

February 17, 2022



Don Horton
Executive Director
Bend Park and Recreation District
799 SW Columbia Street
Bend, Oregon 97702









Subject: Proposal for fish passage feasibility study for City of Bend, Mirror Pond.

Dear Mr. Horton,

It was nice catching up with Kris Knight from the Upper Deschutes Watershed Council (UDWC) and you (Bend Park and Recreation District [BPRD]) regarding next steps at Mirror Pond for the fish passage feasibility study. I have been tracking the Mirror Pond Project since 2014 and recently provided a fish passage overview at the August 25, 2021, Mirror Pond Advisory Committee meeting. Having worked with the UDWC on several similar fish passage projects, I am providing a prospective scope of work for the Mirror Pond Fish Passage Feasibility Project to the City of Bend and BPRD as a potential path forward in addressing the fish passage issues created by the dam.

River Design Group Overview

River Design Group, Inc. (RDG) is a local, action oriented, **employee owned, HUBZone Certified small business** that assists clients with ecological restoration projects throughout the Western U.S. Since 2003, RDG has established a record of collaboratively working with Native American tribes, private landowners, watershed councils, conservation organizations, local governments, and public agencies to complete

	350 YEARS Combined staff experience in dam removal and river restoration	
10 YEARS	Average employee has been at River Design Group	
45 Dams removed and/or modified	 65 Culverts & bridges designed and built for fish passage	800 Large wood habitat structures designed & constructed
 75 Over \$75M in constructed restoration projects over the last 10 years	 500 Comprehensive planning, design, permitting, and on-site construction management for projects	
 2 Completed significant projects that helped delist two ESA-listed species Oregon Chub (<i>Oregonichthys crameri</i>) and Modoc Sucker (<i>Catostomus microps</i>)		 1,750 Acres of wetland & estuary restoration designed

progressive projects that include alternatives analysis, assessment, planning, design, and project implementation. These efforts often involve working with stakeholder groups with diverse interests, experiences, and project goals, and this is where our vast experience and strong leadership helps guide projects to creative solutions that address goals and objectives.

We have an unparalleled record of completing in-water projects such as river and wetland restoration, fish passage, dam alteration, and habitat enhancement projects. With offices in Oregon and Montana, RDG assists clients throughout the region with an exclusive focus on in-water stream restoration activities. RDG maintains a vast professional staff with expertise in water resources, engineering, hydrology, fisheries, geomorphology, wetlands, hydro-survey, GIS, and AutoCAD. Most of our key staff have over 20 years of experience and have been working at RDG for over 10 years. Our consistent team over the past decade creates a synergy, and the entire staff is fully involved with every aspect of river restoration from planning to design to construction and monitoring. Our unique combination of expertise and longevity is a huge asset for restoration projects that are unique and require experienced personnel. We have also found that our consistent team provides a measure of stability for restoration projects that often take several years to complete.

Scope of Work

Based on past meetings and information from the Mirror Pond Advisory Committee, it is our understanding that the Project is moving into the feasibility phase to determine a preferred fish passage alternative and path forward for developing a fish passage retrofit. Our work will be closely coordinated with the BPRD (Don Horton), City of Bend, PacifiCorp (Matt Chancellor and Peter Martins), UDWC (Kris Knight), Alan Ritchey at Oregon Department of Fish and Wildlife (ODFW), and the Advisory Committee. The US Fish and Wildlife Service (USFWS) will also be included in an advisory capacity and potential funding partner as the Project progresses into design. To help focus the feasibility study, the Advisory Committee has developed some priorities as summarized below:

- Preference for fish passage that looks natural and functions with minimal maintenance.
- Attention to public safety that includes recommendations for floater access or no floater access with respect to the City's risk and liability.
- Cost-effective solution that looks at initial costs and long-term maintenance costs.

A two phased scope of work is provided that creates a workflow that aligns with current funding sources.

Phase 1

Task 1-1 Site Basemap

To develop a sound feasibility study, a detailed topographic and bathymetric survey is required. This survey serves as a foundation for all future work and helps accurately represent existing site conditions that factor into cost estimates, permitting and feasibility analysis. We will deploy a qualified field crew with survey-grade GPS and total station to acquire data to develop a topographic surface model of the dam, infrastructure, and surrounding land features. The data points will be downloaded and used to create a seamless surface model of the area of interest. The basemap will serve as the foundation for all feasibility work and will be useful for construction cost estimates and visualization of fish passage alternatives.

