REQUEST FOR PROPOSAL (RFP)

Professional Engineering Services

Coonskin Creek Fish Passage Planning and Design

CONFEDERATED TRIBES OF THE UMATILLA INDIAN RESERVATION

Department of Natural Resource Fisheries Program

Umatilla Tribe Ceded Area Juvenile and Adult Fish Passage Improvement Project

RFP NO. 2024-02/444-024

Date Issued: August 20, 2024

Administrative Contact: Julie A. Burke (julieburke@ctuir.org)
(541) 429-7292

Technical Contact: Michael Lambert (mikelambert@ctuir.org)
(541) 429-7240, (541) 310-7972 (cell)

Table 1. Critical Proposal and Project Dates:

PROJECT SCHEDULE	
Field Site Tour (Voluntary)	August 30, 2024, Friday at 9:00 AM PST
Question Submission Deadline	September 10, 2024
Question Responses	September 16, 2024
Proposal Submission Deadline	September 30, 2024, 2:00 PM PST
Tentative Award Selection (est.)	October 4, 2024
Contract Award (est.)	October 18, 2024
Project Initiation	October 21, 2024
Project Completion	December 30, 2025

Part I – General Information and RFP Process

1.1 Project Purpose and Location

The Confederated Tribes of the Umatilla Indian Reservation (CTUIR), Department of Natural Resources (DNR) Fisheries Program is requesting proposals from professional engineering firms to assess fish passage, develop alternatives, develop full engineer construction set design and permits (e.g. DSL-Corps Fill/Removal, ODEQ 401 WQ, and ODFW Fish Passage) of preferred alternative, and provide construction engineering oversite for the Coonskin Fish Passage Project. The Coonskin Fish Passage Project is located on the Confederated Tribes of the Umatilla Indian Reservation on Allotted Trust property, located about 7 miles east of Mission on Cayuse Road (Umatilla County Road 900; Figure 1& Attachment A).

Figure 1. Coonskin Creek Fish Passage Barrier Location

The Project site includes a degraded concrete cap in the channel intended to protect a historic City of Pendleton municipal water infrastructure pipe buried under Coonskin Creek and two downstream log and rock structures for grade control and fish passage that are no longer in compliance of fish passage criteria. The project also includes evaluation of the Umatilla County Road 900 culvert for fish passage compliance and as necessary providing engineering solutions if out of compliance. The project is intended to improve fish passage for Endangered Species Act-listed Mid-Columbia Summer Steelhead and other native fish. Coonskin Creek is listed as critical habitat for Mid-Columbia Summer Steelhead.

Project objectives include:

1. Evaluate fish passage on lower Coonskin Creek using current NOAA and ODFW fish passage criteria.
2. Enhance/restore fish passage for summer steelhead and other native fish, and
3. Improve floodplain and channel function in support of fish passage criteria.

1.2 Scope of the RFP

This RFP describes the specific services to be contracted and provides information for preparation and submittal of proposals. An explanation of the proposal evaluation process is provided with terms and conditions of the contract that may be awarded as a result of the RFP.

Tasks and products from this engineering services contract will include: field surveys and data collection, compilation of available data and information (e.g., redd surveys, LIDAR and aerial imagery, etc.), hydraulic modeling and sediment analyses, project planning and participation on interdisciplinary planning team, refinement of objectives, development and analysis of alternatives, selection of preferred alternative, participation in BPA's HIP IV review process at 15, 30, and 60% design intervals and coordination with National Oceanic and Atmospheric Administration (NOAA) and ODFW fish passage programs, and preparation of 100% design, construction drawings and specifications, basis for design report, and preliminary cost estimate, and development of environmental compliance permits.

The Contractor's proposal will demonstrate diligence and focus, identify any discrepancies or lack of detail, articulate assumptions, and present suggestions to resolve any questions.

1.3 Project Timeline

The project is scheduled to begin **October 21, 2024, with completion by December 30, 2025.** Construction window will be July 1 through September 30, 2026.

1.4 Closing Date for Proposal Submissions and Proposal Opening

The closing date for submissions will be on **September 30, 2024, 2PM** prevailing local time. Proposals received after the specified time will not be considered. Contractors must email their proposals as a PDF attachment to:

Julie Burke
Email: julieburke@ctuir.org

The subject line of the email shall clearly state "**Coonskin Creek Fish Passage Planning and Design.**"

1.5 In Writing

Proposals shall be prepared by printer or typewriter. No oral, handwritten, telephone, e-mail, or facsimile Proposals will be accepted.

