiding Principles	Project	Funder ¹	Project Manager ²	Contractor	Schedule	Task Description	Task Budget
All	Outreach and Environmental Review						
All	Community Outreach, Meetings, Open Houses, SEPA Scoping	OCR	County	Aspect/Anchor	2013-2015	Coordinate outreach meetings, Open Houses, and SEPA Scoping	\$71,000
All	Programmatic Environmental Impact Statement	Unfunded	Not identified	Not identified	2014-2015	Prepare a PEIS for Integrated Project List	\$129,000
Instream Flow	IPID Instream Flow Improvement Project						
Instream Flow	<u>Appraisal Evaluation / Alternatives Analysis</u>						
Instream Flow	Appraisal Level Study (Dryden Alternative)	OCR	County	Anchor	January 2012	Completed, see Appraisal Study, PID Pump Exchange Project	\$90,000
Instream Flow	Field Data Gathering (4 Icicle / 2 Peshastin Alternatives)	PRCC	TU	TU	September 2014	Walking, GPS'ing canal locations	Unknown
Instream Flow	Data Gathering from IPID (4 Icicle / 2 Peshastin Alternatives)	PRCC	TU	Forsgren	September 2014	Collection of IPID records (maps, reports, records)	\$7,705
Instream Flow	Data Input to CAD (4 Icicle / 2 Peshastin Alternatives)	PRCC	TU	Forsgren	September 2014	GPS data and records input into CAD for hydraulics modeling	\$12,420
Instream Flow	Hydraulic Modeling (4 Icicle / 2 Peshastin Alternatives)	PRCC	TU	Forsgren	September 2014	Hydraulics model to estimate pump station sizing and canal-to-pipe options	\$75,568
Instream Flow	Construction Cost Estimate (4 Icicle / 2 Peshastin Alternatives)	PRCC	TU	Forsgren	September 2014	Opinion of preliminary probable costs based on schematic design and unit pricing	\$13,090
Instream Flow	Meetings (4 Icicle / 2 Peshastin Alternatives)	PRCC	TU	Forsgren	September 2014	Based on 160 hours of meetings	\$28,800
Instream Flow	QA/QC (4 Icicle / 2 Peshastin Alternatives)	PRCC	TU	Forsgren	September 2014	Internal QA/QC	\$9,522
Instream Flow	Report (4 Icicle / 2 Peshastin Alternatives)	PRCC	TU	TU/Forsgren	September 2014	TU (non-technical sections) / Forsgren (technical sections)	\$18,400
Instream Flow	Expenses (4 Icicle / 2 Peshastin Alternatives)	PRCC	TU	Forsgren	September 2014	Project expenses	\$4,445
Instream Flow	<u>Pre-Feasibility Fatal Flaws / Feasibility Study for Alternatives</u>						
Instream Flow	Property Owner Coordination	OCR	County	Aspect/Anchor	November 2014	Fatal flaw analysis around access, easements, & alignments for affected property	\$9,000
Instream Flow	Evaluation of Peshastin Fish Passage/Habitat Benefits (Dryden Alternative)	OCR	County	Aspect/Anchor	November 2014	Update instream flow / IPID pumping records from Appraisal Study, fisheries interest coordination	\$22,000
Instream Flow	Topographic Surveys (Dryden Alternative)	OCR	County	Aspect/Anchor	November 2014	Survey of pump station site & pipe alignment, river level rating curve, bank info	TBD
Instream Flow	Geotechnical Review (Dryden Alternative)	OCR	County	Aspect/Anchor	November 2014	Test pits & borings at pump station location, soil characterization on alignment	TBD
Instream Flow	Project Management (Dryden Alternative)	OCR	County	Aspect/Anchor	November 2014	Project management	\$4,000
Instream Flow	Cross-Walk Comparing Pump Exchange Alternatives	OCR	County	Aspect/Anchor	November 2014	Compares costs and assumptions for different IPID Pump Exchange Studies	Completed
Instream Flow	Design of Icicle Pump Exchange	Funding Request	TU	Not identified	TBD	Pump station design	TBD
Instream Flow	Detailed Pump Station Operations Analysis (Preferred Alternative)	Unfunded	Not identified	Not identified	TBD	Define pump station flow rate, timing, duration, and integration with IPID demand	TBD
Instream Flow	Property Owner Coordination (Preferred Alternative, if not Dryden)	Unfunded	Not identified	Not identified	TBD	Define fatal flaws of key property owners	TBD
