OFFICIAL COORDINATION REQUEST FOR
NON-ROUTINE OPERATIONS AND MAINTENANCE

COORDINATION TITLE- 14BON03 Underwater video of lamprey behavior in BI serpentine section
COORDINATION DATE- 6 Feb 2014
PROJECT- Bonneville Lock and Dam Bradford Island serpentine section
RESPONSE DATE- 13 February 2014 (FPOM)

Description of the problem – The aim of the observations will be to evaluate adult Pacific lamprey behavior at the serpentine weir slots because substantial proportions (25-30%) of adults reaching these areas fail to pass and permanently move downstream (Keefer et al. 2013a, 2013b). The Chris Caudill (University of Idaho) hypothesize that lamprey have difficulty passing through some of the serpentine weir sections, particularly those that are relatively long. Individual weir slots vary in width from 21" to 28" and vary in length from 13" to 44". At Bradford Island, the longest four slots (44") are those with FDX-PIT antennas in place.

Mr. Caudill proposes to install paired video cameras at the upstream and downstream end of two serpentine weirs (four cameras total), one with a PIT antenna (long slot) and one without (short slot). The set up will be conceptually identical to that used by Beck (1995; Figure 1) and using equipment identical to our recent work at McNary and Snake River dams (Thompson et al. 2013). [Note, unfortunately the video collected during the Beck and other FFU studies is no longer available]. Example potential locations are given in Figure 2. Final locations will be determined by top-side access, coordination with BON Project Biologists, and coordination with PSMFC personnel to ensure cameras will not cause interference with FDX PIT readers. Past testing with similar set-ups at McNary Dam have indicated low potential for PIT interference issues.

In an effort to minimize potential impacts to fish, they plan to slightly modify their approach in comparison to past years, where an I-beam was mounted to a fishway wall and an instrument trolley was used to move cameras into place. At Bradford Island in 2014, they propose to mount cameras directly to a 3" i-beams, which will be deployed during observations by sliding the i-beam down a mounting channel attached to the fishway wall (Figure 3). The mounting channels will be installed during the 2013-2014 in-water work period. Total height of the mounting channel will be ~1 1/8".

Length of Time for Testing – Observations will be made during ~ 2 weeks in summer 2014 during the peak of the lamprey run. Efforts will be made to make observations when water clarity it high and when sockeye run numbers are low (e.g., mid-July-early August).

Type of outage required – No outage required.

Dates of Impacts – Efforts will be made to make observations when water clarity it high and when sockeye run numbers are low (e.g., mid-July-early August).

Impact on facility operation.

No impacts are expected on facility operations. Limited project support is needed to facilitate the installation of the monitoring system and power supply. Funding has been arranged.

Expected impacts on fish passage

Downstream Juvenile Migrants:

None

Upstream Adult Migrants:

The 1 1/8" mounting channel is not expect to have measurable impact on adult migrants. When the I-beam and camera systems are deployed for recording video, there is potential for upstream migrants to bump into them or they could act as a slight obstruction. They will be using equipment identical to recent work at McNary and Snake River dams where no impact was seen. When cameras are initially deployed they will be monitored for potential impact and removed if necessary. Additionally, Bonneville Project fisheries has volunteered to observe the I-beams during their fishway inspections from the deck level. Again if negative impacts are noticed the cameras can be removed.