1.6 Necessary Information

Proposals must contain all information requested in the RFP. The CTUIR will not consider additional information submitted after the Closing Date and may reject incomplete proposals.

1.7 Cost of Proposals

The CTUIR shall not be liable for any expenses incurred by Contractors in either preparing or submitting Proposals, evaluation/selection, or contract negotiation process, if any.

1.8 Request for Clarification

Contractors may submit a written request for clarification via email by COB **September 10, 2024.** Questions regarding the RFP or request for clarification shall be emailed to the RFP technical contact. The CTUIR will not consider any requests submitted after the time period specified above.

1.9 Response to Requests for Clarification

Responses to questions will be provided no later than COB **September 16, 2024**.

1.10 Proposals Constitute Firm Offers

Submission of a Proposal constitutes Contractor's affirmation that all terms and conditions of the Proposal constitute a binding offer that shall remain firm for a period of ninety (90) days from the Closing Date.

1.11 Signature Required; Proposer Affirmations

An authorized representative of the Contractor must sign the original Proposal Manually (then scanned) or by electronic signature. Contractor's signature and submission of a signed Proposal in response to the RFP constitute Contractor's affirmation that the Contractor agrees to be bound by the terms and conditions of the RFP and by all terms and conditions of the Contract awarded.

1.12 Type of Contract

The CTUIR shall execute a Subcontract for A&E Services.

1.13 Confidential Information

Proposals are confidential until the evaluation and selection process has been completed and the CTUIR has issued a notice of tentative award. Any information a Contractor submits in response to the RFP that the Contractor considers a trade secret or confidential proprietary information, and Contractor wishes to protect from public disclosure, must be clearly labeled with the following:

"This information constitutes a trade secret or confidential proprietary information and is not to be disclosed except in accordance with applicable public disclosure laws."

1.14 Requests for Further Clarification of Proposals

The CTUIR may request additional clarification from Contractors on any portion of the Proposal.

1.15 Cancellation of RFP

The CTUIR may cancel this RFP at any time upon finding that it is in the CTUIR's best interest to do so.

1.16 Rejection of Proposals

The CTUIR may reject a particular Proposal or all Proposals upon finding that it is in the CTUIR's best interest to do so.

1.17 Tentative Award and Contract Negotiations

The CTUIR will provide a written tentative award notice to the responsible Contractor whose proposal is deemed to be most advantageous and of best value towards meeting the project objectives. The CTUIR will enter into negotiations with the responsible Contractor on the following contract terms: (a) Contract tasks; (b) Staffing; (c) Performance Schedule; and (d) A maximum, not to exceed contract price, which is consistent with the Proposal and fair and reasonable to the CTUIR, taking into account the estimated value, scope, complexity, and nature of the services to be provided. The CTUIR may also negotiate the statement of work and, at its discretion, add to the scope of services based on a Contractor's recommendations (but still within the scope of this RFP) or reduce the scope of services.

Final award will be contingent upon successful negotiation of a contract within 14 days after the tentative award.

The CTUIR may terminate negotiations if they fail to result in a contract within a reasonable time. The CTUIR will then enter into negotiations with the next responsible Contractor, and if necessary the third responsible Contractor. If the second or third round of negotiations fails to result in a contract, the CTUIR may formally terminate the solicitation.

1.18 Protest of Tentative Award Selection

A notification of tentative award to the responsible bidder will be sent to all Contractors that submitted a Proposal in response to this RFP. A Contractor who claims to have been adversely affected by the selection of a competing Contractor shall have seven (7) calendar days after receiving the notice of selection to submit a written protest of the selection to the RFP contact listed in Part 1.4. The CTUIR will not consider protests submitted after the date established in this Part. The protest must specify the grounds upon which the Protest is based.

1.19 Award

After expiration of the seven (7)-calendar day selection protest period and resolution of all protests, the CTUIR will proceed with final award.

1.20 Investigation of References

The CTUIR reserves the right to investigate the references and past performance of any Contractor with respect to its successful performance of similar services, compliance with RFP and contractual obligations, and its lawful payment of suppliers, sub-Contractors, and employees. The CTUIR may postpone award or execution of the contract after the announcement of the apparent successful Contractor in order to complete its investigation. The CTUIR reserves the right to reject any proposal at any time prior to the execution of any resulting contract.

1.21 Amendments

The CTUIR reserves the right to amend the resulting Contract from this RFP. Amendments could include but are not limited to, changes in the statement of work, extension of time and consideration changes for the Contractor. All amendments shall be in writing and signed by all approving parties before becoming effective. Only the CTUIR has the final authority to execute changes, notices or amendments to Contract.

