

9147178

WORK ORDER  
PURSUANT TO AN AGREEMENT BETWEEN  
THE CITY OF FORT COLLINS  
AND  
Anderson Consulting Engineers  
DATED: 11/21/14

Work Order Number:

Purchase Order Number:

Project Title: Evaluation of Fish Friendly Structures along the Poudre River

Original Bid/RFP Project Number & Name:

Commencement Date: Dec 15, 2014

Completion Date: May 1, 2014

Maximum Fee: (time and reimbursable direct costs):40,000

Project Description: The purpose of this Scope of Work is to conduct an evaluation of several diversion structures that presently exist along the Cache la Poudre River. The evaluation is intended to determine the capability to provide improvements to these structures to promote more "fish friendly" facilities and allow connectivity for various aquatic species. Alternatives will be identified and evaluated including sufficient design details to facilitate development of costs for installation of the improvements. Considerations associated with permitting, landownership, and coordination with facility owners will also be identified and discussed in a document summarizing the results.

Scope of Services: See Attached

Professional agrees to perform the services identified above and on the attached forms in accordance with the terms and conditions contained herein and in the Professional Services Agreement between the parties. In the event of a conflict between or ambiguity in the terms of the Professional Services Agreement and this work order (including the attached forms) the Professional Services Agreement shall control.

The attached forms consisting of \_\_\_\_\_ (\_\_\_\_) pages are hereby accepted and incorporated herein, by this reference, and Notice to Proceed is hereby given.

Professional

By: Bradley Anderson  
Date: 11/21/14

City of Fort Collins

By: [Signature]  
Project Manager

Date: 12-1-14

By: \_\_\_\_\_  
Gerry Paul  
Director of Purchasing and Risk Management  
(over \$60,000.00)

Date: \_\_\_\_\_

**ANDERSON CONSULTING ENGINEERS, INC**  
**SCOPE OF WORK**  
for the  
**EVALUATION OF FISH FRIENDLY STRUCTURES ALONG THE POUDRE RIVER**

The purpose of this Scope of Work is to conduct an evaluation of several diversion structures that presently exist along the Cache la Poudre River. The evaluation is intended to determine the capability to provide improvements to these structures to promote more "fish friendly" facilities and allow connectivity for various aquatic species. Alternatives will be identified and evaluated including sufficient design details to facilitate development of costs for installation of the improvements. Considerations associated with permitting, landownership, and coordination with facility owners will also be identified and discussed in a document summarizing the results.

The number of structures that will be evaluated is not known at this time and is limited by budgetary constraints. For the purposes of this scope of work, the structures identified for evaluation will be obtained from the list below and include:

- Boxelder Ditch Diversion Structure
- Timnath Reservoir Inlet Ditch Diversion Structure
- Lake Canal Diversion Structure
- Larimer and Weld Canal Diversion Structure
- Larimer No. 2/New Mercer/Little Cache/Taylor & Gill Diversion Structure
- Larimer County Canal Diversion Structure
- Pleasant Valley & Lake Canal Diversion Structure

Bradley Anderson, P.E., CFM, President of ACE/Principal Engineer, will serve as the Project Manager for this work and Brian Smith, P.E., CFM, Senior Engineer for ACE, will serve as the senior design engineer. Brian Smith will be supported by Scott Parker, P.E., as necessary. Surveying services, if necessary, will be provided by King Surveyors. As necessary, aquatic services to provide data pertinent to the development of fish friendly structures will be provided by Miller Ecological Consultants.

**Task 1. Data Collection, Field Reconnaissance, and Base Map Preparation**

This task will include the collection and review of pertinent data including, but not limited to the following:

- 2013 LIDAR generated 1-foot contour topographic data collected by the City of Fort Collins.
- 2013 aerial imagery.
- Data available from existing hydraulic models. This data may include survey data of existing diversion structures and results related to depth of flow and flow velocity at various discharges.
- Existing design plans/details associated with the construction of the existing diversion facilities.

- Existing utility information and parcel ownership data available from existing GIS data files.
- Habitat inventory results for the Cache la Poudre River (MEC, January 28, 2014)

As part of this task, site visits will be conducted to familiarize the project staff with the specific site conditions to help facilitate the evaluation, design and cost estimation. This task will also include prioritizing the eight diversion structures to accommodate funding available for the project.

Cost \$ 2,200

**Task 2. Alternative Development and Evaluation**

This task will involve the development of alternatives for the installation of fish friendly improvements to existing diversion structures. It is anticipated that not more than 3 alternatives will be developed and evaluated for feasibility at each location. During this task, information pertinent to the evaluation and conceptual design will be compiled and will include:

- Range of flows critical for the passage of the aquatic species of interest. Minimum flow ranges will be especially important.
- Flows available at each location; i.e., identification of the flows that must be passed at each diversion location.
- Identification of the target aquatic species and associated design parameters related to cruising speed, sustained speed, darting speed, and failure speed.

Conceptual details associated with the alternatives will be compiled and presented with a range of costs for each alternative. Fish friendly structures that have been recently installed along the Front Range will be identified and information obtained to facilitate the evaluation of the alternative concepts. A recommendation will be provided for the fish friendly improvements best suited for each location. The recommendation will be based on cost, considerations with respect to permitting and institutional constraints, potential impact to property owners, and benefits related to associated target species.

Cost \$ 12,400

**Task 3. Alternative Details/Costs and Permitting**

Based on the results of Task 2, specific details will be provided for each diversion structure location to promote the development of cost estimates associated with the improvements. Costs will include construction, design, coordination fees with irrigation entities, etc. Funding opportunities may also be investigated as part of this task. Permitting requirements will be identified and investigated. To the extent possible, potential utility conflicts will also be identified.

Cost \$ 15,500