



Statement of Work Report

Project Title: Upper Columbia Spring Chinook and Steelhead Juvenile and Adult Abundance, Productivity and Spatial Structure Monitoring
Project #: 2010-034-00
Contract Title: 2010-034-00 EXP UPPER COLUMBIA SPRING CHINOOK
Contract #: 47950 [ISSUED]
Province: Columbia Cascade **Subbasin:** Methow
Workorder ID: 254215 **Task ID:** 1
Perf. Period Budget: \$542,753 **Perf. Period:** 7/1/2010 - 6/30/2011
Contract Type: Contract (IGC) **Pricing Type:** Cost Reimbursement (CNF)
Contractor(s): Washington Department of Fish and Wildlife (WDFW) (Prime - WAFISWIL00)
BPA Internal Ref: 47950
SOW Validation: Last validated 04/28/2010 with 0 problems, and 0 reviewable items
Contract Documents: [Budget - Contract \(05/17/2010\)](#) 2010_budget_for_2010-034-00_5-17

Contacts:

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Work Element Table of Contents:

<u>Work Element - Work Element Title</u>	<u>EC Needed*</u>	<u>Estimate</u>	<u>(%)</u>
A : 165. Produce Environmental Compliance Documentation - Provide EC documentation to BPA		\$1,323	(0 %)
B : 119. Manage and Administer Projects - Manage and administer project		\$6,370	(1 %)
C : 162. Analyze/Interpret Data - Review and develop statistical methods for smolt trapping		\$15,694	(3 %)
D : 157. Collect/Generate/Validate Field and Lab Data - Upper	*	\$36,511	(7 %)



<u>Work Element - Work Element Title</u>	<u>EC Needed*</u>	<u>Estimate</u>	<u>(%)</u>
E : 156. Develop RM&E Methods and Designs - Develop software application for analysis of PIT tag data		\$60,890	(11 %)
F : 70. Install Fish Monitoring Equipment - Install permanent in-stream PIT tag arrays in preselected locations	*	\$233,693	(43 %)
G : 159. Transfer/Consolidate Regionally Standardized Data - Upload PIT tag data to PTAGIS database		\$34,657	(6 %)
H : 157. Collect/Generate/Validate Field and Lab Data - Estimate the number of hatchery and wild steelhead	*	\$17,328	(3 %)
I : 70. Install Fish Monitoring Equipment - Install temporary PIT tag arrays in preselected locations	*	\$68,227	(13 %)
J : 157. Collect/Generate/Validate Field and Lab Data - Estimate number of steelhead spawning outside of survey area	*	\$7,580	(1 %)
K : 157. Collect/Generate/Validate Field and Lab Data - Estimate spring Chinook redd observer efficiency	*	\$56,837	(10 %)
L : 185. Produce Pisces Status Report - Periodic Status Reports for BPA		\$3,643	(1 %)
M : 132. Produce (Annual) Progress Report - Submit Progress Report for the period (July 2010) to (June 2011)		\$0	(0%)
Total:		\$542,753	

* Environmental Compliance (EC) needed before work begins.

Contract Description:



A unique well coordinated standardized monitoring and evaluation program(s) exists in the Upper Columbia River Basin. Monitoring and evaluation programs are funded by a combination of federal (BPA, BOR, USFWS), State, Tribal, and regional (PUDs) entities. WDFW will be the research lead for the project and obtain all necessary environmental compliance permits for the project. Colville Confederated Tribes will be the primary contractor for the Okanogan Basin. While all these various program contribute data to estimate VSP parameters for steelhead and spring Chinook salmon, these programs also share common deficiencies related to precision and accuracy of the abundance estimates. Existing M & E activities combined with recent advances in PIT tag technology provide an opportunity to improve the quality of the data generated in order to make proper management decisions concerning ESA listed species. The overall objectives of the project are to: 1) evaluate precision and accuracy of the smolt monitoring methodology for both steelhead and spring Chinook , 2) estimate the proportion of hatchery steelhead in each primary population, 3) estimate the precision of redd counts for both steelhead and spring Chinook and 4) evaluate the accuracy of the steelhead spawning ground survey design. We also intend to conduct a steelhead radio telemetry study to independently validate estimates generated from PIT tags and to estimate steelhead population characteristics (overwinter survival, number of redds per female). These tasks address in part or fully the critical uncertainties identified under Supplementation in the Columbia River Basin Research Plan (2006-03) and steelhead population characteristics (abundance, productivity, and ratio of hatchery fish) under the Fish and Wildlife Program. Additionally, all of the studies in this proposal are directly consistent with RPAs for the FCRPS BiOp.