1.22 Tour of Site

A pre-bid tour of the site for Contractors is voluntary, however, we encourage contractors to attend to better inform their bid. The site tour is scheduled on **August 30, 2024, from 9:00 AM to 12:30 PM PST.** Interested contractors should meet at the CTUIR Governance Center at **46411 Timíne Way, Pendleton, Oregon, 97801.** Contractors planning to tour the project site are encouraged to confirm attendance with the contacts by 4:00 pm the day before the tour is scheduled. Contact Michael Lambert, (541) 429-7240 or email mikelambert@ctuir.org.

PART II – SERVICES AND MATERIALS TO BE PROVIDED

2.1 Scope of Work

Project planning and design scope includes data collection, field survey, hydrologic and hydraulic analyses and modeling, project planning, refinement of objectives, alternatives development and analysis, selection of preferred alternative, and development of design for preferred alternative, including 15% concept, 30% design, 80% design and final (100% design passage) construction ready design package and permits (e.g. DSL-Corps Fill/Removal, ODEQ 401 WQ, and ODFW Fish Passage) with accompanying hydraulic model and sediment analysis, basis of design report, construction surface model, and engineer cost estimate.

The existing conditions includes an approximate 20ft by 20ft concrete apron with no defined channeled and two previously built log weir structures that don't meet current juvenile jump height criteria. There is also a bedrock step downstream of these structures that currently delays or prevents fish passage. Lastly, the County Road at the upper end of the project may be perched and limit fish passage due to the culvert entry. The reach over about 0.5 miles needs to be surveyed using current NOAA and ODFW passage criteria to identify passage concerns. The Contractor will develop a design over the entire reach to rectify fish passage concerns and fully meet NOAA and ODFW fish passage criteria for juvenile and adult ESA-listed Mid-Columbia River summer steelhead. The site also includes opportunities to potentially improve instream habitat conditions. A list of desired project needs and criteria are detailed include:

- Meets NOAA/ODFW fish passage criteria.
- Minimize passage delay and injury.
- Potentially improve off-channel juvenile salmonid rearing habitat.
- Enhancement critical during the seasonal flow hydrograph (October-June)

2.2 Project Tasks and Milestones

The scope of work will require completing the outlined tasks and developing milestones and schedule to complete tasks, gathering available information and data for the site, including completing topographic survey to provide an existing condition surface for hydraulic modeling which will support assessment of fish passage, sediment, and project planning. Project area features (concrete weir protection pad, historic wood/rock control structures, County Road culvert and channel bedrock outcrop), will also be surveyed. Design alternatives will be developed and evaluated with selection of a preferred alternative that meets NOAA and ODFW fish passage criteria and considers fish habitat opportunities.

Project planning includes scoping, communication with partners, and refinement of objectives, development of alternatives and concepts, and selection of a preferred alternative. The preferred alternative will be further developed through an iterative process, as outlined in Table 2, with design intervals of 15, 30, 80 and 100%. Requirements of the ESA will be completed through the BPA HIP IV process with review by the BPA Restoration Review Team (RRT) and will begin with the 15% Conceptual Design and continue through Final Design. This process will also include review by the ODFW Fish Passage Program, NOAA Hydraulic Engineer, and landowners. A draft Basis of Design Report will be developed at the 30% design stage and submitted to the

RRT as well as project partners. Review comments will be considered and incorporated into the 80% and 100% final designs.

2.21 TASKS

Anticipated tasks for administration, planning, design and permitting with need for deliverables:

Task 1 – Data Collection and Analysis of Existing Data

- Conduct an initial site visit and review existing topographic survey data.
- Complete a fish passage survey assessment using NOAA and ODFW fish passage criteria to assess the stream for fish passage deficiencies that need design solutions.
- Complete a wetland delineation.
- Conduct survey work and data collection as needed to develop a design and complete permits.
- Review hydrologic analyses and determine recurrence flows for design.
- Collate existing CTUIR physical and ecological data.

Task 2 – Develop Three Conceptual Alternatives (15% Design)

- Conduct hydrologic, hydraulic and sediment analysis, prepare and present results to support planning and alternatives development.
- Create 15% design drawings of conceptual alternatives (in addition to no action alternative) that address project objectives.
- Include project descriptions in written report.
- Develop initial cost estimates for design and implementation of each alternative.

