

Jay S. Kidder, P. E.
Owner, Chinook Engineering

Fish Passage Qualifications

Summary of Qualifications

As the owner of Chinook Engineering, Mr. Kidder provides state and federal agencies, private non profit groups, municipalities, Indian tribes, and private developers in the Pacific Northwest, Alaska and nationally with engineering and fisheries biology expertise. For the past eight years, Mr. Kidder has focused much of his effort on fisheries issues within the Pacific Northwest and Puget Sound Basin. His work includes the evaluation and analysis of fish mortality and behavior in hydroelectric turbines, stream bypasses, diversions and the development of recommendations for improving fish passage success at manmade and natural barriers. Much of his current project load relate to on-the-ground facilities that provide a method to prevent federal intervention on Endangered Species Recovery plans.

Mr. Kidder was honored to have worked closely with the late Milo C. Bell and expert Fisheries Engineer whom pioneered many of our fish passage techniques in use today. Mr. Kidder's work experience includes project planning, design, and construction management for salmon, steelhead, trout, and sturgeon fish hatcheries, adult upstream fish passage, juvenile upstream passage and screening facilities, and spawning channels. His emphasis recently has been to provide juvenile and adult fish passage at numerous road culverts.

Whether fish passage is for inclusion in a fish hatchery, or for the protection of an endangered species that needs to complete its spawning cycle or to be protected from diversion systems, fishways and screens take on many arrangements and design characteristics and are of a primary interest for Mr. Kidder when fish passage is critical. He is experienced in utilizing National Marine Fisheries Service criteria for passage and screen sweeping velocities to address the best solution for the client and the fish.



***Fish Passage Development
Expertise***

Mr. Kidder is experienced in all facets of conceptual design, final design, and construction management of the following methods of passing fish around blockages and diversions;

Adult Fishways

***Up and
Downstream
Passage***

- Hells Gate Vertical Slot Fishway
- Ice Harbor Pool and Weir Fishway
- Pool and Weir (with or without orifice) Fishway
- Alaska Steeppass Fishway
- Culvert Baffle Fishway
- Denil Fishway
- Labyrinth Fishway
- Helical Fishway
- Weir fishways of log or concrete
- Velocity passage Barriers
- Roughened channels of grouted boulders and loose boulders
- Barriers and Traps
- Juvenile upstream passage systems
- Pool and chute fishways



He is experienced in utilizing many different materials of construction such as;

- Concrete
- Steel
- In-place hard rock
- Shot Crete
- Reinforced Fiberglass
- Aluminum

Juvenile Screens

Downstream Passage and Diversions

- Louver Screens
- Rotating Drum Screens
- Self Cleaning Screens
- V Shaped Screens
- Pump Station Screens
- Horizontal Floating Screens
- Vertical Plain Screens
- Electric weirs
- Wedge wire screens
- Juvenile Transport Pipes and delivery system
- Cowlitz Falls Vertical Gulper Screens
- Smolt Trap Screens

Partial Client List

- State of Washington
- State of Oregon, Bureau of Land Management
- Sierra Pacific Power Company
- Bonneville Power Administration
- U.S. Army Corps of Engineers, Portland Office
- Alaska Department of Fish and Game
- Snohomish Conservation District
- Skagit Fisheries Enhancement Group
- Southern Southeast Regional Aquaculture Association
- Sierra Pacific Power Company
- Truckee Meadows Water Authority
- Seattle City Light, Environment, Health and Safety Division



***Northwest Native
American Tribes***

- State of Washington Conservation Districts
- Kootenai Tribe of Idaho
- Yakama Indian Nation
- Colville Confederated Tribes
- Nisqually Indian Tribe
- Squaxin Island Tribe
- Skagit System Cooperative
- Makah Tribe
- Tulalip Tribes
- Quileute Tribe

***Fish Passage and Barrier
Analysis Project Examples***

**Farad Dam Hydroelectric Diversion
Replacement, Truckee River, California.
Sierra Pacific Power Company, Reno NV**

Chinook Engineering provided biological and fisheries engineering design services for a replacement of a timber crib dam and diversion for a 550 CFS hydroelectric system on the Truckee River, near Floristan CA.. The old diversion washed out during high flows of the winter of 1997, and the proposed new structure replacement includes; the construction of grouted in-place with cement, boulders that create a series of steps to provide passage for fish upstream and downstream. The design also allows boaters to pass the diversion without a portage.