Instream Flow	Topographic Survey (Preferred Alternative, if not Dryden)	Unfunded	Not identified	Not identified	TBD	Survey of pump station site & pipe alignment, river level rating curve, bank info	TBD
Instream Flow	Geotechnical Review (Preferred Alternative, if not Dryden)	Unfunded	Not identified	Not identified	TBD	Test pits & borings at pump station location, soil characterization on alignment	TBD
Instream Flow	Detailed Environmental and Permitting Review (Preferred Alternative)	Unfunded	Not identified	Not identified	TBD	Detailed project-level environmental review, under PEIS umbrella	TBD
Instream Flow	Feasibility Level Construction / O&M Costs (Preferred Alternative)	Unfunded	Not identified	Not identified	TBD	Develop feasibility level costs for funding and financial evaluation	TBD
Instream Flow	Preparation of Feasibility Study / Project Management (Preferred Alternative)	Unfunded	Not identified	Not identified	TBD	Develop feasibility level costs for funding and financial evaluation	TBD
Instream Flow	<u>Design / Construction / O&M (Preferred Alternative)</u>	Unfunded	Not identified	Not identified	TBD	Design, construction, and O&M dependent on preferred alternative	\$4M to \$9M
Muni / Instream Flow	Eight Mile Lake Restoration / Expansion (1827', 2000', 2500' and 5000' levels)						
Muni / Instream Flow	Bathymetric Surveys	PRCC	TU	Gravity	December 2013	Map lake volume, GPS dam & topography, inundated features for 4 lake levels	Unknown
Muni / Instream Flow	Assessment of Existing Storage Conditions	PRCC	TU	Forsgren	September 2014	Evaluation of existing dam conditions, current operating level / features	\$X
Muni / Instream Flow	Dam construction recommendations	PRCC	TU	Forsgren	September 2014	Estimate dam height, length, configuration for 4 lake levels	\$X
Muni / Instream Flow	Inundation levels / features / areas	PRCC	TU	Forsgren	September 2014	Estimate land affected, recreational facilities/habitat/trees for 4 lake levels	\$X
Muni / Instream Flow	Assessment of Existing Storage Conditions	OCR	County	Aspect/Anchor	November 2014	Evaluation of existing dam operating conditions, structural limitations, inundated areas, Wilderness Boundary	\$28,000
Muni / Instream Flow	Identify and Evaluate Options for Increasing Storage	OCR	County	Aspect/Anchor	November 2014	Evaluate structural, inlet, and outlet modifications for the 4 lake levels	\$11,000
Muni / Instream Flow	Identify and Evaluate Options for Improving Operations	OCR	County	Aspect/Anchor	November 2014	Evaluate timing and release options for IPID needs, and Icicle Guiding Principles	\$10,000
Muni / Instream Flow	Summarize Water Use and Benefits	OCR	County	Aspect/Anchor	November 2014	Summarize instream and out-of-stream opportunities (water year dependent)	\$15,000
Muni / Instream Flow	Preliminary Environmental Review and Permitting Fatal Flaw Analysis	OCR	County	Aspect/Anchor	November 2014	Preliminary project-level environmental review, under PEIS umbrella	\$12,000
Muni / Instream Flow	Prepare Appraisal Study Report	OCR	County	Aspect/Anchor	November 2014	Prepare appraisal level report	\$24,000
Muni / Instream Flow	Project Management, Coordination and Meetings	OCR	County	Aspect/Anchor	November 2014	Project management, coordination, and meetings	\$10,000
Muni / Instream Flow	<u>Pre-Feasibility Fatal Flaws / Feasibility Study</u>	Unfunded	Not identified	Not identified	TBD	Fatal flaw analysis, feasibility study	TBD
Muni / Instream Flow	<u>Design / Construction / O&M</u>	Unfunded	Not identified	Not identified	TBD	Design, construction, and O&M dependent on preferred alternative	TBD
Muni / Instream Flow / Irrigation	Alpine Lakes Automation, Optimization, Modernization						