Additionally, in collaboration with PTAGIS managers and other researchers (e.g., Chris Jordan, NMFS; Pat Connolly, USGS) we will develop a request for proposals (i.e., subcontract) for the development of an automated process that would not only assist, but standardize how data from in-stream PIT tag arrays is analyzed. Because many PIT tag arrays are already online with no efficient method of analyzing the data collected, we propose the scoping for the subcontract be conducted immediately and the project be completed the first year of the project. The program would be developed in a common format (i.e., Access) and a suite of standardized queries would be available. The program would be downloadable from the PTAGIS or other web sites and could be customized further if needed.

In summary, this project seeks to build on the existing programs in all the subbasins and provide information and equipment needed for long term monitoring of VSP parameters with a known level of accuracy and precision.

WDFW will be the research lead for the project and obtain all necessary environmental compliance permits for the project which includes CR-142326. Andrew Murdoch will be the point of contact for WDFW. Colville Confederated Tribes (CCT) will be the primary contractor for the Okanogan Basin; CR-142326. John Arteburn is the point of contact for the CCT.

Statement of Work Report

Work Element Details

A: 165. Produce Environmental Compliance Documentation

Title:	Provide EC documentation to BPA
Description:	WDFW will be the research lead for the project and obtain all necessary environmental compliance permits for the project which includes CR-142326. Andrew Murdoch will be the point of contact for WDFW. Colville Confederated Tribes (CCT) will be the primary contractor for the Okanogan Basin; CR-142326. John Arteburn is the point of contact for the CCT.
Deliverable Specification:	Send electronic versions of all ESA permits to BPA EC Lead
Planned Metrics:	Are herbicides used as part of work performed under this contract?: No



Milestone Title	Start Date	End Date	Status	Milestone Description
A. Obtain all necessary EC permits for this contract and for CR-142326	7/1/2010	7/1/2010	Active	WDFW will be the research lead for the project and obtain all necessary environmental compliance permits for the project which includes CR-142326. Andrew Murdoch will be the point of contact for WDFW. Colville Confederated Tribes (CCT) will be the primary contractor for the Okanogan Basin; CR-142326. John Arteburn is the point of contact for the CCT.
Deliverable: B. EC documents obtained for this contract and for CR-142326		6/30/2011	Active	<i>See the Deliverable Specification above</i>

B: 119. Manage and Administer Projects

Title: Manage and administer project
Description: Overall project management to include BPA SOW and budget development and submittal as well as WDFW contracting and budget development and coordination and annual budget review with Colville Tribes.
Deliverable Specification: Overall project management. Submit next year's SOW, Budget, and Property Inventory (if applicable) to the BPA COTR.

Milestone Title	Start Date	End Date	Status	Milestone Description
A. Manage and administer project	7/1/2010	6/30/2011	Active	Provide copies of contractual and administrative documents as requested. Attend conference calls to communicate project status and needs with BPA's COTR.
B. Submit invoices to BPA consistent with BPA's contract management manual.	8/1/2010	6/30/2011	Active	Invoices will be prepared and submitted to BPA consistent with their contract management manual.
C. Accrual - Submit September estimate to BPA	7/1/2010	9/10/2010	Active	Provide BPA with an estimate of contract work that will occur prior to September 30 but will not be billed until October 1 or later. Generally, this should be done by September 10.
D. Funding Package - Conduct internal review (e.g., Supervisor or Interagency)	2/1/2011	2/28/2011	Active	Submit next year's SOW, Line Item Budget, and Property Inventory (if applicable) for internal contractor review before submitting to BPA. Assuming this review takes 30 days, start this milestone 120 days before the end of the current contract.
E. Per COTR, revise/finalize the new contract package, (SOW, EC docs, budget and property inventory)	3/1/2011	4/15/2011	Active	Work with the COTR to revise and finalize the draft contracting package.
Deliverable: F. Project managed. Draft contracting package including the SOW, LIB, & PI submitted to COTR.		6/30/2011	Active	<i>See the Deliverable Specification above</i>

C: 162. Analyze/Interpret Data

Title: Review and develop statistical methods for smolt trapping
Description: WDFW Biometrician will review current statistical formulas, methods, and assumptions regarding the estimation of migrating juvenile salmonids. Identify deficiencies, develop new equations, and make recommendations for future area of interest.
Deliverable Specification: Equations and methods for estimating smolt production will be included in annual report written in next contract period.
Planned Metrics: * Primary R, M, and E Focal Area : Population Status
 * Primary R, M, and E Type : Status and Trend Monitoring
Primary Focal Species: Chinook - Upper Columbia River Spring ESU | Steelhead - Upper Columbia River DPS