Task 3 – Conceptual Alternatives Scoring and Ranking

- Organize meeting with CTUIR Fisheries Program technical staff and other agency staff (County Public Works, ODFW, etc.) as needed to rank conceptual alternatives.
- Ranking shall consider project objectives, design and implementation cost, sustainability, constructability, permitting, environmental regulations, additional habitat benefits, and public acceptance.
- Summary of alternative ranking to be included in the written report.

Task 4 – Conceptual Design Written Report

- Summarize data collection and assessments of existing data.
- Document calculations, technical analyses, and hydraulic modeling.
- Provide a description of the conceptual alternatives.
- Discuss and detail design and implementation costs for each concept.
- Provide conceptual engineering drawings (15%) of existing conditions and concepts. Drawings shall identify:
    - Landowners and relevant boundaries,
    - Expected Area of Potential Effects (APE),
    - Roads and infrastructure,
    - Profiles and cross sections with water surfaces relevant to designs,
    - Structural conceptual-level details,
    - North arrows and flow directions,
    - Wetlands and ordinary high water delineations, and
    - Structural dimensions.
- Identify and describe criteria for conceptual alternatives scoring.

- Detail and summarize concept scoring.
- Address environmental compliance comments (HIP IV)

Task 5 – 30% Design of Preferred Alternative and Draft Basis of Design Report

- Summarize data collection and assessments of existing data.
- Document calculations, technical analyses, and hydraulic modeling.
- Provide a description of the preferred alternative.
- Update estimated implementation cost.
- Provide engineering drawings (30%). Drawings shall identify:
    - Landowners and relevant boundaries,
    - Expected Area of Potential Effects (APE),
    - Roads and infrastructure,
    - Profiles and cross sections with water surfaces relevant to designs,
    - Structural details,
    - North arrows and flow directions,
    - Wetlands and ordinary high-water delineations, and
    - Structural dimensions.
- Address environmental compliance comments (HIP IV)

Task 6 – 80% Design of Preferred Alternative and Basis of Design Final Report

- Summarize data collection and assessments of existing data.
- Document calculations, technical analyses, and hydraulic modeling.
- Provide a description of the preferred alternative.
- Update estimated implementation cost.
- Calculated materials cut/fill necessary for permitting and construction bid packages.
- Provide engineering drawings (80%). Drawings shall identify:
    - Landowners and relevant boundaries,
    - Final Area of Potential Effects (APE),
    - Roads and infrastructure,
    - Profiles and cross sections with water surfaces relevant to designs,
    - Structural details,
    - North arrows and flow directions,
    - Wetlands and ordinary high-water delineations, and
    - Structural dimensions.
- Develop final basis for design report
    - Outlines directly how project meets NOAA/ODFW fish passage criteria, pre- and post-implementation,
    - Specifically address how project meets DEQ TMDL water quality stream listings.
- Address environmental compliance comments (BPA HIP IV)

Task 7 – Final (100 Design) Design Package

- Final engineering and design efforts to prepare a 100 percent ready-to-bid package will be completed and, upon the review team's authorization, can be issued for construction.
- The final construction bid documents will include the Oregon Professional Engineer stamped drawings, construction schedule, and technical specifications necessary and suitable to bid and construct the project.

- The complete construction package will include an implementation plan that will summarize recommended environmentally responsible construction methods and/or protocols necessary to fulfill project goals and objectives, while maximizing construction efficiency.
- Provide engineering drawings (100%). Drawings shall identify:
    - Landowners and relevant boundaries,
    - Expected Area of Potential Effects (APE),
    - Roads and infrastructure,
    - Profiles and cross sections with water surfaces relevant to designs,
    - Structural details,
    - North arrows and flow directions,
    - Wetlands and ordinary high-water delineations, and
    - Structural dimensions.
- Develop and provide a construction surface model for construction contractor implementation.
- Address environmental compliance comments (BPA HIP IV)

Task 8 – Project Permitting

- Environmental compliance permitting will include applying for and obtaining a U.S. Army Corps of Engineers and Oregon Division of State Lands Joint Permit Application (JPA) removal/fill permit, Oregon Department of Environmental Quality Section 401 Water Quality Certification, Oregon Department of Fish and Wildlife fish passage plans and CTUIR Development and Stream Zone Alteration Permits.
- The projects will also need review and approval through the BPA RRT to ensure all required conservation measures and best management practices are implemented, and obtain approval through the National Marine Fisheries Service Northwest Region Hydropower Division.
- Assume a wetland delineation will be necessary given the potential habitat enhancements necessary to address passage deficiencies.

Task 9 – Project Management and Coordination

- This task includes staff time for various duties related to kick off meeting, and project design review meetings and administration (general communications, project set up, invoicing, etc.). Based on past experience with BPA funded and reviewed projects, we expect a total of 4 project design review meetings to occur at project kickoff, and at each design stage.