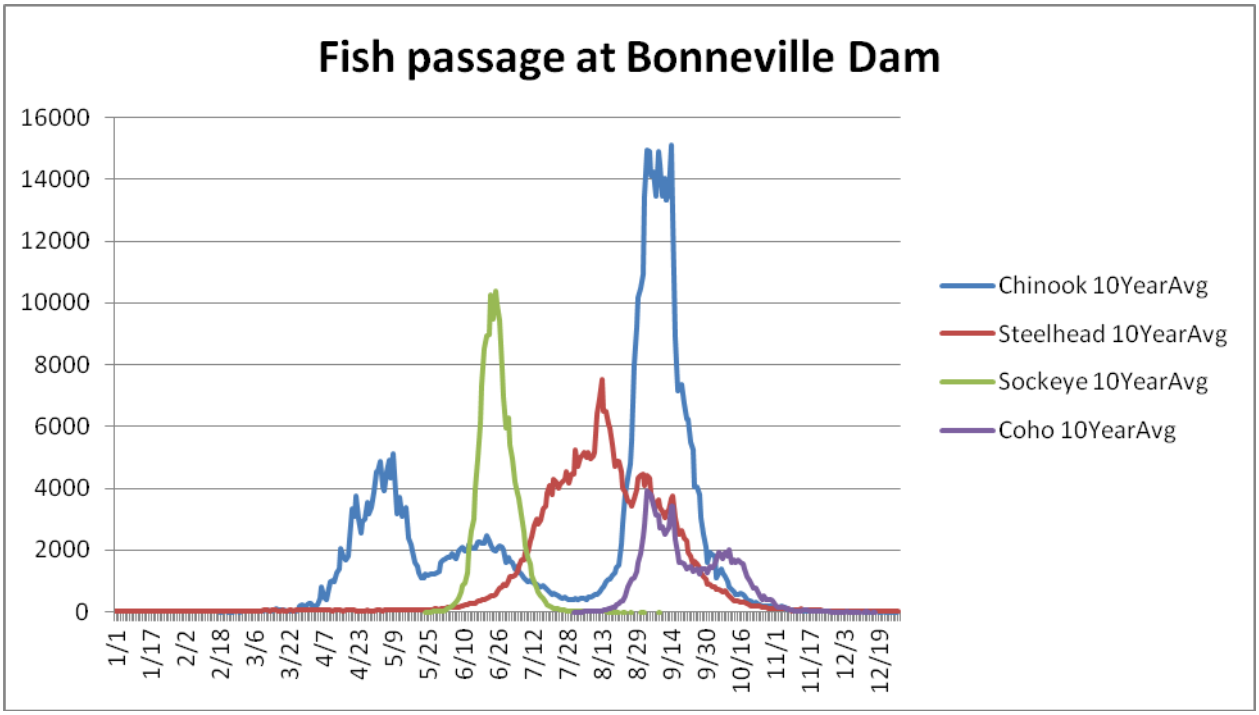

Figure 1. Fish passage and timing at Bonneville Dam.

Adult Fallback:

None

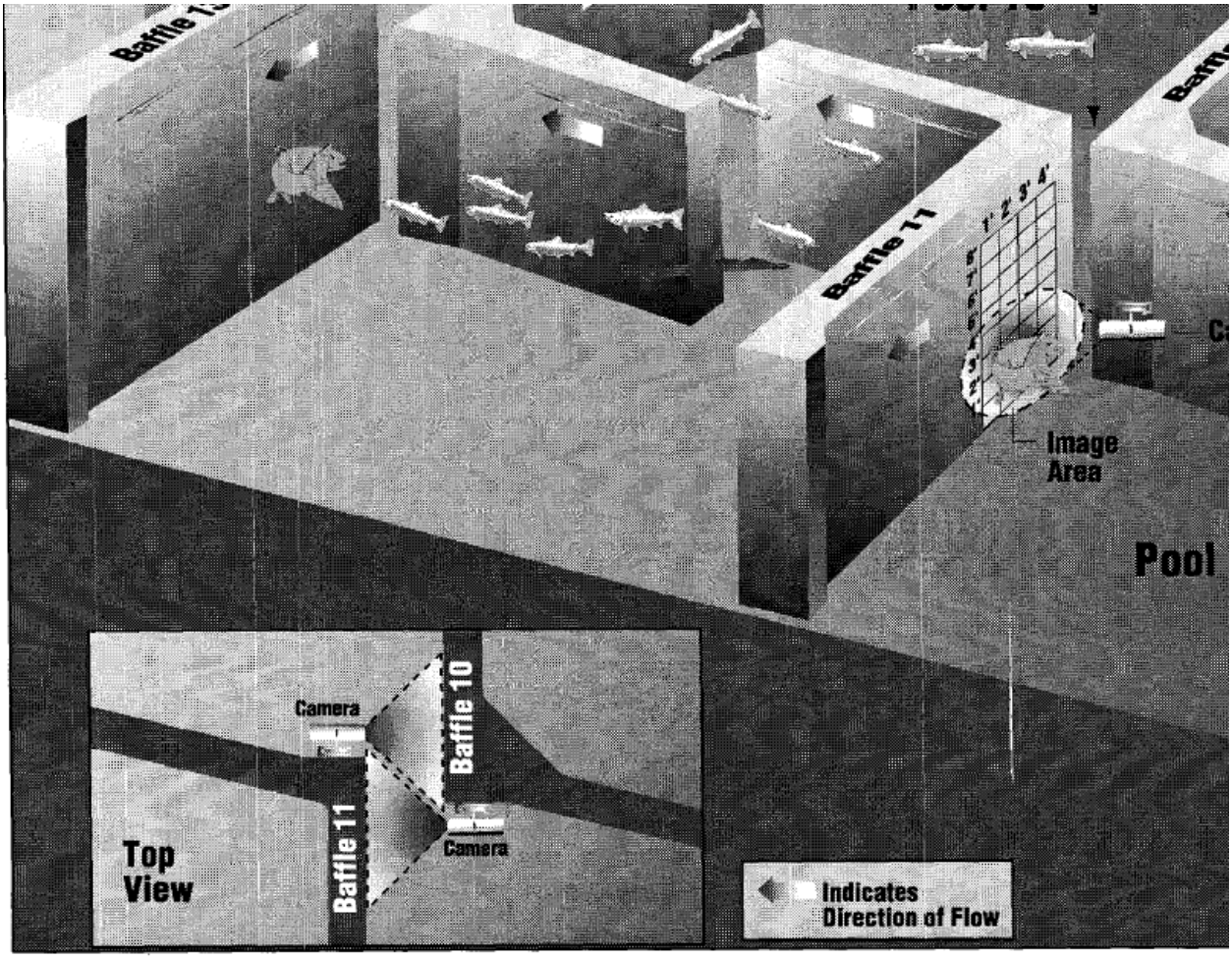

Figure 4. General view of the ladder showing locations of the cameras in the vertical slot at the Washington shore ladde

Figure 1. Video camera deployments from Beck (1995) depicting location of serpetine wier cameras used in that study. We propose near idential set-ups.

Figure 2: Representative (cartoon) depiction of camera rail and camera deployments in Bradford Island Serpentine Weir section. I-beams sliding in a mounting bracket (green) will support camera and IR light assemblies (blue) during deployment; I-beams and cameras will be removed during non-observational periods.

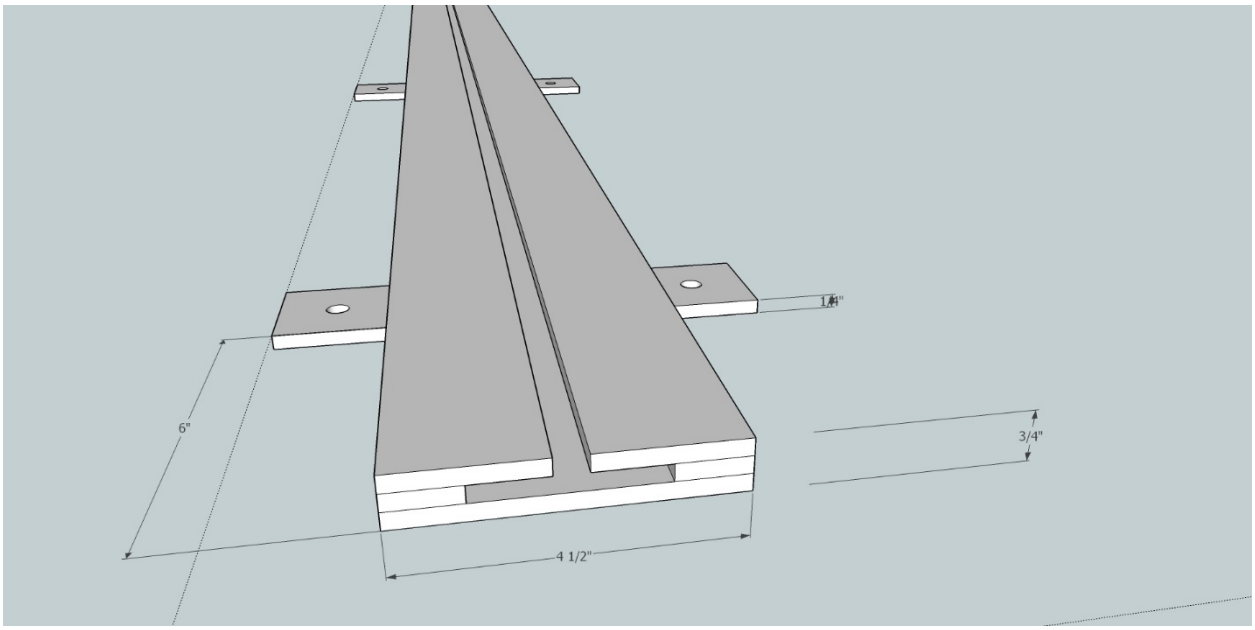

Figure 3: Detail of mounting channel showing slot for camera I-beam. The channel will be constructed from ¼" sheet aluminum welded into a laminate. The channel will be mounted at least one foot above the fishway floor. A stop will prevent the i-beam from extending below the channel (not shown). Mounting tabs will be a minimum 24" O.C. and rails will be anchored with ¼" SS Hilti bolts with an embedded depth of ~2" each. I-beams will be placed in area out of the direct flow as shown in Figures 1 and 2.