Milestone Title	Start Date	End Date	Status	Milestone Description
A. Develop RFP and predetermined queries and reports	8/1/2010	10/31/2010	Active	Collaborate with researchers in Columbia Basin to identify uses for PIT tag data. Develop RFP for subcontractors.
B. Publish RFP	11/1/2010	11/30/2010	Active	Publish RFP for subcontractors to develop proposals
C. Identify and award subcontract	12/1/2010	12/31/2010	Active	Award subcontract and work with contractor on project
Deliverable: D. Software application for PIT tag generated from in-stream arrays		3/1/2011	Active	<i>See the Deliverable Specification above</i>

F: 70. Install Fish Monitoring Equipment

Title: Install permanent in-stream PIT tag arrays in preselected locations
Description: Construct and install permanent PIT arrays in selected tributaries of the upper Columbia Basin
Deliverable Specification: Install and operate PIT tag arrays at selected locations
Primary Focal Species: Chinook - Upper Columbia River Spring ESU | Steelhead - Upper Columbia River DPS
Country: US **NPCC Subbasin:** Multiple
State: WA **HUC5 Watershed:** Multiple
County: Multiple **HUC6 Name:** Multiple
Salmonid ESUs Present: Outside legal CKUCS (Upper Columbia River Spring-run Chinook Salmon ESU) boundary (<multiple>) | Upper Columbia River Spring-run Chinook Salmon ESU (<multiple>) | Upper Columbia River Steelhead DPS (<multiple>)

Milestone Title	Start Date	End Date	Status	Milestone Description
A. Environmental compliance requirements complete	7/1/2010	7/1/2010	Active	On-the-ground work associated with this work element cannot proceed until this milestone is complete. Milestone is complete when final documentation is received from BPA environmental compliance staff (completion can be based on pre-existing environmental documentation from BPA).
B. Identify specific sites in target streams	7/2/2010	6/30/2011	Active	Identify locations and acquire permission to access and install arrays. Record location using GPS and record stream width to determine antenna length and width.
C. Purchase, fabrication, construction, and/or installation of the equipment or facility	7/2/2010	6/30/2011	Active	Construct and install permanent arrays as conditions permit.
Deliverable: D. Install PIT tag arrays		6/30/2011	Active	<i>See the Deliverable Specification above</i>

G: 159. Transfer/Consolidate Regionally Standardized Data

Title: Upload PIT tag data to PTAGIS database
Description: Collect raw PIT tag data from arrays, convert to appropriate, and upload to PTAGIS database on weekly basis.
Deliverable Specification: Upload data to regional PTAGIS database on a weekly basis
Primary Focal Species: Chinook - Upper Columbia River Spring ESU | Steelhead - Upper Columbia River DPS

Milestone Title	Start Date	End Date	Status	Milestone Description
A. Upload PIT tag data to PTAGIS database	7/1/2010	6/30/2011	Active	Coordinate with PTAGIS data manager regarding new permanent sites. Upload data on weekly basis to database
Deliverable: B. PIT tag recapture data		6/30/2011	Active	<i>See the Deliverable Specification above</i>

H: 157. Collect/Generate/Validate Field and Lab Data

Title: Estimate the number of hatchery and wild steelhead
Description: Use recently developed software application to determine the number of hatchery and wild steelhead that spawned upstream of a selected array.
Deliverable Specification: Estimate total number of hatchery and wild steelhead by expanding recaptures by brood year specific tagging rates.
Planned Metrics:
 * Primary R, M, and E Focal Area : Population Status
 * Primary R, M, and E Type : Status and Trend Monitoring
 * Secondary R, M, and E Type : Uncertainties Research
Primary Focal Species: Steelhead - Upper Columbia River DPS
Country: US **NPCC Subbasin:** Multiple



State: WA **HUC5 Watershed:** Multiple
County: Multiple **HUC6 Name:** Multiple
Salmonid ESUs Present: Outside legal CKUCS (Upper Columbia River Spring-run Chinook Salmon ESU boundary (<multiple>) | Upper Columbia River Spring-run Chinook Salmon ESU (<multiple>) | Upper Columbia River Steelhead DPS (<multiple>)

