US Army Corps of Engineers
Portland District

A GUIDE FOR PERSONNEL CONDUCTING FISHERIES RESEARCH AT THE WILLAMETTE PROJECT

January 2016

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INTRODUCTION

The purpose of this guide is to inform personnel conducting research at the Willamette Valley Project (WVP) of the Corps of Engineers (COE) requirements for completing research in a safe and secure manner. There are many activities which must be coordinated at this project including: facilities operation & maintenance, security, construction, fish related research, and public visitation. Many of the research activities involve personnel who are not familiar with Corps requirements, or with the unique requirements of the WVP. In addition, the requirements themselves change over time, particularly with regard to safety and security. Everyone's cooperation is required to insure the safety and security of all concerned.

COORDINATION

Send paper copies requesting access for research to:

Supervisory Fisheries Biologist – WVP

Greg Taylor
U. S. Army Corps of Engineers
P. O. Box 429
Lowell, OR 97452

In addition, send electronic copies requesting access for research to the relevant Operations and Maintenance Managers:

Willamette Project (Cougar, Lookout Point/Dexter, Hills Creek, Fall Creek, Dorena, Cottage Grove, Fern Ridge)

Willamette Project – O&M Manager
Greg Barrowcliff
Gregory.J.Barrowcliff@usace.army.mil
541-937-2131 x 131

Foster/Green Peter O&M Manager
Thomas Voldbaek
Thomas.Voldbaek@usace.army.mil
541-367-5124 x 15

Big Cliff/Detroit – O&M Manager
Tim Ernster
Timothy.A.Ernster@usace.army.mil
541-405-6857

Fisheries Biologist – Operations Division

Chris Walker
Portland District Office
Christopher.E.Walker@usace.army.mil
503-808-4316

All fisheries research, monitoring, or evaluation conducted at the Willamette Valley Project must be coordinated with WVP Biologists to ensure compliance with COE requirements and to identify any operations, maintenance, or construction activities that could affect personnel safety or project completion. The Project Biologists will coordinate all this work with the appropriate WVP personnel.

To initiate research, monitoring, or evaluation at the WVP, personnel must first write the O&M Manager to request access (see address provided). This must be done annually for ongoing research programs. The letter should summarize the work planned and should indicate the extent of coordination completed. For example, one might indicate that the work is Corps funded and that it is on Portland District's programmed list of approved research activities. The letter should include the applicable items from the following list:

1. A project work plan, including a detailed schedule of planned activities.
2. A project impact statement.
3. An activity hazard analysis and job hazard analyses.
4. Material Safety Data Sheets (MSDS).
5. Appropriate ESA documents, when applicable.
6. State collector's permit, when applicable.
7. Funding arrangements for project support.
8. Lists of boats, personnel and vehicles.

Work may not start until the Corps provides a written affirmative response.

It is important to coordinate changes in schedules, activities, personnel, and so on, as they occur through the season.

For work requiring physical project support, funding arrangements must be made before assistance can be provided. If your work requires project support, submit your requests to the Project Biologists. They will facilitate work requests for researchers.

Removing fish or wildlife from the WVP may require an appropriate collector’s permit(s), a copy of which must be provided to the WVP before research may commence. Dead fish should be immediately reported to the Project Biologists and will be disposed of back into the river. Researchers are required to write an incident report (with photos if available) to be sent to the Project Biologist.

ORIENTATION

Coordination Meeting

Once in receipt of the approval letter from the Corps of Engineers, a coordination meeting will be held between the activity study leaders and the Project Biologists. At a minimum, all the items in the attached RESEARCH, MONITORING, AND EVALUATION – WVP PRE-WORK CHECKLIST will be discussed.

Pre-work Meeting

Following the coordination meeting described above, and before the activity begins, the study leaders and Project Biologists will conduct a pre-work orientation meeting for all personnel involved. **This is an annual requirement for all activities whether on going or new starts, and should be held well before the activity begins**.

Work plans, relations with the Project, and important safety considerations will be discussed. In particular, the Project's Hazardous Energy Control Procedures (HECP) will be reviewed. Work areas will be defined and reviewed in detail to identify any special hazards and precautions. Keys will be issued at this meeting as well.

Visitors

Researchers must not bring visitors on project without making prior arrangements with Project Biologists. Willamette Valley Project does not currently maintain a visitor pass system. For this reason, visitors are signed in/out and escorted at all times while on projects. Visitors permitted without continual escort include official visitors from other Corps offices and those permitted without escort by managers. Other employees do not retain authority to authorize visitors to be unescorted. All visitors are required to sign in and out whether escorted or unescorted, and notify the operator on duty of intended visit locations if other than office areas. When visitors are escorted in large groups while participating in pre-scheduled tours, the escort may make one entry in the sign in log representing the total number of participants. Escorts will be responsible for notifying the operator on duty of arrival and departures, while ensuring all visitors remain together and only enter authorized areas. Please allow several weeks' advanced notice if bringing foreign nationals to the Project, as they must register with and be approved by the COE security office. Project Biologists will facilitate these actions.

Before bringing any media representatives on-site, please call our Public Affairs Office at 503-808-4510. PAO personnel will discuss guidelines and check-in procedures. Failure to contact PAO, or provide two days advance notice, may result in a denial of access to the Project.

KEY PERSONNEL

Some of the important project phone numbers are shown in the table below.