In addition a fine plate fish screen located off channel to the Truckee River was designed for fry sized fish criteria. NOAA specifications for screening of fry size fish was utilized in this design.



Glendale Diversion Renovation, Roughened Channel Fish Passage and Fine Plate Fish Screen, Truckee Meadows Water Authority, Reno , NV

Chinook Engineering was working on a team for the design renovation of a loose rock diversion structure on the Truckee River to provide fisheries engineering services. Our scope of work included the design development and establishment of design criteria for juvenile and adult Lahontan cutthroat trout. Fish passage upstream and downstream was the governing design criteria.

A fine plate fish screen was installed for on channel installation and is designed for fry criteria in accordance with NOAA criteria for through screen velocity and sweeping velocity. The project was modeled in a physical modeling lab at 12 scale Froude equivalence. This project was completed in 2011.

Chelan River Reach 4 Restoration, Chelan County PUD, Wenatchee, WA

Chinook Engineering was selected to assist a team of designers, geomorphologists and biologists to restore a one mile reach of the lower Chelan River. Our team will assemble two alternatives that include methods to pass the high amount of bedload through the system while at the same time increasing and improving the habitat for chinook salmon and steelhead. The project includes approximately one mile of constructed stream channel for spawning and rearing and additional rearing habitat in the tailrace of the hydroelectric powerhouse. A roughened channel fish pass is associated with the water supply diversion anticipated to be located at the tail out of a bedrock canyon. The water supply will be delivered to the stream channel for spawning and rearing habitat.



Additional Experience will gladly be provided upon request.

***Other Relevant
Fisheries
Engineering/Biology
Skills***

Mr. Kidder has been working in the fisheries engineering profession for more than 26 years. His work has included the planning, design, and construction management of fish hatcheries and habitat improvement projects in the Northwest, California, and Alaska. In completing more than 120 constructed projects, he has developed considerable skills in:

- Site reconnaissance and facility alternative evaluation and layout
- Engineering design and evaluation of juvenile screens and adult velocity barriers
- Evaluation and design of modifications/retrofits of fish passage structures in streams and rivers
- Civil and mechanical design of hatchery raceways, incubation and rearing facilities, and laboratories
- Civil and mechanical design of process water piping, water pumping systems, water treatment, heat exchangers, and water chilling systems

Additional Skills

Computer Modeling

Mr. Kidder's computer modeling skills include interpretation of working mathematical equations relating such things as fish mortality and success of passage past obstructions, or through turbines. With the use of PC based computations and spreadsheet analysis, equations are linked to provide real world estimates of fish passage, mortalities and other parameters that were once only estimated with empirical fish tag and recovery studies.

Permitting

Mr. Kidder has prepared many types of permits including U.S. Army Corps of Engineers Section 10 and 404, EPA NPDES, SEPA, NEPA, Hydraulics, Municipal Building, and Shoreline Development.



Construction Management

Mr. Kidder has performed on site inspection, reviewed shop drawings, negotiated and processed change orders, and provided QA/QC throughout his career.

Mechanical System Design

Mr. Kidder has designed water pumping systems, packed columns, water chillers, recirculating systems, ultraviolet light water treatment systems, and HVAC systems.

Computer Related Skills

Mr. Kidder's computer and modeling skills include using IFIM, KYPIPE, HEC RAS, and Hydrograph simulation, and using MS Excel, MS Access, AutoCAD, BIM and Revit and MS Word.

Education

Bachelor of Science, Fisheries Biology
1980, University of Washington

Bachelor of Science, Civil Engineering
1984, University of Washington

Professional Registration

Registered Civil Engineer in the states of:
Alaska
Idaho
California
Nevada
Oregon
Washington