Milestone Title	Start Date	End Date	Status	Milestone Description
A. Environmental compliance requirements complete	7/1/2010	7/1/2010	Active	On-the-ground work associated with this work element cannot proceed until this milestone is complete. Milestone is complete when final documentation is received from BPA environmental compliance staff (completion can be based on pre-existing environmental documentation from BPA).
B. Determine number of steelhead at each array	7/2/2010	6/30/2011	Active	Query new software database for steelhead that spawned upstream of the array.
C. Estimate total number of steelhead	6/1/2011	6/30/2011	Active	Expand steelhead recaptures by brood year specific PIT tag rates. Estimate total number of hatchery and wild steelhead that spawned upstream of the array.
Deliverable: D. Number of hatchery and wild steelhead.		6/30/2011	Active	<i>See the Deliverable Specification above</i>

I: 70. Install Fish Monitoring Equipment

Title: Install temporary PIT tag arrays in preselected locations
Description: Construct and install temporary PIT tag arrays for determining upper distribution of steelhead spawning habitat. Remove antennas when spawning is complete.
Deliverable Specification: Number of temporary antennas built, installed and removed.
Primary Focal Species: Steelhead - Upper Columbia River DPS
Country: US **NPCC Subbasin:** Multiple
State: WA **HUC5 Watershed:** Multiple
County: Multiple **HUC6 Name:** Multiple
Salmonid ESUs Present: Upper Columbia River Spring-run Chinook Salmon ESU (accessible) | Upper Columbia River Steelhead DPS (accessible)

Milestone Title	Start Date	End Date	Status	Milestone Description
A. Environmental compliance requirements complete	7/1/2010	7/1/2010	Active	On-the-ground work associated with this work element cannot proceed until this milestone is complete. Milestone is complete when final documentation is received from BPA environmental compliance staff (completion can be based on pre-existing environmental documentation from BPA).
B. Purchase, fabrication, construction, and/or installation of the equipment or facility	7/2/2010	4/1/2011	Active	Build and install temporary antennas at the upper distribution of survey areas before spawning begins.
C. Remove antenna after spawning is complete	6/1/2011	6/30/2011	Active	Remove all temporary antennas after spawning is complete and all potential kelts have moved downstream.
Deliverable: D. Temporary PIT tag antennas		6/30/2011	Active	<i>See the Deliverable Specification above</i>

J: 157. Collect/Generate/Validate Field and Lab Data

Title: Estimate number of steelhead spawning outside of survey area
Description: Determine number of steelhead detected at temporary PIT tag antennas and expand by brood year or run year specific tag rates.
Deliverable Specification: Number of steelhead detected at upper limits of habitat
Planned Metrics:
 * Primary R, M, and E Focal Area : Population Status
 * Primary R, M, and E Type : Status and Trend Monitoring
 * Secondary R, M, and E Type : Uncertainties Research
Primary Focal Species: Steelhead - Upper Columbia River DPS
Country: US **NPCC Subbasin:** Multiple
State: WA **HUC5 Watershed:** Multiple
County: Multiple **HUC6 Name:** Multiple
Salmonid ESUs Present: Upper Columbia River Spring-run Chinook Salmon ESU (accessible) | Upper Columbia River Steelhead DPS (accessible)



Milestone Title	Start Date	End Date	Status	Milestone Description
A. Environmental compliance requirements complete	7/1/2010	7/1/2010	Active	On-the-ground work associated with this work element cannot proceed until this milestone is complete. Milestone is complete when final documentation is received from BPA environmental compliance staff (completion can be based on pre-existing environmental documentation from BPA).
B. Download temporary arrays on weekly basis during spawning season	3/1/2011	6/1/2011	Active	Download temporary arrays on weekly basis during spawning season
C. Estimate the number and origin of steelhead outside spawning area	6/1/2011	6/30/2011	Active	Expand number of detections by tag rate to estimate total number of steelhead
Deliverable: D. Number of steelhead that spawned outside of survey area		6/30/2011	Active	<i>See the Deliverable Specification above</i>

K: 157. Collect/Generate/Validate Field and Lab Data

Title: Estimate spring Chinook redd observer efficiency

Description: Estimate observer efficiency in detected spring Chinook redds by conducting intensive census surveys of index areas. Subsequently, conduct multiple naive independent surveys of census areas and determine proportion of redds observed correctly.

Deliverable Specification: Estimates of observer efficiency will be calculated based on the "true" number of redd in the census areas. Multiple independent observers will provide data for estimating variance of redd counts in the Methow Basin.

