

## MEMORANDUM FOR THE RECORD

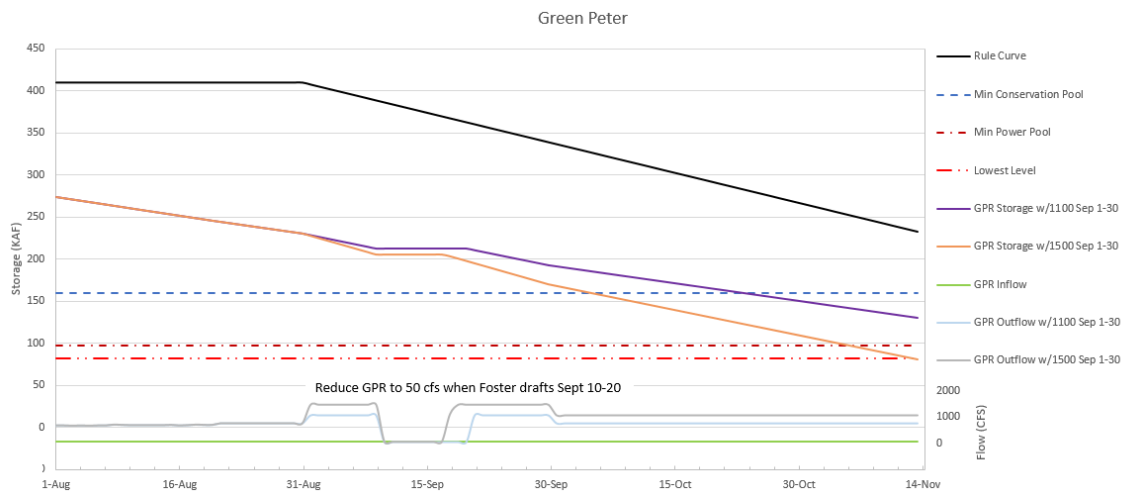
**TITLE** - 18FOS03 MFR Spawning Flows in South Santiam River**DATE** - 06 September 2018**PROJECT** - Foster Dam**RESPONSE DATE** - 20 September 2018**Description of the problem**

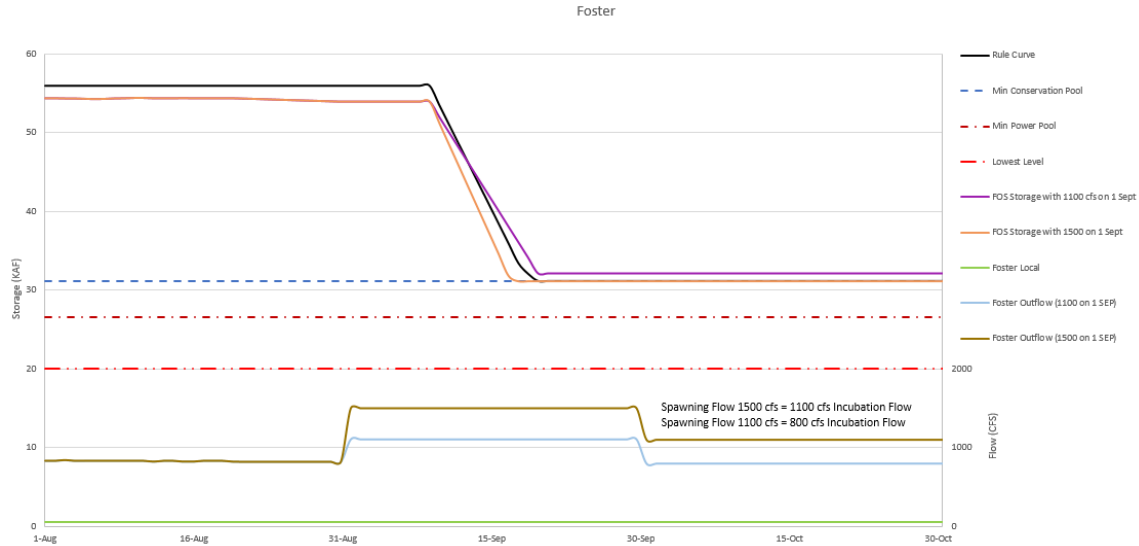
To balance flows in the Willamette basin for salmon and steelhead, flow targets are being adjusted adaptively as conditions change and as the latest forecasts become available.

The flow changes for the South Santiam River (below Foster Dam) were the result of discussions with the National Marine Fisheries Service, Oregon Department of Fish and Wildlife, and others as dry conditions continue.