Location / Personnel	Phone	Email
EMERGENCY	911	
Lookout Point Control Room	541-937-3072	
Foster Control Room	541-367-5124 ext 0	
Detroit Control Room	503-897-2385	
WVP Ops Manager – Erik Petersen	541-684-4301	
Deputy WVP Ops Manager – Dustin Bengtson	541-684-4302	
O&M Manager (FOS, GPR) – Tom Voldbaek	541-367-5124 x15	**Thomas.Voldbaek@usace.army.mil**
O&M Manager (Willamette) - Greg Barrowcliff	541-937-2131 x 131	**Gregory.J.Barrowcliff@usace.army.mil**
O&M Manger (BCL, DET – Tim Ernster	541-405-6857	**Timothy.A.Ernster@usace.army.mil**
Fisheries Biologist – Operations Div – Chris Walker	503-808-4305	**Christopher.E.Walker@usace.army.mil**
Sup. Project Fisheries Biologist – Greg Taylor	541-937-2131 x 146	**Gregory.A.Taylor@usace.army.mil**
Project Fisheries Biologist – Doug Garletts	541-937-2131 x 142	**Douglas.F.Garletts@usace.army.mil**
Project Fisheries Biologist – Chad Helms	541-937-2131 x 150	**Chad.K.Helms@usace.army.mil**

SAFETY

An important requirement of the Corps' Safety Manual is an Activity Hazard Analysis. A new hazard analysis must be provided for review and approval at the beginning of each year of research activity. In addition, we require copies of the OSHA-mandated Personnel Job Hazard Analyses for each position description involved in the activity.

The safety manual (**EM385-1-1**) also requires the following:

1. Each research group must conduct weekly safety meetings. Notes, or at least a list of topics from each of these meetings, must be provided to the Project Biologists monthly.

2. As defined in the Corps' Safety Manual, a specified number of employees at each job site must have First Aid and CPR training. Generally, two people on each crew must be currently certified in first aid and CPR. Provide a list of all personnel's First Aid and CPR certification expiration dates to the Project Biologists.

3. Report all accidents to the control room immediately.

The Willamette Project uses OSHA-mandated Hazardous Energy Control Procedures (HECP) to reduce the hazards of working around high energy sources including electricity; pressurized air, oil, and water systems. Annual training is required for all personnel. All researchers requesting permission to enter the Project will attend HECP training as part of their orientation. A designated Willamette Project representative will administer the training.

Smoking indoors is not permitted anywhere on the Project.

The Willamette Project has emergency warning sirens at each powerhouse. Be advised warning sirens may not be audible from all project locations. In the event of an apparent emergency, all personnel should leave potentially dangerous areas.

A list of all chemicals that the research unit anticipates using on the Project must be presented to the Project Biologists prior to bringing any chemicals onto the Project. Material Safety Data Sheets (MSDS) must be obtained for all approved hazardous materials brought onto the Project. Copies of these sheets must be provided to the Project Biologists and be made available to anyone working in the area. Each research group is responsible for supplying their own general first aid supplies. Additional first aid supplies specified in the MSDS must also be supplied. Research groups must properly store and dispose of chemicals and hazardous wastes. If a research group spills a chemical or hazardous material, they are responsible for cleaning up the spill. All spills are to be reported to the control room immediately.

Each research unit is responsible for providing their employees with appropriate safety equipment and training on the use of that equipment. Employers should consider use of: steel-toed footwear, hard hats, earplugs, eye protection, safety harnesses, shock absorbing fall

protection, and personal floatation devices. If you have questions about what safety equipment will be required for your research, contact the Project Biologists. Personnel must meet minimum dress requirements while at the Willamette Project. The dress code applies in all non-visitor areas. The dress code is in effect all hours, even night shift. Failure to meet the minimum dress requirement may be grounds for dismissal from the project. Minimum dress requirement is long pants and short sleeved shirt (no sleeveless, tank tops, or midriffs), hard hat, and safety shoes. Additional identifying dress (uniforms) may be required in some situations, such as when angling from dams in public view.

Vehicle speed limits are posted throughout the project. Personnel should comply with these limits and generally drive defensively. Seat belt use is required. Riding in the cargo area of trucks is prohibited. The Willamette Project has a lot of vehicular and pedestrian traffic. Special care must be taken to avoid accidents.

SECURITY

Access Controls

The following are the minimum requirements for procedural access controls under normal operations. The Willamette Valley Project works under the direction of the Department of Defense system of Force Protection Conditions (FPCON) in determining appropriate access controls.

a. Personnel – The following access controls are effective during normal business hours. Normal business hours are 0700 – 1700. Normal business days consist of a minimum of Monday through Thursday, excluding holidays. Fridays will also be considered normal business days for those projects that have support staff assigned on other than 10 or 12-hour shifts.

(1) Visitors – Willamette Valley Project does not currently maintain a visitor pass system. For this reason, visitors are signed in/out and escorted at all times while on projects. Visitors permitted without continual escort include official visitors from other Corps offices and those permitted without escort by managers. Other employees do not retain authority to authorize visitors to be unescorted. All visitors are required to sign in and out whether escorted or unescorted, and notify the operator on duty of intended visit locations if other than office areas. When visitors are escorted in large groups while participating in pre-scheduled tours, the escort may make one entry in the sign in log representing the total number of participants. Escorts will be responsible for notifying the operator on duty of arrival and departures, while ensuring all visitors remain together and only enter authorized areas. During increased FPCON's of Charlie and Delta, or as directed by the Operations Project Manager or Security Officer, tours will be discontinued.