Planned Metrics:
 * Primary R, M, and E Focal Area : Population Status
 * Primary R, M, and E Type : Status and Trend Monitoring

Primary Focal Species: Chinook - Upper Columbia River Spring ESU

Country: US **NPCC Subbasin:** METHOW

State: WA **HUC5 Watershed:** Multiple

County: OKANOGAN **HUC6 Name:** Multiple

Salmonid ESUs Present: Upper Columbia River Spring-run Chinook Salmon ESU (accessible) | Upper Columbia River Steelhead DPS (accessible)

Milestone Title	Start Date	End Date	Status	Milestone Description
A. Environmental compliance requirements complete	7/1/2010	7/1/2010	Active	On-the-ground work associated with this work element cannot proceed until this milestone is complete. Milestone is complete when final documentation is received from BPA environmental compliance staff (completion can be based on pre-existing environmental documentation from BPA).
B. Identify spring Chinook census areas in Methow Basin	7/2/2010	7/31/2010	Active	Identify specific stream reaches in the Twisp, Chewuch and Methow rivers, based on historical data, that can be surveyed in a single day.
C. Conduct surveys of census area per protocol	8/1/2010	9/30/2010	Active	Conduct surveys per protocol and map all features within census area.
D. Conduct independent surveys of census areas per protocol	8/1/2010	9/30/2010	Active	Conduct independent surveys using naive surveyors and map all redds.
E. Analyze results and estimate observer efficiency and calculate variance	10/1/2010	10/31/2010	Active	Calculate observer efficiency for each independent surveyor based on known number of redds in census area. Quantify errors as either omission or false identification.
Deliverable: F. Estimates of observer efficiency		10/31/2010	Active	<i>See the Deliverable Specification above</i>

L: 185. Produce Pisces Status Report

Title: Periodic Status Reports for BPA

Description: The Contractor shall report on the status of milestones and deliverables in Pisces. Reports shall be completed quarterly as determined by the BPA COTR. Additionally, when indicating a deliverable milestone as COMPLETE, the contractor shall provide metrics and the final location (latitude and longitude) prior to submitting the report to the BPA COTR.

Deliverable Specification:



Milestone Title	Start Date	End Date	Status	Milestone Description
A. Jul-Sep 2010 (7/1/2010 - 9/30/2010)	10/1/2010	10/15/2010	Active	
B. Oct-Dec 2010 (10/1/2010 - 12/31/2010)	1/1/2011	1/15/2011	Active	
C. Jan-Mar 2011 (1/1/2011 - 3/31/2011)	4/1/2011	4/15/2011	Active	
D. Final Apr-Jun 2011 (4/1/2011 - 6/30/2011)	6/16/2011	6/30/2011	Active	

M: 132. Produce (Annual) Progress Report

Title: Submit Progress Report for the period (July 2010) to (June 2011)
Description: Date range (July 2010) to (June 2011) is agreed upon by the COTR and the contractor. This will not coincide with the contract period. This is an ongoing project and a progress report covering the contract period will be submitted under the subsequent contract. This is approved by the COTR.

The progress report summarizes CR-136226 for which this contract is one small part and any work completed will be included in a single annual report. The annual report for CR-136226 will include the project goal, objectives, hypotheses, completed and uncompleted deliverables, problems encountered, lessons learned, and long-term planning. Examples of long-term planning include future improvements, new directions, or level of effort for contract implementation, including any ramping up or ramping down of contract components or of the project as a whole.

Deliverable Specification:

Milestone Title	Start Date	End Date	Status	Milestone Description
A. Review progress report format requirements	6/1/2011	6/30/2011	Active	WDFW will produce this report as a deliverable under a subsequent contract, approved by the COTR, in the summer of 2011.

Inadvertent Discovery Instructions

BPA is required by section 106 of the National Historic Preservation Act (NHPA) to consider the effects of its undertakings on historic properties (16 USC 470). Prior to approving the expenditure of funds or conducting a federal undertaking, BPA must follow the section 106 process as described at 36 CFR 800. Even though BPA has completed this process by the time an undertaking is implemented, if cultural materials are discovered during the implementation of a project, work within the immediate area must stop and the significance of the materials must be evaluated and adverse effects resolved before the project can continue (36 CFR 800.13(b)(3)). The Inadvertent Discovery of Cultural Resources Procedure form outlines the steps to be taken and notifications to be made. If the undertaking takes place on tribal lands (16 USC 470w), BPA must also "comply with applicable tribal regulations and procedures and obtain the concurrence of the Indian tribe on the proposed action" (36 CFR 800.13(d)).

Inadvertent Discovery of Cultural Resources Procedure form:
<http://www.efw.bpa.gov/IntegratedFWP/InadvertentDiscoveryProcedure.pdf>