Deliverables: Topographic surface model and basemap of existing site.

Task 1-2 Fish Passage Alternatives

The Advisory Committee has been considering alternatives for fish passage at Mirror Pond with facilitation by Vernita Ediger, PhD. As the Project moves forward, it is our understanding that a representative from Central Oregon Intergovernmental Council (COIC) will facilitate meetings with the Advisory Committee and provide Project leadership for public outreach and involvement as we develop information and materials for review. The COIC representative will coordinate all public input/feedback opportunities and development of a comment/response matrix. For this task, we envision developing three options for fish passage at Mirror Pond Dam. The alternatives will be presented in a public meeting forum to allow for input and additional considerations in the development of the concepts. The following alternatives will be developed to a level that is adequate for consideration and decision making by the Advisory Committee:

- 1) Traditional concrete or steel fish ladder that has discrete steps and meets current fish passage criteria for fish ladders.
- 2) Rock ramp that builds up the bed of the river to match the crest of the dam using natural materials and consistent with current standards for ODFW fish passage criteria.
- 3) Nature-like fishway that creates a fish passage channel to the crest of the dam using natural materials and is consistent with current standards for ODFW fish passage criteria.

Each of the alternatives will identify the fish species, life stages, typical timing for passage, and operational parameters (i.e., high and low flows). An overview of constructability, access requirements, expected monitoring and maintenance will be provided for each alternative. In addition to these alternatives, a brief description and concept for screening the existing hydropower water intake will be presented that may include a fish friendly turbine retrofit. A short narrative describing typical permitting steps will be included with the Technical Memorandum and how the concept meets fish passage criteria.

Deliverables: Concept level drawing for each alternative and public presentation to Advisory Committee describing pros/cons for each alternative. Cost estimates will be prepared to assist in decision making and a fish screen concept will be developed for the hydropower facility. A Technical Memorandum will be developed to document the alternatives.

Phase 2

Task 2-1 Preferred Alternative Development

We will work with the City of Bend, BPRD, PacifiCorp, regulatory representatives, stakeholders, and the COIC representative to facilitate selection of a preferred alternative for fish passage at Mirror Pond Dam. The selected alternative will be presented to the City Council and BPRD Board to ensure support for the Project. Next, the alternative will be further vetted with ODFW to ensure fish passage criteria can be met with additional design details, and additional public input will be coordinated by the COIC representative. We envision at least two public presentations to the Advisory Committee that will enable opportunities for public feedback and input into the design process. Based on available funding and level of effort necessary for public involvement, the preferred alternative design will be advanced to the point where additional grants and funding can be secured to further implement the Project. Likewise, we will assist in developing information for the City Council and BPRD Board to incorporate the Project into the Bend 2015 Vision.

Deliverables: Information for City Council, Bend Park and Recreation District Board, and public meetings. Project presentation at two Advisory Committee meetings. Development of a 10% design drawing set for the preferred alternative. Cost estimate for Project implementation.

Schedule

It is anticipated that Phase 1 can be accomplished in the months of February through May. Phase 2 is predicated on future funding approval and would continue from the end of Phase 1 and likely finish in September 2022. Phase 2 deliverables would coincide with grant funding application milestones, such as the Oregon Watershed Enhancement Board (OWEB), to maximize future funding opportunities.

Budget

Based on the scope of work provided for Phase 1 and 2, the following budget estimate is provided for the Project. We envision a time and materials contract with BPRD that includes a not to exceed clause that coincides with the available funding sources for each phase of the Project.

Table 1. Estimated budget for tasks.	
Task	Amount
<i>Phase 1</i>	
Task 1-1: Site Basemap	\$6,000
Task 1-2: Fish Passage Alternatives	\$14,000
<i>Phase 2</i>	
Task 2-1: Preferred Alternative Development	\$25,000
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	\$45,000

This estimate is based on similar projects and our experience working on fish passage projects in Oregon. Please let me know if you need additional information or have questions.

Respectfully,



Scott Wright, PE, PMP
Principal Engineer / Project Manager