# Fish Passage Plan (FPP) Change Request Form

**Change Form # & Title**: 18LGS009 – Add Criteria for Ladder Cooling Pump

**Date Submitted**: February 14, 2018; REVISED April 4, April 11, and June 18

**Project**: Little Goose Dam

**Requester Name, Agency**: Chris Peery Corps NWW

**Final Action:** **APPROVED as Revised June 18, 2018**

**FPP Section**: LGS section 2.4.2. Adult Facilities – Fish Passage Season (Mar 1-Dec 31)

**Justification for Change**: Add new section for criteria to turn on LGS ladder cooling pump. Criteria are the same as for Lower Granite ladder exit pool cooling pumps.

**Proposed Changes**: Add new section 2.4.2.14:

**2.4.2.14. Adult Fish Ladder Exit Pool Cooling Pump.** Operate forebay exit pool cooling pump that spray upstream of the fish ladder exit to enhance conditions for adult fish exiting the ladder and to supplement cooler water throughout the ladder. The water supply for the manifold at the exit pool originates from an added forebay pump with intake at elevation 543’ in the forebay, which is 90’ below the MOP range (633-638’).

* + - * 1. Begin operation of exit pool cooling pump after 1 June and when the 0.5 meter forebay temperature exceeds 64°F (18°C) at any time. Forebay temperature string data are online at: http://pweb.crohms.org/ftppub/water\_quality/tempstrings/
				2. Continue this operation until 1 September and until water temperature at the 0.5 m forebay string is < 68°F (20°C) for 3 consecutive days; at that time, discontinue pump operation until water temperature has declined below 64°F and then use criteria as described above to re-start pump operation.
				3. The pump may be turned on or off at the Project Biologist’s discretion if adult passage delays are observed either in the forebay or within the ladder, and operation of the pump is believed to influence the adult passage issue.

**Comments**: *(listed from oldest to newest)*

3/8/18 FPOM: FPOM generally ok with this. Conder would like to look at ladder temperature data to make sure a differential doesn’t show up at exit temperatures below 68°F. Van Dyke concurred. PENDING further review and discussion at FPOM on April 13th.

4/4/18 email to FPOM from Chris Peery with revised change form: “Attached is the updated FPP Change form for operation criteria for the fishway cooling pump at little Goose Dam, for your review. We will discuss at next week's FPOM meeting at McNary Dam.”

-----Original Message-----
From: Kiefer, Russell [mailto:russ.kiefer@idfg.idaho.gov]
Sent: Wednesday, April 04, 2018 3:22 PM
To: Peery, Christopher A CIV (US) <Christopher.A.Peery@usace.army.mil>
Subject: [Non-DoD Source] RE: 18 LGS 009 Fish Pump Criteria FPP Change

Chris,

We have no objections, but question the need to start at 64F instead of the standard 68F. Was there any data to support this change?

Russ

From: Peery, Christopher A CIV (US)
Sent: Wednesday, April 04, 2018 3:26 PM
To: 'Kiefer,Russell' <russ.kiefer@idfg.idaho.gov>
Cc: 'Trevor Conder - NOAA Federal' <trevor.conder@noaa.gov>

Russ,

Trevor looked over the string data as well as fishway temperatures and he determined that around 18 C at 0.5 m depth was when the forebay began to stratify and you started seeing warm surface water (which could be warmer than 18 C) flows into the ladder exit.

Did I get that correct Trevor?

We can discuss this at the meeting next week to clarify these points.

Chris

-----Original Message-----
From: Tom Lorz [mailto:lort@critfc.org]
Sent: Wednesday, April 04, 2018 4:30 PM
To: Peery, Christopher A CIV (US) <Christopher.A.Peery@usace.army.mil>
Subject: [Non-DoD Source] RE: 18 LGS 009 Fish Pump Criteria FPP Change

This should be ok, assume we will be talking more at FPOM, thanks

-----Original Message-----
From: Swank, David [mailto:david\_swank@fws.gov]
Sent: Wednesday, April 04, 2018 3:51 PM
To: Peery, Christopher A CIV (US) <Christopher.A.Peery@usace.army.mil>
Subject: [Non-DoD Source] Re: [EXTERNAL] 18 LGS 009 Fish Pump Criteria FPP Change

Hi Chris,

I just read this over, and I think there's a typo in the revised text for part a. The threshold to turn it on should be 68F, otherwise it wouldn't make any sense. We'd have to jump from 68 down to 64 or less to shut off the pump...