Final Action: Approved at the February 13 FPOM meeting.

Additional feedback once photos (above) of the mounting channel were reviewed.

-----Original Message-----
From: Caudill, Christopher (caudill@uidaho.edu) [mailto:caudill@uidaho.edu]
Sent: Thursday, February 20, 2014 9:34 AM
To: Trevor Conder - NOAA Federal; Hausmann, Ben J NWP
Cc: Tom Lorz; Mackey, Tammy M NWP; Gary Fredricks - NOAA Federal; Boggs, Charles (cboggs@uidaho.edu); Johnson, Eric (ejohnson@uidaho.edu); Mark A Kirk
Subject: RE: [EXTERNAL] Re: FW: Mounting channels for I-beam in BI serpentine for video

Hello Trevor and Tom,

Absolutely. We will need to discuss the details of the camera deployments with you before equipment goes in the water during the run season. We will be working on the brackets and mounts this spring. Our hope is to orient the cameras such that we can image into the slot without having cameras in the flow, and if we can't, we'll settle for imaging across the opening. The cameras and lights are both "bullet" shaped and shouldn't present too much of an issue. Regardless, we'll work with you to make sure everybody's comfortable with the set up because it's an important spot to get everything right.

Thanks,
Chris C.

-----Original Message-----
From: Hausmann, Ben J NWP
Sent: Thursday, February 20, 2014 9:01 AM
To: Trevor Conder - NOAA Federal
Cc: Tom Lorz; Mackey, Tammy M NWP; Gary Fredricks - NOAA Federal; Caudill, Christopher
Subject: RE: [EXTERNAL] Re: FW: Mounting channels for I-beam in BI serpentine for video

Trevor,
I think the camera and I-beam, once installed, will certainly be in the main stream of flow. I think the question may be how much obstruction is acceptable. Chris will have to get you the specific dimensions but I think we're talking about a total of 7-8 inches (I-beam plus camera) once it is installed. This will only be for a few weeks during the height of the lamprey run. I think we can get an acceptable configuration for the channel that is currently installed but you guys will have to let us know if you have issue with the other components scheduled to go in this summer.
Thanks for looking into it.

Ben

-----Original Message-----
From: Trevor Conder - NOAA Federal [mailto:trevor.conder@noaa.gov]
Sent: Thursday, February 20, 2014 8:17 AM
To: Hausmann, Ben J NWP
Cc: Tom Lorz; Mackey, Tammy M NWP; Gary Fredricks - NOAA Federal; Caudill, Christopher
Subject: Re: [EXTERNAL] Re: FW: Mounting channels for I-beam in BI serpentine for video

Ben,

Our main concern here is that large structures (brackets, cameras, etc.) are not protruding into the main pathway of flow where adult salmonids could be injured. From the schematic, it appears that the face of the cameras will be very close to the edge of the main stream of flow. Please verify for us that on the final install, these cameras and mounting structures will not protrude into the streaming flow, and have them backed out of the flow if necessary. As always, any sharp edges should be smoothed and minimized to the degree possible. Send us some photos along the way and let us know if you have any questions or concerns.

Trevor

On Thu, Feb 20, 2014 at 6:05 AM, Hausmann, Ben J NWP <Ben.J.Hausmann@usace.army.mil> wrote:
Tom,

We have asked the researchers to cut off the overhanging portion and not have anything protruding into the flow, above water or not. We'll try to get a picture to folks once the mod is complete. Thanks for the feedback.

Ben

-----Original Message-----
From: Tom Lorz [mailto:lort@critfc.org]
Sent: Wednesday, February 19, 2014 6:20 PM
To: Hausmann, Ben J NWP; Mackey, Tammy M NWP
Cc: trevor.conder@noaa.gov
Subject: [EXTERNAL] Re: FW: Mounting channels for I-beam in BI serpentine for video

Don't know if trevor talked to you yet, but it seems that they could do a better job and run this along the concrete ball with out the overhang at the top of the bracket, or is this out of the water. Even if it is out of the water still not the best. This seems to be out in the flow more than I was expecting. I would strongly suggest they shift if back some. Sent this to our lamprey guy to see if this is any problem as well.

let me know if there is a problem moving this, when are you watered back up and no longer able to get do, Thursday, probably....