Muni / Instream Flow / Irrigation	Lake Recharge Evaluation	OCR	County	Aspect/Anchor	November 2014	Evaluate recharge for 7 lakes for historical and climate-change-induced water years (2020, 2040, 2080) for 10%, 50%, 90% exceedance probabilities	\$30,000
Muni / Instream Flow / Irrigation	Lake Optimization Evaluation	OCR	County	Aspect/Anchor	November 2014	Model different operating regimes to yield optimal drawdowns for each lake, and estimate water supply benefits versus refill risk	\$45,000
Muni / Instream Flow / Irrigation	Lake Optimization Evaluation	Reclamation	LNFH	TBD	pending	Evaluation of opportunities for automation of Snow and Nada Lakes (partially funded)	\$2,000,000
Muni / Instream Flow / Irrigation	Lake Automation Appraisal Study	OCR	County	Aspect/Anchor	November 2014	Evaluate the feasibility of automating lake discharge remotely	\$45,000
Muni / Instream Flow / Irrigation	Klonaqua Lakes Bathymetric Survey	OCR	County	Aspect/Gravity	November 2014	Complete bathymetry study of Klonaqua Lake and summarize storage options	\$25,000
Muni / Instream Flow / Irrigation	Lake Automation Feasibility Study	Unfunded	Not identified	Not identified	TBD	Fatal flaw analysis, feasibility study	TBD
Muni / Instream Flow / Irrigation	Design/Construction	Unfunded	Not identified	Not identified	TBD	Design and construction	TBD
Irrigation / Instream Flow	IPID Comprehensive Plan	Unfunded	Not Identified	Not Identified	TBD	Update 20 year old plan for IPID operating conditions, infrastructure analysis, conservation opportunities, capital financing	\$100,000
Irrigation / Instream Flow	Water Conservation Survey	OCR	County	Aspect	November 2014	Survey conservation opportunities in IPID, COIC, and City of Leavenworth.	\$12,000
Irrigation / Instream Flow	Cascade Orchard Irrigation Company Comprehensive Plan	Unfunded	Not Identified	Not identified	TBD	Develop plan for Cascade Orchard operating conditions, infrastructure analysis, conservation opportunities, capital financing	\$70,000
Passage / Tribal Fishery	LNFH Intake / Structure 2 / Structure 5 Option Analysis						
Passage / Tribal Fishery	Sediment Transport and Hydrologic Modeling Study	OCR	County	Interfluv	TBD	Evaluate impacts to hatchery operations, tribal fishery, existing habitat, and private property for various flow volumes between natural / hatchery channels	\$10,000
Passage / Tribal Fishery	Fish Passage and Survival Assessment: Icicle and Peshastin Creeks	OCR	WDFW	WDFW	June 2017	Evaluate movement & survival of bull trout & steelhead in Icicle and Peshastin Creeks	\$116,829
Passage / Tribal Fishery	Structure 2 Passage / Structural Design Issues	Unfunded	Not Identified	Not identified	TBD	Evaluate improvements to Structure 2 for various flow scenarios	\$X
Passage / Tribal Fishery	Structure 2 Mechanics and Radial Gates Upgrade	Reclamation	LNFH	TBD	TBD	Upgrade Structure 2 mechanics and radial gates	\$200,000
Passage / Tribal Fishery	Structure 5 Passage / Structural Design Issues	Unfunded	Not Identified	Not identified		Evaluate improvements to Structure 5 for various flow scenarios	\$X
Passage / Tribal Fishery	Intake Passage / Structural Design Issues	Reclamation	LNFH	Not identified	TBD	Evaluate improvements to the LNFH Intake for various flow scenarios (\$500,000 funded, \$50,000 additional budgeted/requested by LNFH currently)	\$550,000+
Passage / Tribal Fishery	Boulder Field and IPID Diversion Fish Passage	SRFB	TU	TBD	TBD	Develop preliminary designs for Boulder Field / IPID Dam from 2013 Fish Passage Assessment	\$179,000
Instream Flow / LNFH Ops	LNFH Improvement Projects						
Instream Flow / LNFH Ops	LNFH Historic Channel & Hatchery Canal Flow Monitoring Plan (401 Cert)	Reclamation	LNFH	LNFH	Completed	Monitoring protocols for Historic and Hatchery Channels	\$X