(2) Contracted workers – Contract workers are permitted on projects unescorted during lower level FPCON's, contact information is maintained by the responsible Contracting Officer Representative, the District Contracting Office and the Supply office at Lookout Point. Contract

service providers are admitted on a visual recognition. New employees are encouraged to request identification until visual recognition can be made. Upon notification by either the Project Security Officer, Operations Project Manager, Assistant Operations Project Manager, Administrative Officer, Natural Resources Manager, Operations or Maintenance Manager, employees will require a full identification check and personal escort for all contract workers on the projects. Powerhouse Operators will never be utilized as escorts. If there are no available support personnel to provide escort service, contract workers will be required to return at another date.

(3) Foreign visitors - All Foreign visitors will be personally escorted as other visitors, in addition, foreign visitors need to be processed through the District Chief, Security and Law Enforcement and project Security Officer. This process allows for authorized background checks and applicable conditions to be constituted during the visit or declined access. All parties need to be aware that process normally takes 7-10 days per person.

b. The following access requirements are in place outside normal business hours.

(1) Visitors – Visitors will not normally be permitted on projects after normal working hours.

(2) Contracted workers – Ordinarily only cleaning personnel will be permitted at projects after normal working hours. The Contracting Officer will be responsible for providing the Operator on duty with a photocopy of picture ID for each contractor authorized on premises after normal working hours.

c. Vehicles –The following controls are placed on vehicles for the following types:

(3) Visitors – Visitors are required to park in designated parking areas while on projects. Upon entering increased levels of FPCON's and at the discretion of the Operations Project Manager and Security Officer, visitors will not be permitted to drive on to projects and will be asked to leave vehicles on the road area immediately ahead of access gates.

(4) Contracted workers – Under normal operating procedures, contract workers are permitted vehicle access up to the point of the employee parking areas. Upon notification by the Operations Project Manager or Security Officer, contractors will be asked to park vehicles in the location of visitors, directly ahead of the entrance gates or turned away for unessential services.

All researchers wanting access to the Willamette Project must be US citizens with proof of citizenship. Certain restrictions are in place for Project security and personnel safety. Each research group must provide lists identifying personnel and equipment. Vehicles must be identified by manufacturer, model, year, color, and license number. This includes government and personally owned vehicles that will be in restricted areas or on the Project during non-standard work hours. Boats that will be on the Project or in the boat restricted zone (BRZ) must also be listed and described by size and registration number.

Keys will be checked out to individuals to accomplish their approved work. Personnel must confine travels around the Project to their pre-determined work areas. Arrangements must be made with the Project Biologists to visit other areas of interest. All keys MUST be returned to the Project Office at the end of the research activity.

Researchers are asked to restrict the number of visitors they invite to the project. All persons visiting non-public areas must either be accompanied by a Willamette Project employee. If you absolutely must bring visitors on project, notify the Project Biologists as early as possible. Foreign nationals are restricted from areas beyond those open to the general public, without special security clearance through the Portland District security office. (*This type of clearance will take several weeks to process*).

HAZARDOUS AREAS

Each project has numerous hazardous areas including: powerhouse tailrace decks, powerhouse wing walls, spillways, construction areas, riprap areas, and reservoir drawdown zones, etc. The project biologists will identify any potential hazardous areas during the pre-work meeting.

CONSTRUCTION ACTIVITIES

All plans for fish related construction on the Project must be coordinated through the Project Fish Biologists. Construction may not begin until Project engineering staff approves the proposal.

All crane operation must be approved by the Chief of Maintenance. Cranes must meet all Corps safety requirements and must be tested under the direction of the Chief of Maintenance. Likewise, crane operators must be approved by the Chief of Maintenance.

Activities that might impact fish passage are not allowed near fishways without prior coordination and approval. Activities, particularly construction that can potentially cause material or pollutants to fall into fishways, or generate noise that can cause fish to delay in passing, must be coordinated.

BOAT OPERATION

The Willamette Project has established a Boat Restricted Zone (BRZ) around the major structures of the project. Signs designate this area. No boats may enter the BRZ without prior approval of the O&M Manager who will issue a BRZ entry permit. Researchers must follow the requirements defined in the Project's most recent Boat Restricted Zone Policy.

Special points of the BRZ access policy:

An applicant must first meet the requirements described in the Coordination section.

A written request including schedule and work plan must be received by the Project at least two weeks prior to start of the requested access.

Requests that require project support must be made as far in advance as possible, but a minimum of 30 days prior to the anticipated need.

A pre-work safety meeting will be held at the project and administered by a designated Project representative, prior to commencing the work.

TheO&M Manager will issue a BRZ entry permit.

Immediately prior to entry, radio contact must be made with the Control Room. The entrants shall identify themselves and give their entry permit number. After the Control Room operator approves, then the researcher may enter the BRZ. Radio contact must be maintained while the researchers are in the BRZ and when they leave they must advise the Control Room.

Boats are not allowed within 600 feet of the powerhouse or spillway without applying certain clearances. These are defined in the policy statement.

Willamette Project
Boat Restricted Zone Policy

Purpose:

The Boat Restricted Zone (BRZ) Policy has been established to ensure that persons whose work requires them to enter the restricted zones are fully apprised of the hazards associated with the

structures and operating conditions. And, that they are properly equipped to safely deal with the hazards.