Task 10 – Engineering Oversight

- This task includes engineer staff time to provide technical guidance throughout project implementation. We anticipate construction work window of 6-10 weeks.
- Project site visits during construction to support implementation in meeting engineering technical design compliance.
- Provide engineering support for design change notices when technical problems requires engineering design sheets for construction purposes.
- Project will require staff time for administrative tasks, general communication on project activities and availability to discuss on the phone or web meeting project technical needs.

2.3 Deliverables and Timeline

The following are expected minimum deliverables. The project timeline would start with a fully executed contract with end date of December 30, 2025. Final deliverables and timeline will be negotiated in the contracting process, and proposals that meet technical soundness in deliverables/schedule, efficiency, and/or novel approaches where applicable are strongly encouraged.

Meetings:

- Kickoff meeting (CTUIR Offices in Mission);
- Site walkthrough.
- Conceptual design documenting the relevant concepts and constraints. This project will require careful examination of historic conditions compared to an analytical solution to the new channel design. The approach, or hybridization of approaches, will be discussed and documented.
- 15% design review by the project technical team (comprised of CTUIR, the landowner and the Contractor); and,
- 30%, 60%[1], 90%, and 100 % final design and HIP IV compliance.

Products:

- Raw data and results of site analysis, following standardized CTUIR GIS Department requirements (Attachment B).
- Project area maps including Area of Potential Effect in PDF and designs in AutoCAD format version 2000 or newer, using dwg or dxf formats.
- Plan view map of the channel reconstruction area.
- A complete and comprehensive survey of the project area.
- Written specifications and drawings describing the channel de-watering plan.
- Fish passage and habitat assessment of project area using NOAA/ODFW fish passage criteria.
- Wetland delineation.
- Flow analysis.
- Sediment analysis.
- Shear Stress, Velocity and Scour Depth analysis.
- Estimates of the total amount of cut and/or fill volume of earthen material. Must meet the US Army Corps of Engineers/Oregon Division of State Lands Joint Permit Application requirements.
- Completion of all necessary permits and other environmental compliance documents.
- Signed and stamped drawings (Oregon Engineer License required). Drawings and written technical specifications that describe each aspect of the channel restoration work to be accomplished during construction. Drawings, technical reports and written specifications should provide sufficient detail to enable regulatory agency permitting and construction of the project.
- Engineering assistance and availability for the consultation process.
- Cost estimates of the proposed actions.
- A price quote for the work to be completed under this document.
- Construction surface model of final construction design.

[1] NOTE: The 60% design will also require an itemized cost estimate for construction implementation, and the production of the Area of Potential Effect Shapefiles.

The selected Contractor will work closely with the CTUIR in understanding concerns and goals for the project. The Contractor will review existing physical and ecological data and collect additional data as needed to meet the requirements listed below. This effort will ultimately provide background assessment information and specific recommendations for passage and habitat restoration actions for the project area.

2.4 Team Competencies

The following are recommendations for minimum consultant team competencies. One person might fill more than one role, and it is expected that proposals will include additional competencies as required.

- Project Manager (Coordination and Planning)
- Civil/Hydraulic Engineer (with current Oregon PE License)
- Geomorphologist/Hydrologist
- Botanist

2.5 Required Proposal Components

For this RFP, prospective contractors will submit a proposal package (maximum 40 pages) to the Administrative Contact (see Section 1.4) that includes the following components:

A. Cover letter

B. Executive summary

C. Proposed method of task completion

a. Describe proposed methods, approach, and expected deliverables to assess conceptual alternatives that address project goals and objectives. Creative and innovative approaches and alternatives are encouraged.
b. Include the development of baseline and proposed conditions.
c. Explain how the requirements for BPA's HIP process will be completed and how design tasks will inform that process.
d. Describe the final design outputs and products; passage, wetland delineation, and basis for design reports; and permits.

D. Qualifications and experience

a. Company background and available resources: Provide information regarding the areas of specific expertise and types of services offered by the company and technical staff that relate directly to this scope of work. Describe engineering experience and expertise within the region related to designing improved fish passage and habitat conditions for salmon and steelhead.
b. Design team: Provide a description of the specific design team members and their qualifications, relevant to improving fish passage and natural river design. Staff biographies for each member should be included and demonstrate experience in hydraulic modeling, channel design, and habitat restoration driven by habitat limiting factors and fishery life history requirements.
c. Project examples: Identify and describe a minimum of three engineering design projects that are like the proposed project, which has been successfully completed within the past five years.