thanks
tom

>>> "Hausmann, Ben J NWP" <Ben.J.Hausmann@usace.army.mil> 2/19/2014 10:12 AM >>>
Tom,
What do you think of this? I've asked them to change it but would appreciate your opinion.
Ben

-----Original Message-----
From: Caudill, Christopher (caudill@uidaho.edu) [mailto:caudill@uidaho.edu]
Sent: Wednesday, February 19, 2014 3:47 PM
To: Traylor, Andrew NWP; Zorich, Nathan A NWP; Hausmann, Ben J NWP; Royer, Ida M NWP; Bissell, Brian M NWP
Cc: Mackey, Tammy M NWP
Subject: [EXTERNAL] RE: Mounting channels for I-beam in BI serpentine for video

Good point Andy. We use shims to wedge the i-beam in place and to prevent vibration, though I forgot to check and make sure we added one at the bottom to keep the lower half snug. I'll check with Jeff on the details.

C

-----Original Message-----
From: Traylor, Andrew NWP [mailto:Andrew.W.Traylor@usace.army.mil]
Sent: Wednesday, February 19, 2014 3:44 PM
To: Caudill, Christopher (caudill@uidaho.edu); Zorich, Nathan A NWP; Hausmann, Ben J NWP; Royer, Ida M NWP; Bissell, Brian M NWP
Cc: Mackey, Tammy M NWP
Subject: RE: Mounting channels for I-beam in BI serpentine for video

Thanks guys. I met with Jeff this afternoon and we've got a good plan for moving forward.

I was glad to hear there's no interference with the PIT antennas too. Darren did reiterate his concerns about any movement between the I-beam and the guide causing noise. Any effort to minimize this would be prudent, especially if there's something that could be done in the dewatered state.

-Andy

-----Original Message-----
From: Caudill, Christopher (caudill@uidaho.edu) [mailto:caudill@uidaho.edu]
Sent: Wednesday, February 19, 2014 3:24 PM
To: Zorich, Nathan A NWP; Traylor, Andrew NWP; Hausmann, Ben J NWP; Royer, Ida M NWP; Bissell, Brian M NWP
Cc: Mackey, Tammy M NWP
Subject: [EXTERNAL] RE: Mounting channels for I-beam in BI serpentine for video

Hello Nathan, et al.

I've spoken to Jeff and he's spoken to Andy. He and Les plan to cut the beams flush so no more "stick-out" sometime tomorrow. Will also grind everything nice and smooth. Again, our apologies for the unexpected (and inappropriate) change in plans.

Also, Jeff met with Darren today and tested the cameras. He reports no interference with the PIT antennas, so good to go there.

Thanks,
Chris

-----Original Message-----
From: Zorich, Nathan A NWP [mailto:Nathan.A.Zorich@usace.army.mil]
Sent: Wednesday, February 19, 2014 2:20 PM
To: Traylor, Andrew NWP; Hausmann, Ben J NWP; Royer, Ida M NWP; Bissell, Brian M NWP
Cc: Mackey, Tammy M NWP; Caudill, Christopher (caudill@uidaho.edu)
Subject: RE: Mounting channels for I-beam in BI serpentine for video

Spoke with Chris Caudill on the phone today.

He had been recently told by his field crew that due to the inability to remove the grating above the I-beam channel it had to be installed at an angle and that the top part was sticking into the air above the fishway. The angle was required so the I-beam could be installed w/o removing the grating.

Their plan is to cut the rail's length so it no longer sticks out past the wall and then smooth the edges to protect fish. The work will likely be done by:

Jeff Garnett cell:
Les Layng cell:

If things are not done to your satisfaction please let me know, and of course feel free to coordinate with Garnett and Layng in the field.

Nathan Zorich

Fish Biologist - Fish Field Unit - USACE
(541) 554-3137 - Black Berry
Nathan.A.Zorich@usace.army.mil

-----Original Message-----
From: Zorich, Nathan A NWP
Sent: Tuesday, February 18, 2014 4:59 PM
To: Traylor, Andrew NWP
Subject: Mounting channels for I-beam in BI serpentine for video

Andy,

I was a little surprised to see how far two of the four channels lean away from the smooth wall creating an edge. Looking closer it seems they are above the typical water line and likely had to be installed that way to facilities feeding the I-beam into the channel.

Just wanted to be sure your crew saw this and was ok with it while there still might be time for an adjustment. I haven't had time to talk to Caudill yet but will tomorrow.

Nathan Zorich