Scope:

The BRZ Policy is applicable to all persons entering the boat restricted zone at the Willamette Project

General:

The waters immediately around the structures and channels at the project present fixed and dynamic hazards to personnel performing work in close proximity.

The structures have open, unprotected water inlets and outlets that are capable of ingesting, capsizing or swamping smaller vessels. These facilities have both remote and automatic operating capabilities.

Water velocities exceeding 8 Feet per Second (FPS) can be measured in continuously changing directions.

Water velocities at the surface and below, are constantly altered to normal operation of the turbines and spillway gates. (These alterations may be done automatically or remotely)

Protective relay actions can cause sudden water elevation variations up to 14 feet with resulting sudden increase in velocities. These sudden elevation changes are sufficient in magnitude and duration to capsize a vessel, or pitch them into structures or wires when in close proximity. Personnel on board vessels are at great risk of being cast overboard during sudden elevation changes due to load rejection events.

Surface and submerged debris are an ever-present danger and is capable of fouling or breaking vessel propulsion or steering mechanisms.

Requirements:

Personnel and Vessel Safety Equipment:

All personnel must wear personal flotation devices while in the BRZ.

All vessels entering the BRZ will meet Coast guard safety standards for day and night operations. Included are fire extinguishing capabilities, running and anchor lights, an audible warning device capable of being heard anywhere within the BRZ. Each vessel entering the BRZ will have either a current Coast Guard Certification or Oregon State inspection sticker on the boat demonstrating the equipment meets current safety standards.

Communication with the project control room must be available to the boat operator. Failure to maintain communication with the control room during the period the boats are operating within the BRZ is cause for removal from the BRZ and future access denial.

A rescue line shall be available in a throw bag or other approver device. The rescue line length shall be of sufficient length to reach personnel that have gone overboard. A minimum length of 50' is recommended. Line which is constructed of a buoyant material is also recommended.

A spotlight that can be easily operated by the boat operator must be available.

No vessel may enter the BRZ without proper coordination with the O&M Manager or appointed representative:

The applicant must submit a written request for access to their Willamette Point of Contact and to the O&M Manager two weeks in advance of the anticipated work date(s). The request must include a schedule and written work plan. The work plan must include a description of the work to be performed, the locations of the work and any known project operating requirements or restrictions necessary. Requests that require project support must be as far in advance as possible, but a minimum of 30 days prior to the anticipated need.

Additional requirements, as outlined in the current Willamette Fish Operations Plan, must be observed if applicable.

The applicant must submit a written job and activity hazard analysis.

A pre-work safety meeting will be held at the project prior to the anticipated work dates. The safety meeting must be attended by the Task/Work Leader or supervision of the work crew.

Entrants must obtain a "BRZ entry Permit" prior to entry into the zones.

Immediately prior to entering the BRZ, entrants must contact the control room operator and **request permission to enter the BRZ**. This will enable the control room operator the opportunity to relay any pertinent real time conditions about the BRZ prior to granting final approval. The BRZ entrants will also contact the control room operator and notify them at the time they are leaving the BRZ.

REFERENCES

For more information, please refer to the following documents. One of the purposes of this Guide for Researchers is to summarize requirements defined in more detail in the following documents. Where discrepancies occur it should be understood that the Guide carries less authority than the references.

- OSHA safety requirements can be found in **29 CFR 1910, 1926 and 1960**.
- Corps of Engineers safety requirements are provided in the **Corps' Safety Manual #EM 385-1-1 dated 15 September 2008 (yellow cover)**.
- The Project has supplements to the safety manual describing **control of hazardous energy and confined space entry.** Researchers must understand that these procedures are to ensure safety and that failure to comply could cause fatalities and destruction of equipment.
- All researchers must comply with Title 36, CFR. (Corps pamphlet **EP 1165-2-316** dated May 1986)
- Memorandum subject**: Willamette Valley Projects Security Plan**, 2009.
- **Willamette Valley Projects Boat Restricted Zone Policy** revised July 2009.

Researchers should be aware that guidance concerning project operations for fish is provided in the Willamette Fish Operations Plan. Fish related activities must not conflict with requirements listed in this last document without special coordination.

FORMS AND CHECKLISTS FOR RESEARCHERS

RESEARCH, MONITORING, AND EVALUATION - WVP
PRE-WORK CHECKLIST

Research group _____Research activity _____

BRZ permit # _____

Point of contact _____ phone: _____

WILL. point of contact _____ phone: _____

Anticipated start date _____Anticipated end date _____

Activity area _____

- ☐ Letter to Operations Superintendent
- ☐ Response from Operations Superintendent
- ☐ Work plan
- ☐ Detailed schedule of activities
- ☐ Statement of impacts to the project, project support needs, storage, parking
- ☐ Funding arrangements for project support
- ☐ Job hazard analysis (job-specific)
- ☐ Activity hazard analysis (overall)
- ☐ Material Safety Data Sheets (if applicable)
- ☐ Appropriate ESA documents (if applicable)
- ☐ State collector's permit (if applicable)
- ☐ Complete list of personnel, vehicles, and boats
- ☐ First aid/CPR certification (expiration dates?)
- ☐ Attended hazardous energy safety training (annual requirement) _____
- ☐ Pre-work orientation meeting _____
- ☐ Gate/Door keys issued _____

HAZARD ASSESSMENT SAFETY TALK FORM

Updated 18 June 2006

Before official visitors are allowed to tour or work in areas not open to the public, the following form must be completed and discussed with the project point of contact (POC).