From: Peery, Christopher A CIV (US)
Sent: Wednesday, April 04, 2018 4:16 PM
To: 'Swank, David' <david\_swank@fws.gov>
Cc: 'Trevor Conder - NOAA Federal' <trevor.conder@noaa.gov>; Setter, Ann L CIV USARMY CENWW (US) <Ann.L.Setter@usace.army.mil>
Subject: RE: [Non-DoD Source] Re: [EXTERNAL] 18 LGS 009 Fish Pump Criteria FPP Change

David,

Trevor meant to use 64 so that was not a typo but I see what you mean. As soon as you turn it off you would need to turn it back on again because the forebay would likely be above 64. I also saw I forgot to add "until 1 September" to part b (see below). Good catch.

Trevor, we need a little wordsmithing here.

a. Begin operation of exit pool cooling pump after 1 June and when the 0.5 meter forebay temperature exceeds 64°F (18°C) at any time. Forebay temperature string data are online at: http://pweb.crohms.org/ftppub/water\_quality/tempstrings/

b. Continue this operation until 1 September or until water temperature at the 0.5 m forebay string is < 68°F (20°C) for 3 consecutive days, whichever is later; at that time, discontinue pump operation until criteria to start pump operation are met.

4/11/18: Revised by Chris Peery to add language for ending the operation.

4/13/18 FPOM: Conder reviewed the data and found there were times when the pump should have been used. The data indicate stratification starts at 63°F, so Conder suggests starting the pump at 64°F. The criteria for turning on and off are different. Kiefer doesn’t want unnecessary wear and tear on the new pump and said that the delay problem with differentials in the ladder occurs at higher temperatures (>=68°F). Conder cited a U of I study that found delay when there was a 1°C differential at temperatures lower than 68°F. PENDING further review and discussion.

5/24/18 FPOM: Swank would like some language added about turning pumps back on. Peery will make that revision.

-----Original Message-----

From: Trevor Conder - NOAA Federal [mailto:trevor.conder@noaa.gov]
Sent: Wednesday, June 13, 2018 4:31 PM
To: Swank, David <david\_swank@fws.gov>
Subject: [Non-DoD Source] Re: [EXTERNAL] RE: LGS pump criteria Change Form

David,

I see your point. This is the criteria I originally suggested to the Corps. Not sure how it was changed to or but it wasn't me.

If after June 1, turn on cooling pumps if the .5 meter forebay string exceeds 18C at any time. Pumps will remain on until after September 1 and the .5 meter forebay string is below 20C every hour for three consecutive days.

From: Peery, Christopher A CIV (US)
Sent: Monday, June 18, 2018 7:32 AM
To: 'Trevor Conder - NOAA Federal' <trevor.conder@noaa.gov>; Swank, David <david\_swank@fws.gov>

So, change "or" to "and" so it reads;

b. Continue this operation until 1 September and until water temperature at the exit pool and the 0.5 m forebay string at 0.5 meters deep are is < 68°F (20°C) for 3 consecutive days; at that time, discontinue pump operation until water temperature has declined below 64°C and then use criteria as described above to re-start pump operation are met.

Will this work?

From: David Swank [mailto:david\_swank@fws.gov]
Sent: Monday, June 18, 2018 9:26 AM
To: Peery, Christopher A CIV (US) <Christopher.A.Peery@usace.army.mil>
Cc: Trevor Conder - NOAA Federal <trevor.conder@noaa.gov>

Just delete the "is" before < 68F and I think we're good.

From: Trevor Conder - NOAA Federal [mailto:trevor.conder@noaa.gov]
Sent: Monday, June 18, 2018 9:34 AM
To: David Swank <david\_swank@fws.gov>
Cc: Peery, Christopher A CIV (US) <Christopher.A.Peery@usace.army.mil>

Chris,

We are fine with this language.

-Trevor

**Record of Final Action**: APPROVED as revised June 18, 2018