**Type of change/outage required**

Flows were increased to 1,200 cfs, for spawning spring Chinook salmon below Foster Dam on the South Santiam River on September 4 after various scenarios were proposed/modeled. Flows for spawning spring Chinook salmon are typically scheduled to increase to 1,500 cfs as listed in the Biological Opinion (BiOp). Flows will be decreased to 1,000 cfs on 26 September due to continued dry conditions.

**Scenarios:**



## Dates of impacts

01 September-TBD.

## Expected impacts on fish

Impacts to fish will depend on future flows. This memorandum will be updated to reflect those impacts.

The U.S. Army Corps of Engineers, National Marine Fisheries Service, and the Oregon Department of Fish and Wildlife (ODFW) conducted visual observations of redds from Foster Dam to Pleasant Valley on 20 September. After flows are decreased on 26 September, ODFW will conduct a survey to assess impacts and to ensure redds are still watered up. This assessment was completed and redds were still watered up after flows were decreased to 1,000 cfs.

## Comments from agencies

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

From: Hart, Salina N CIV USARMY CENWP (US)

Sent: Wednesday, August 29, 2018 5:25 PM

To: Anne Mullan - NOAA Federal <anne.mullan@noaa.gov>

Cc: Walker, Christopher E CIV USARMY USACE (US)

<Christopher.E.Walker@usace.army.mil>; Taylor, Gregory A CIV USARMY CENWP (US) <Gregory.A.Taylor@usace.army.mil>; DLL-CENWP-RCC <DLL-CENWP-RCC@usace.army.mil>; Hoque, Yamen M CIV USARMY CENWP (US)

<Yamen.M.Hoque@usace.army.mil>; Elise Kelly

<elise.x.kelley@state.or.us>; Kelly Reis <kelly.e.reis@state.or.us>;

Jeffrey Ziller <Jeffrey.S.Ziller@state.or.us>

Subject: Re: [Non-DoD Source] Re: Fall Creek Release Plan

Anne,

Thanks for the response. We can ramp up to 1200 cfs earlier as requested, but just keep in mind that if we do not get enough precip,

the ability to maintain the 1000 cfs incubation flow lessons. Hopefully the fish spawn early and we can ramp back down earlier.

Chris sent out an invite for Wednesday so we can discuss how things are looking then.

Thanks again!

Salina N. Hart, PE  
Chief, Reservoir Regulation & Water Quality Section  
Office: 503.808.4887  
Cell: 503.819.4189  
From: Anne Mullan - NOAA Federal  
Sent: Wednesday, August 29, 2018 4:35 PM  
To: Hart, Salina N CIV USARMY CENWP (US)  
Cc: Walker, Christopher E CIV USARMY USACE (US); Taylor, Gregory A CIV USARMY CENWP (US); DLL-CENWP-RCC; Hoque, Yamen M CIV USARMY CENWP (US); Elise Kelly; Kelly Reis; Jeffrey Ziller  
Subject: Re: FW: [Non-DoD Source] Re: Fall Creek Release Plan

Hello Salina and others,  
I had a chance to discuss the spawning timing and possible changes due to flow with ODFW Biologists and would like to suggest that rather than the proposal sent yesterday, the Corps considers the following alternative:

South Santiam spawning flows at 1200 cfs by Tuesday 9/4, increasing within ramping rates. This will signal spawners to get busy, if they are in the system, or arriving in the next week as we would expect for most that crossed Willamette Falls more than a month ago (with few counts since July 17, see [Blockedhttps://www.dfw.state.or.us/fish/fish\\_counts/willamette/2018/2018\\_Monthly\\_sheet.pdf](https://www.dfw.state.or.us/fish/fish_counts/willamette/2018/2018_Monthly_sheet.pdf)). As air temperatures stay in the 80s, the conditions won't improve without flow to expand spawning areas or provide more depth. As the month of September moves along, we would like to get the redd counts by reach from the contractors working in that basin. We could then converse again about when to drop to 1000 cfs incubation flows based on whether more redds would be expected into late September.

We appreciate the change in flows at Fall Creek, to benefit spawners there with all flows through the fishhorns, when you close ROs. If other basins allow the Corps to more closely meet Albany targets (as is proposed for Cougar, and could also be done in Hills Creek to maintain the desired elevations in LOP), that would help provide river conditions more conducive to rearing juveniles going into October. Ideally, adults will be moving into tribs soon, if they haven't already.

On Detroit, we acknowledge the hope to keep elevations at a few ramps in the reservoir through September 3rd, and are glad to see there's sufficient flow for full BiOp spawning and incubation target flows into Sept and October. Also nice to have had temp operations through the start of this week; hopefully better incubation timing this fall as a result.