Visitor Name (please print legibly)_____

Visitor phone number: _____ alternate_____ Keycard Number_____

email_____ Hard key number_____

Project or Group_____ Keycard expiration date_____

Willamette POC—

Today's date _____ End date of activity_____

The POC will cover the following activity hazards and emergency procedures.

___ Lockout/Tag out procedures
___ Electrical hazards (GFCI/bus lines)
___ Natural hazards
___ Overhead hazards, cranes, rigging
___ Water hazards (PFD)
___ Chemical hazards (MSDS)
___ Materials spills/cleanup (HAZMAT)
___ Working from boats (BRZ)
___ Working from heights
___ Working at night
___ Working in confined spaces
___ Working in CoE research labs (SMF/AFF)
___ Security Policy
___ Dress Code
___ Driving on Project
___ Physical health
___ Emergency medical procedures (2223/BERT)
___ Emergency warning siren
___ Lifting and carrying
___ Potable water systems
___ Sanitation systems
___ Interacting with the public
___ Interacting with other researchers
___ Transport and operation of heavy equipment
___ Painting and Sandblasting
___ Welding, cutting and power tools

Personal protective equipment (PPE) requirements are to be covered by visitor's employer (supervisor), and are usually written into the Position Hazard Analysis. The employer is responsible for assuring the visitor has been trained to use the PPE, has demonstrated the ability to use the PPE, and has the proper physical qualifications. See EM 385-1-1 for further information.

___ Protective headgear (hardhat) ___ Protective glasses, goggles or face shields
___ Protective footwear (steeltoed)___ Other_____
___ Hearing protection

Date of PPE training by employer_____

Please notify your POC immediately if unsafe working conditions or procedures are noted.

Signature of visitor_____ Date_____

Signature of POC _____ Date_____

Signature of HECP Trainer _____ Date_____

Request for Keys

<u>This form is to be submitted a minimum of 1 week prior to issuing</u>

Name: _____
(First) (MI) (Last)
DOB: _____

DL #: _____ DL State_____ Expiration Date_____

Main Contractor: _____Phone: _____

Your Company: _____Phone: _____

Job Site: _____

Beginning Date: _____End Date: _____

Access Required:
Work Hours: <u>6am-6pm</u> <u>24 hrs</u> <u>Weekends</u> _____

Access Needs: Gates: _____ Doors: _____

Hard Keys: Series_____ #_____

_____ #_____

COE POC: _____ Phone #: _____

Safety Talk Given By: _____ Date: _____

I agree not to loan, transfer, misuse, modify or duplicate the above keys and ID badge. I understand and agree that violation of this agreement may render me responsible for the expenses of a relock for the affected areas.

Printed Name: _____

Signature: _____

Date: _____

Please fax requests to Operations Superintendent- Roger Kline, at (541) 937-3401.

For Official Use Only
BLD staff please initial and date when this information is entered into the systems listed below.
C-Cure _____ Selectron_____ Best_____

MEMORANDUM FOR Commander, US Army Corps of Engineers, ATTN:
CECE-OS-FL, 20 Massachusetts Avenue, NW,
Washington, DC 20314-1000

SUBJECT: Request Visit of Foreign National(s) to the Portland District

1. Reference AR-380-10, paragraph 5-9, wherein authority is specifically delegated to MACOM commanders, including the Chief of Engineers, to approve visits of foreign nationals to installations and facilities under their jurisdiction.

2. The Commander, Portland District requests clearance for the following foreign national(s) to visit:

a. Name:

b. Position:

c. Country of Citizenship:

d. Date(s) of visit:

e. Purpose:

_____
_____
_____

3. Point of contact for the visit is _____, telephone _____.

4. This visit will benefit the Corps of Engineers and no classified information will be discussed.

5. Attached is a copy of the visitor's passport information for your records and retention.

_____ _____
Signature Block Date

Attachment(s):

SAMPLE RESEARCH DOCUMENTS

SAMPLE RESEARCH PACKET/PROJECT IMPACTS DOCUMENT

PROJECT IMPACTS OF THE PRELIMINARY EVALUATION OF FISH BEHAVIOR PASSING THROUGH SUBMERGED ORIFICES WITH AND WITHOUT PIT TAG DETECTORS INSTALLED

Fisheries Field Unit

U.S. Army Corps of Engineers, Portland District
Bonneville Lock and Dam
Cascade Locks, OR 97014
(541) 374-8801

8 November, 2016

PRELIMINARY EVALUATION OF FISH BEHAVIOR PASSING THROUGH SUBMERGED ORIFICES WITH AND WITHOUT PIT TAG DETECTORS INSTALLED

Background

Installation of adult Passive Integrated Transponders (PIT) tag detectors at Columbia River dams is required by the Supplemental Biological Opinion Incidental Take Statement 3.e. (1998). The impact of adult PIT tag interrogation systems on adult fish passage needs to be evaluated before full scale PIT tag detectors can be installed. In addition, the accuracy of the detectors needs to be tested.

Lamprey passage, in addition to salmonid passage, has become an issue with the adult fish passage evaluation program for the lower Columbia River dams. About 70% of the tagged lamprey that enter the fishways at Bonneville dam do not pass (Steve Ley, personal comm.). Additional information is needed on the problems encountered by lamprey attempting to pass ladders designed for salmonids. Many researches have requested video of lamprey passage through submerged orifices, overflow weirs, and other portions of adult fishways. This study can supply that information as a secondary benefit of this work.