Instream Flow / LNFH Ops	LNFH Snow & Nada Lake Releases Monitoring Plan (401 Cert)	Reclamation	LNFH	LNFH	Completed	Evaluation of monitoring protocols for Snow and Nada Lake	\$X
Instream Flow / LNFH Ops	LNFH Annual Flow Monitoring Reports (401 Cert)	Reclamation	LNFH	LNFH	Completed	Reports for 2011 and 2012 are completed, 2013 Report pending	\$X
Instream Flow / LNFH Ops	LNFH Flood Control Operating Rules (401 Cert)	Reclamation	LNFH	LNFH	Completed	Contained in USFWS 2011 Biological Assessment & 2011 BiOp	\$X
Instream Flow / LNFH Ops	LNFH Navigaion / Boating Evaluation (401 Cert)	Reclamation	LNFH	LNFH	Completed		\$X
Instream Flow / LNFH Ops	LNFH Instream Temperature Study and Implementaion Plan (401 Cert)	Reclamation	LNFH	LNFH	Pending	Study plan completed with QAPP, implementation plan ongoing	\$X
Instream Flow / LNFH Ops	LNFH QAPP Phosphorous, Sediment and Turbidity Monitoring (401 Cert)	Reclamation	LNFH	LNFH	Pending	Study plan completed with QAPP, implementation plan ongoing	\$X
Instream Flow / LNFH Ops	NOAA BiOp Decision	USFWS	LNFH	TBD	November 2014	Decision on flow, passage issues at LNFH	\$X
Instream Flow / LNFH Ops	LNFH Historic Channel & Hatchery Canal Flow Management Plan (401 Cert)	Reclamation	LNFH	LNFH	June 2014 (est)	Evaluation of potential flow targets/flow management based on USFWS IFIM	\$X
Instream Flow / LNFH Ops	IFIM Study for Historic Channel (401 Cert)	Reclamation	LNFH	USFWS	pending final	Habitat / flow / fish life stage relationships evaluated in historic channel	\$X
Instream Flow / LNFH Ops	LNFH Aquifer Recharge Plan (401 Cert)	Reclamation	LNFH	LNFH	pending	Evaluation of aquifer recharge for hatchery wells	\$X
Instream Flow / LNFH Ops	Water reuse study for hatchery	Reclamation	LNFH	TBD	pending	Evaluate water reuse conservation opportunities at the hatchery (partially funded)	\$3,600,000
Instream Flow / LNFH Ops	Effluent Pump Back for hatchery	Reclamation	LNFH	?		Evaluate effluent pump back opportunities at the hatchery	\$X
Instream Flow / LNFH Ops	Wellfield Enhancement for hatchery	Request to retask OCR \$	Not Identified	Not identified	TBD	Evaluate opportunities for additional wells to supplement hatchery supply in lieu of surface water	\$X
Instream Flow / LNFH Ops	Repair underground plumbing at LNFH	Reclamation	LNFH	TBD	FY2015	Repair underground plumbing at LNFH	\$1,500,000
Instream Flow / LNFH Ops	LNFH Alternatives Analysis	Reclamation	LNFH	TBD	FY2014	Alternatives and Cost/Benefit Analysis for LNFH	\$500,000

Screening	Screening Projects						
Screening	LNFH Screening Project	Reclamation	LNFH	TBD	FY2014-2016	Update screens at LNFH (\$1M NEPA funding for LNFH Screen in place)	\$1,000,000+
Screening	Water Diversion and Screen Assessment: Icicle and Peshastin Creeks	OCR Request	WDFW	WDFW	June 2017	Screen and diversion inventory	\$15,923
Screening	Cascade Orchard Irrigation Company Screening Project	Unfunded	Not Identified	Not identified		Update screens at Cascade Orchard	\$X
Screening	IPID Screening Project	Unfunded	Not Identified	Not identified		Update screens for IPID	\$X
Habitat	Habitat Improvements / Lands Plan / Terrestrial Mitigation	Unfunded	Not Identified	Not identified		Habitat improvements in natural channel, potential land acquisition to offset impacts	\$X
Municipal	Instream Flow Rule Amendment	Unfunded	Not Identified	Not identified		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
1. Funders: Potential project funders could include Office of Columbia River (OCR) , Priest Rapids Coordinating Committee (PRCC) , Salmon Recovery Foundation Board , direct Legislative Appropriations, Bureau of Reclamation , and others.							
2. Project Managers: Potential project managers could include Chelan County, Trout Unlimited, Washington Water Trust, Yakama Nation, Colville Confederated Tribes, LNFH, Conservation Districts, and others.							