Thanks for the coordination, and we can check in next Wednesday if needed. On a slightly positive note, the CPC is now showing a 3-week

outlook of EC: Equal Chances to be above or below normal precipitation levels for 8th-21st September... although probabilities of drier days when they forecast out to November. Rain, come on down -- after Labor Day.

Best, Anne

On Tue, Aug 28, 2018 at 4:04 PM, Hart, Salina N CIV USARMY CENWP (US) <Salina.N.Hart@usace.army.mil <mailto:Salina.N.Hart@usace.army.mil> > wrote:

Anne,

Thanks for talking things through earlier. As discussed, the following is the plan for next week and through the month. Let us know if this is the same understanding as you have.

- Fall Creek: Decrease outflows to approximately 200 cfs (full flow through fishhorns) and close RO's. This will impact Albany flows. Expectation is to be near 75% of Albany target.

- Detroit/Big Cliff: Start increasing to 1500 cfs by 4 September (this allows a little more water for recreation for Labor Day. Temperature operations have stopped since the reservoir is below spillway crest.)

- Green Peter/Foster: Start increasing outflow to 1200 cfs. Start on Tuesday (900 cfs) and ramp 100 cfs each day until Friday (1200 cfs). We will have a call Wednesday to see if we truly need to ramp all the way up to 1200 cfs. The plan then will be to reduce to 1,000 cfs on 1 October. As always, if the outlook looks worse or even better, we can discuss other possible operations.

Thank you,

Salina N. Hart, P.E.  
Chief, Reservoir Regulation & Water Quality Section  
Portland District  
503.808.4887 Office  
503.819.4189 Mobile

salina.n.hart@usace.army.mil  
<mailto:salina.n.hart@usace.army.mil>

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

From: Anne Mullan - NOAA Federal [mailto:anne.mullan@noaa.gov <mailto:anne.mullan@noaa.gov> ]  
Sent: Tuesday, August 28, 2018 2:09 PM  
To: Hart, Salina N CIV USARMY CENWP (US) <Salina.N.Hart@usace.army.mil <mailto:Salina.N.Hart@usace.army.mil> >  
Cc: Walker, Christopher E CIV USARMY USACE (US) <Christopher.E.Walker@usace.army.mil <mailto:Christopher.E.Walker@usace.army.mil> >; Taylor, Gregory A CIV USARMY CENWP (US) <Gregory.A.Taylor@usace.army.mil <mailto:Gregory.A.Taylor@usace.army.mil> >; DLL-CENWP-RCC <DLL-CENWP-RCC@usace.army.mil <mailto:DLL-CENWP-RCC@usace.army.mil> >

Subject: Re: FW: [Non-DoD Source] Re: Fall Creek Release Plan

yes, I can discuss briefly-- I'll call your work number and if you see this before you hear from me, feel free to call me.

best, Anne

On Tue, Aug 28, 2018 at 12:25 PM, Hart, Salina N CIV USARMY CENWP (US) <Salina.N.Hart@usace.army.mil>  
<mailto:Salina.N.Hart@usace.army.mil> wrote:

Hi Anne,

Are you available today to discuss? We are concerned about the South Santiam. The water supply outlook doesn't look promising. The OWRD Water Conditions report dated yesterday says that ENSO-Neutral conditions are expected to continue through the summer. There are increasing chances for El Niño conditions during the fall and winter which means a dry.

Thanks,

Salina N. Hart, P.E.  
Chief, Reservoir Regulation & Water Quality Section  
Portland District  
503.808.4887 Office  
503.819.4189 Mobile

salina.n.hart@usace.army.mil  
<mailto:salina.n.hart@usace.army.mil>

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

From: Hoque, Yamen M CIV USARMY CENWP (US)  
Sent: Tuesday, August 28, 2018 10:07 AM  
To: Hart, Salina N CIV USARMY CENWP (US)  
<Salina.N.Hart@usace.army.mil> <mailto:Salina.N.Hart@usace.army.mil>  
Subject: FW: [Non-DoD Source] Re: Fall Creek Release Plan

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

From: Anne Mullan - NOAA Federal  
<mailto:anne.mullan@noaa.gov> <mailto:anne.mullan@noaa.gov> > ]  
Sent: Monday, August 27, 2018 5:43 PM  
To: Hoque, Yamen M CIV USARMY CENWP (US)  
<Yamen.M.Hoque@usace.army.mil> <mailto:Yamen.M.Hoque@usace.army.mil>  
<mailto:Yamen.M.Hoque@usace.army.mil>  
<mailto:Yamen.M.Hoque@usace.army.mil> > >; Scullion, Mary K CIV USARMY CENWP (US) <Mary.K.Scullion@usace.army.mil>  
<mailto:