This is expected to be a long-term study that is anticipated to last through December 2003. The FFU conducted the preliminary work on this study in 1999 and 2000. Prior to that, the FFU did an underwater evaluation of fish passage in 1993 and 1994.

OBJECTIVES

Establish historic, baseline data concerning passage routes of fish through a literature review regarding proportions of fish passing through submerged orifices vs. overflow section of weirs.
Determine if the behavior and proportions of fish passing through submerged orifices and overflow sections is different in a normal weir than they are in a weir in which one of the orifices has a PIT tag detector installed. Behaviors to be examined includes proportions of fish passing through north or south orifices or overflow sections, fallback rates, hesitations, and approach and exit orientation through the orifice. (H_o) There is no significant difference in passage between orifices and overflow sections of weirs, whether with or without PIT tag detectors.
Determine the efficacy of adult PIT-tag detectors in tag enumeration of sample fish using visual verification, by means of video technology, of PIT-tagged fish passing the detectors.

METHODS

For Objective 1. For 2001, underwater and overhead cameras will be need to be installed to observe submerged orifices and overflow sections. Overhead cameras will be used to observe overflow weir passage simultaneously with underwater videos to determine the proportion of fish using the overflow weir. Sites for the video cameras will be 37, 51, 52, 53, and 56 in the Washington shore ladder, weirs 50 and 51 in the A branch, and weirs 50 and 51 in the B branch.

We will be recording the spring and fall runs to determine the proportions of fish passing through the orifices and the overflow sections of the weirs. Recording will take place for approximately two weeks during the peak of each run, for a total of about four weeks of recording during the fish passage season. We will be recording all species of salmonids, shad, and lamprey. Four cameras for each weir, two underwater cameras and two overhead cameras, will be used at one time. To improve visibility and aid in identifying fish, we will paint the floor of the ladder and the top of the weirs white. The information we obtain from observing the behavior of fish used to determine usable locations for PIT tag detectors.

Objective 2. The PIT tags and the housing for them will be installed by the National Marine Fisheries Service. Video taping will be done for approximately two weeks with an equal number of hours recorded of weirs with and without PIT tag detectors. The video tapes will be viewed to determine if there is any difference in numbers or behavior of fish in passage at the weirs with PIT tags and numbers or behavior in passage at weirs without PIT tag detectors. Behaviors that will be looked for include any differences between the weirs with or without PIT tag detectors (or just the housing) in avoidance or reluctance to pass, percent passing over the overflow section compared with going through the orifice, and jumping rather than swimming over the weirs.

Objective 3. In 2001, fish collected at the Adult Fish Collection and Monitoring Facility will be tagged with PIT tags by NMFS personnel. In addition, visual detachable streamer tags and other visual cues will be applied to the fish prior to their release and exit from the facility. The four underwater and four overhead cameras that are installed at weirs in the Washington shore ladder will film these fish and the video tape will be viewed to verify the accuracy of the PIT tag units to detect the presence of PIT tagged fish.

Justification of the Proposed Study Area

Bonneville Dam will be used because it is the first dam upstream on the Columbia River and slated to be the first dam outfitted with adult PIT tag detectors. In addition, Bonneville Dam has an adult fish collection facility where fish may be easily collected and tagged. Radio-telemetry work, which is already being done at Bonneville, would also help answer any concerns about the underwater cameras effecting fish passage. In the Washington shore ladder, weirs 52 and 53 will still be used because it is near ac power and not far down to the water's surface. Weir 37 will be used for the verification portion of the study as it is near the adult collection facility and we will be able to observe the behavior of fish shortly after they have been released from the lab. We can then compare fallback behavior of fish released from the lab with fish that have not been trapped.. In addition, the selected weirs in the Washington will be where the PIT tag detectors will be installed. The A branch and B branch were selected in order to obtain base line data on fish behavior at the weirs. These particular weirs were chosen because they are not far from an available power source, which we will need for our trailer.

SCHEDULE

During the winter of 2000/2001, we will mount the camera guides and paint the floors of the ladder around the orifices and the top of the overflow sections at the Bonneville Dam

Washington shore ladder and in the A and B branches of the Bradford Island fish ladder. In the Washington shore ladders, we will install camera mounts on weirs 37, 51, 52, 53, and 56. To install camera mounts and, later, cameras on weir 37, we will need crane time six to ten times during the season. In addition, we will also need to remove the mounts we used last year from the Cascades Island fish ladder. The transformer at the Cascades Island site will, however, remain.

During the peak of the spring run, probably in May, we will video-tape the overflow sections and orifices for approximately two weeks at each test weir. The same will follow for the peaks of the fall run. We will also video-tape fish passing over weir 37 whenever NMFS personnel release fish tagged with PIT, Peterson, and streamer tags. Tapes will be read as they become available. In addition, various cameras, camera angles, deployments, and times of day will continue to be tested throughout the year for efficiency of viewing and identification of fish. When the video taping in September is completed, the camera and mounts will be removed.

FACILITIES AND EQUIPMENT REQUIREMENTS

A transformer and electric hookup, as well as space, for the FFU trailer near the junction pool on the B branch site on Bradford Island. The transformer will be in addition to the one left at the Cascades Island site.
Access to the Cascades Island, Washington shore, and A and B branch fishways during the winter maintenance season.
Permission to use the office in the adult lab to store our equipment and for office work. The FFU will furnish the desks and any other office supplies.