E. Project Schedule

a. Provide a detailed project schedule consistent with meeting project purpose, tasks, milestones and schedule.
b. Modifications to the timeline within the stated initiation and completion dates for improved effectiveness and/or efficiency are encouraged.

F. Price Quote

a. Provide a project planning and design budget that details hours and rates for each primary design team member to complete the proposal tasks.
b. Include costs for all subcontractors.
c. Use FY 2025 GSA Per Diem Rates for lodging, meals & incidentals when developing travel portion of bid.

G. References

a. Provide at least three client references.
b. Include contact information (names, physical and email addresses, phone numbers), project type, general project actions, and cost.

PART III – Selection Criteria

Proposal selection will be completed through a quality-based selection process (QBS) by a review team. The criteria to be evaluated and weighted are: 1) Adequacy of Technical Proposal, 2) Personnel and Company Qualifications, 3) Costs, and 4) Indian Preference.

I. **Adequacy of Technical Proposal**: (180 points) 45%
- Proposal content and applicability of the approach and methodologies for addressing and completing tasks and milestones in Section III (100)
- Creative, efficient, and/or novel approaches presented (30)
- Incorporation of habitat improvements in addition to fish passage (25)
- Adequacy of proposed modeling and data analysis methods (25)

II. **Personnel and Company Qualifications**: (120 points) 30%
- Technical experience of principal project staff related to the project performance (50)
- Experience in developing and engineering similar passage design projects (50)
- Educational qualifications related to the project performance (20)

III. **Cost:** : (80 points) 20%

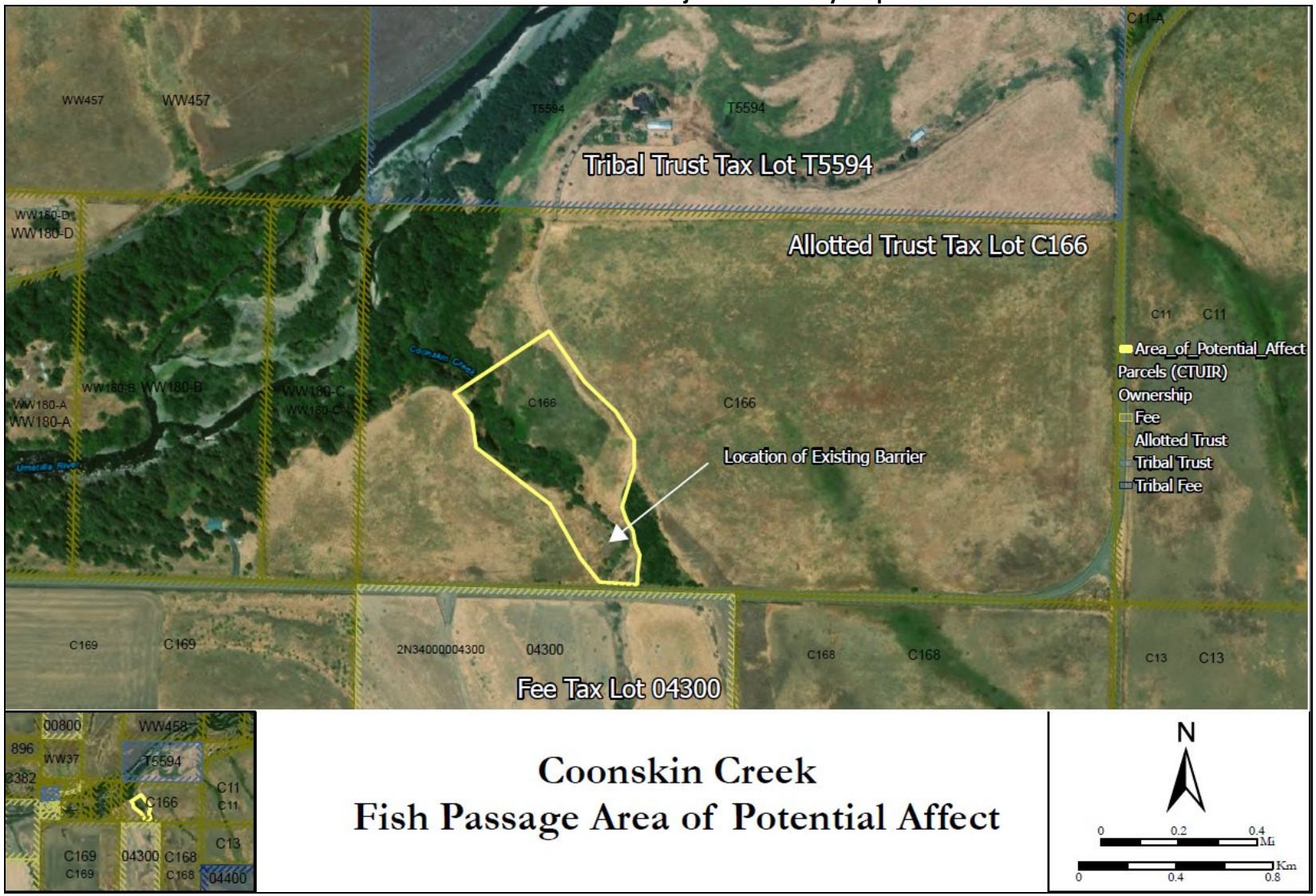
Design cost and value will be considered for addressing all questions and completion of all tasks described in Section 2