PROJECT IMPACTS

Project Services

During the maintenance season, we will need access to the Washington shore and the A and B branches fishladders in order to paint the floor and weir tops of the fish ladder and to install the camera mounts. We will also need access to the Cascades Island fishladder in order to remove the camera mounts that we used last year.
We will need crane service six to ten times during the season to install cameras at weir 37 in the Washington shore ladder.
We will need the FFU trailer moved from Cascades Island to the B branch site, near the junction pool.

Security

Project security issues involve access to the study areas by FFU personnel and vehicles. Primary work areas will be the Washington shore ladder and the A and B branches of the Bradford Island fishway. The viewing of the video tapes will be done either at the FFU office or the FFU storeroom located in the second powerhouse. Any video-tape viewing by contract personnel will be done off the project. As the workers on this project will be Corps employees, all personnel will be familiar with project regulations concerning security. Should it become necessary for one of us to change the video tape during none business hours, the control room will be notified.

Because one of the camera sites will be accessible to tourists, there is a potential security problem from the public. This site is the by the A branch, on the downstream side. During the hours the project is open to the public, measures will need to taken to protect the camera equipment.

Safety

All personnel will read the Corps of Engineers General Safety and Health Requirements Manual #385-1-1. In addition, monthly safety meetings will be held and the list of topics covered will be provided to the Project Fish Activity Coordinator. More frequent safety meetings specific to this study should not be necessary as we plan to collect data for only one week out of each month. The list of personnel and the expiration dates of their First Aid and CPR expiration dates is attached.

An example of an Activity Hazard Analysis can be found in appendix X

EXAMPLES OF LISTS FOR BOATS, PERSONNEL AND VEHICLES

REG.	NAME	LENGTH	AGENCY	ACTIVITY	POC
OR 111AB	TULE	16	NMFS	PH1 FGE	BROWN, BOB
OR 222BC	TYEE	26	NMFS	PH1 FGE	TROUTMAN, SUE

Figure 4 Suggested Format for Boat List.

			EXPIRATION	
NAME	AGENCY	ACTIVITY	1ST AID	CPR
BROWN, BOB	NOAA-F	PH1 FGE	6/30/04	6/30/04
GILL, MARCUS	NOAA-F	PH1 FGE	6/15/04	6/30/04
SALMON, SAM	NOAA-F	PH1 FGE	6/15/04	6/30/04
TROUTMAN, SUE	NOAA-F	PH1 FGE	6/15/04	6/30/04

Figure 5 Suggested Format for Personnel List.

LICENSE	ST	DESCRIPTION	COLOR	AGENCY	OWNER	POC/CREW BOSS
101-AAA	OR	VOLKSWAGON	RED	NOAA-F	BROWN, BOB	BROWN, BOB
202-ABB	WA	FORD BRONCO	WHITE	NOAA-F	SALMON, SAM	BROWN, BOB
303-ACC	GOV	SUBURBAN	SILVER	NOAA-F	US GOV'T	BROWN, BOB

Figure 6 Suggested Format for Vehicle List.

Sample Activity Hazard Analysis

PRINCIPLE STEPS	POTENTIAL HAZARDS	RECOMMENDED CONTROLS (FROM EM 385-1-1)
1. Installing camera mounts.	Working in severe weather.	Be alert to and prepare for severe weather. Wear several layers of warm clothing for protection from the cold and, as the weather indicates, a waterproof over-garment for protection from the rain (*06.J).
	Riding in a manbasket and climbing ladders creating a potential for falls onto hard surfaces.	Wear work vests and safety harnesses whenever exposed to hazards of falling. When working from ladders, spotters shall be present and responsible for handling ropes and securing equipment (*05.1, 05.F.01-.03, and 21.D.)
	Riding in a manbasket and climbing ladders creating a potential for falls into water.	When working over water, always wear a personal floatation device. Wear work vests and safety harnesses whenever exposed to hazards of falling. When working from ladders, spotters shall be present and responsible for handling ropes and securing equipment (*05.1, 05.F.01-.03, 21.D, and 0.F.05, 05.1.01).
	Potential for being struck by falling objects causing head injury or foot injury.	Always wear hard hats and steel-toed boots. Be aware, at all times, of the location of the crane and the crane boom (*05.D.01, 02, 04, 05,A.08, and 08.A-.B).
	Lifting heavy equipment causing the potential for back strain.	Never attempt to lift a heavy object by yourself. Use a back brace. Use safe lifting techniques such as lifting with your legs rather than with your back.
	Working around and with power and hand tools and equipment causing the potential for injuries to the hands, as well as to other parts of the body.	Wear appropriate hand protection and other protection gear. Know how to operate the tools before starting, especially power tools. Be alert as you work and watch for potentially hazardous situations (*05.A.10)
	Potential for eye injury due to working with power tools.	Always use safety goggles when using a power drill or other power tool that could send debris flying (*05.B.01, 02, 06).
	Exposure to noise.	Use ear protection devices when using power tools and working in the fishway (*05.C.01, 04, 07).
	In using power tools, potential for electric shock.	Inspect tools to ensure there are no frayed cords or other obvious defects. When working with electrical equipment in damp areas, wear boots with soles of rubber or other insulating materials.
	Tripping hazards.	Practice good housekeeping in keeping work area uncluttered. Be aware of potential tripping hazards that cannot be removed (*14.C.01-04, 08).
EQUIPMENT	**INSPECTION REQUIREMENTS**	**TRAINING REQUIREMENTS**
Hand tools, power tools	Inspection prior to use.	Instruction or review in using tools according to the manufacturers' instructions. Documented safety meeting prior to work. First Aid/CPR training (*03.A.02 and 03.D)