VI. **Indian Preference**: 20-points 5%

Must meet these factors in order to secure Indian Preference status;
- Membership in a Federally recognized Tribe;
- Indian Ownership of 51% or more;
- Indian Control;
- Indian Management;
- Financing obtained by Indian person; and,
- Equipment obtained by Indian person.

The CTUIR will issue a contract agreement to the responsible Contractor whose proposal is deemed to be most advantageous and of best value towards meeting the project objectives.

Attachment A: Project Site Vicinity Map



Coonskin Creek
Fish Passage Area of Potential Affect

ATTACHMENT B: GIS Standards and Requirements

The CONTRACTOR shall provide the TRIBES with a digital copy of all finished products that include geographic information. All geographic information shall be delivered in a digital, georeferenced format. Metadata shall be included with all deliverables. The TRIBES use ESRI ArcGIS software as its standard GIS platform, SQL server as its primary database software. This schedule provides a minimum set of requirements for the delivery of GIS files being created for CTUIR. Further requirements may be included in the project implementation plan. All geographic data shall be expected to meet these minimum levels of standards.

If attribute information are collected in addition to geographic positions the CONTRACTOR shall provide a digital data dictionary file that has been approved by the persons responsible for the contract for CTUIR in terms of expected content and format. The data dictionary file must describe all the associated attribute information. Included in the data dictionary must be a definition of each table and each column within the table. The table definition must include the purpose, structure, and a list of any associated features. The column definition must include the data type, data precision, and a brief description of each of the values that may be included in the column (including an explanation of any abbreviations or codes that are utilized). If an extensive number of abbreviations or codes will be utilized to populate a column, a separate domain list shall be provided All domain list values must be accompanied by a description especially in the case of abbreviations. The preferred delivery format for all GIS attribute tables is a comma delimited, ASCII text file format with all column headings specified.

1. Data Collection Standards.

1.1. Survey Data Standards. CONTRACTOR shall:

1.1.1. use known Tribal survey monuments if working within the reservation boundary,

1.1.2. meet a minimum level or accuracy for all survey work ($1/100^{th}$ of a foot), and

1.1.3. submit a digital file of all survey points and a digital file of their associated attribute descriptions.

1.2. GPS Data Standards. CONTRACTOR shall ensure:

1.2.1. all geographic features collected have a unique identification which links it with its attribute information in an associated table,

1.2.2. all attribute tables have a digital data dictionary file,

1.2.3. horizontal coordinates are documented and meet a minimum level of accuracy as is appropriate for the scope of work. To determine appropriateness, the following guidelines shall be used:

1.2.3.1. Survey Grade are the most accurate and most commonly used in situations where accuracy is essential (engineering applications, property boundary determinations, etc.), as such they are the preferred method. They typically provide true positional accuracy within a centimeter in the horizontal direction and elevation accuracies within 10 centimeters.

1.2.3.2. Mapping Grade receivers must be differentially corrected GPS to reduce positional errors. Differential correction is the process of improving fixed positions utilizing data from a base station. With differential correction, horizontal accuracies from one to two meters can be achieved, while vertical

accuracy is around 3 meters. These receivers are most commonly used by GIS professionals for gathering data for inventories, resource mapping, environmental management and infrastructure management. This method is permissible if Survey Grade cannot be provided.

1.2.3.3. Recreational Grade are the least accurate units, and are not permitted without express authorization from the TRIBES' Office of Information Technology. This is typically used for outdoor recreational activities, these receivers can have up to 20 meters in positional error.

1.3. Georeferencing.

1.3.1. Survey grade information must be georeferenced to the approved coordinate system as adopted by the Oregon Legislature in the Oregon Revised Statute 93.330:

Oregon State Plane North
Projection: Lambert_Conformal_Conic
False_Easting: 8202099.737533
False_Northing: 0.000000
Central_Meridian: -120.500000
Standard_Parallel_1: 44.333333
Standard_Parallel_2: 46.000000
Latitude_Of_Origin: 43.666667
Linear Unit: Foot (0.304800)

Geographic Coordinate System: GCS_North_American_1983
Angular Unit: Degree (0.0174532925199433299)
Prime Meridian: Greenwich (0.000000000000000000)
Datum: D_North_American_1983

Spheroid: GRS_1980
Semimajor Axis: 6378137.000000000000000000
Semiminor Axis: 6356752.314140356100000000
Inverse Flattening: 298.257222101000020000

1.3.2. Geographic data including data other than survey grade information, such as CAD, GIS, Aerial Imagery, and Photography must be georeferenced using the following coordinate system:

NAD83 UTM Zone 11 North Projection:
Transverse_Mercator False_Easting:
500000.000000
False_Northing: 0.000000
Central_Meridian: -117.000000
Scale_Factor: 0.999600
Latitude_Of_Origin: 0.000000
Linear Unit: Meter (1.000000)

Geographic Coordinate System: GCS_North_American_1983
Angular Unit: Degree (0.0174532925199433299)
Prime Meridian: Greenwich (0.000000000000000000)

Datum: D_North_American_1983
Spheroid: GRS_1980

1.3.3. All aerial photography and satellite imagery must be georeferenced and orthographically rectified unless otherwise authorized by the TRIBES' Office of Information Technology.

2. **Data Development Requirements.**

2.1. ArcGIS data.

2.2.1. All intersecting lines shall be processed to remove overshoots and undershoots.
2.2.2. Lines, polygons, points and annotation must not be duplicated.
2.2.3. Polygons must have only one label per feature.
2.2.4. Polygons must edge match without slivers.
2.2.5. Polygons must not overlap.
2.2.6. Polygons must close without overshoots or undershoots

2.2. CAD data.

2.2.1. Zero length segments shall be removed.
2.2.2. Different feature types shall not share a common line segment.
2.2.3. Snapping shall be set such that lines intersect.
2.2.4. All block definitions shall be provided.
2.2.5. A detailed layer list shall be provided.

2.3. LiDAR data. CTUIR follows the Oregon Airborne LiDAR Data Standard

2.4. A project report describing the processing steps shall be provided.

3. Data Delivery Requirements:

3.1 Vector Data. Points, polygons and lines (parcels, roads, streams, buildings, etc.) – shall be delivered in the following formats:
ESRI Shape file format,
ESRI File Geodatabase format,

3.2 CAD data. Electronic files of all developed CAD data as DWG shall be provided including a PDF of survey or as-built.

3.3 Raster Data. (aerial photos and other remote sensing imagery) shall be in the following formats: TIFF, JPEG, ERDAS IMAGINE, GRID, GEOJPG.

3.4 LiDAR Data. CTUIR follows the Oregon Airborne LiDAR Data Standard. All LiDAR data collections must meet those standards. Unless otherwise stated in the project implementation plan CONTRACTOR shall provide:

3.4.1 LAS files, containing classification values.
3.4.2 Intensity gird.

3.4.3 Highest hits grid.
3.4.4 Bare earth digital terrain model as a DEM

3.5 Metadata. A metadata file shall be submitted for each digital file delivered to CTUIR. Metadata must provide sufficient information to allow a reasonable understanding of the source, accuracy, modifications to, and applicability of the data provided. All submitted metadata shall follow Federal Geographic Data Committee (FGDC) Standards specified in *Content Standard for Digital GeoSpatial Metadata (FGDC-STD-001-1998)* (FGDC 1998). All metadata should be submitted in text (*.txt), Microsoft Word (*.doc), or the ESRI compatible XML format.).

3.5.1 Minimum metadata standards for geographic information. The CONTRACTOR shall:

3.5.1.1 Provide a purpose statement identifying the project for which the data was created,
3.5.1.2 Identify the original source of the data,
3.5.1.3 Identify the creator of the data,
3.5.1.4 Indicate the date that the data was input into a GIS system,
3.5.1.5 Provide confidence of attribution data,
3.5.1.6 Provide positional confidence of the object location (horizontal and vertical),
3.5.1.7 Identify hardware used to collect and process the data,
3.5.1.8 Identify software used to collect and process the data,
3.5.1.9 Identify the attributes associated with the data.