PRINCIPLE STEPS	POTENTIAL HAZARDS	RECOMMENDED CONTROLS (FROM EM 385-1-1)
2. Painting floor of the ladder, weirs.	Handling and storing hazardous substances.	Material Safety Data Sheets are to be maintained on site (*06.B.01). Practice good housekeeping when doing the work and cleaning up (*14.C.01-04, 08).
	Climbing ladders creating a potential for falls onto hard surfaces.	Wear work vests and safety harnesses whenever exposed to hazards of falling. When working from ladders, spotters shall be present and responsible for handling ropes and securing equipment (*05.1, 05.F.01-.03, and 21.D.)
EQUIPMENT	**INSPECTION REQUIREMENTS**	**TRAINING REQUIREMENTS**
Paint, painting equipment	Read label on paint container, inspection of equipment prior to use.	Paint used and stored according to the manufacturers' instructions. Equipment used according to the manufacturers' instructions. Material Safety Data Sheets to be maintained on site (*06.B.01).

PRINCIPLE STEPS	POTENTIAL HAZARDS	RECOMMENDED CONTROLS (FROM EM 385-1-1)
3. Building scaffolding.	Working in severe weather.	Be alert to and prepare for severe weather. Wear several layers of warm clothing for protection from the cold and, as the weather indicates, a waterproof over-garment to be protected from the rain (*06.J).
	Climbing ladders creating a potential for falls onto hard surfaces.	Wear work vests and safety harnesses whenever exposed to hazards of falling. When working from ladders, spotters shall be present and responsible for handling ropes and securing equipment (*05.1, 05.F.01-.03, and 21.D.)
	Climbing ladders creating a potential for falls into water.	When working over water, always wear a personal floatation device. Wear work vests and safety harnesses whenever exposed to hazards of falling. When working from ladders, spotters shall be present and responsible for handling ropes and securing equipment (*05.1, 05.F.01-.03, 21.D, and 0.F.05, 05.1.01).
	Potential for being struck by falling objects causing head injury or foot injury.	Always wear hard hats and steel-toed boots. Be aware, at all times, of the location of the crane and the crane boom (*05.D.01, 02, 04, 05,A.08, and 08.A-.B).
	Lifting heavy equipment causing the potential for back strain.	Never attempt to lift a heavy object by yourself. Use a back brace. Use safe lifting techniques such as lifting with your legs rather than with your back.
	Working around and with power and hand tools and equipment causing the potential for injuries to the hands, as well as to other parts of the body.	Wear appropriate hand protection and other protection gear. Know how to operate the tools before starting, especially power tools. Be alert as you work and watch for potentially hazardous situations (*05.A.10)
	Potential for eye injury due to working with power tools.	Always use safety goggles when using a power drill or other power tool that could send debris flying (*05.B.01, 02, 06).

	Exposure to noise.	Use ear protection devices when using power tools and working in the fishway (*05.C.01, 04, 07).
	In using power tools, potential for electric shock.	Inspect tools to ensure there are no frayed cords or other obvious defects. When working with electrical equipment in damp areas, wear boots with soles of rubber or other insulating materials.
	Tripping hazards.	Practice good housekeeping in keeping work area uncluttered. Be aware of potential tripping hazards that cannot be removed (*14.C.01-04, 08).
EQUIPMENT	**INSPECTION REQUIREMENTS**	**TRAINING REQUIREMENTS**
Hand tools, power tools	Inspection prior to use.	Instruction or review in using tools according to the manufacturers' instructions. Documented safety meeting prior to work. First Aid/CPR training (*03.A.02 and 03.D)

PRINCIPLE STEPS	**POTENTIAL HAZARDS**	**RECOMMENDED CONTROLS (FROM EM 385-1-1)**
4. Installing camera, operating and removing camera.	Working in severe weather.	Be alert to and prepare for severe weather. Wear several layers of warm clothing for protection from the cold and, as the weather indicates, a waterproof over-garment to be protected from the rain (*06.J).
	Potential to slip and fall into deep water.	Wear a personal floatation device. Wear safety harnesses whenever exposed to hazards of falling. When working over water, have another person on the site to act as a spotter. Tie safety line to solid structure (*0.F.05, 05.1.01).
	Potential for back strain or other muscle or ligament strain from working in an awkward position.	Use care in moving around and handling equipment. Obtain help in lifting or handling equipment that is heavy or awkward to handle. When necessary, use lifting devices (*14D.A.01-06).
	Exposure to noise from rushing water in ladder.	Use earplugs or other hearing protection equipment (*05.C.01, 04, 07).
	Potential for head and foot injury from working around industrial equipment.	Wear hardhat and steel-toed boots at all times (*05.D.01, 02, 04, 05 and A.08,).
	Tripping hazards.	Practice good housekeeping in keeping work area uncluttered. Be aware of potential tripping hazards that cannot be removed (*14.C.01-04, 08).
EQUIPMENT	**INSPECTION REQUIREMENTS**	**TRAINING REQUIREMENTS**
UW cameras, poles, mounts, VCR's, tripods.	Make sure all equipment is in working order.	Read and follow manufacturers' instructions.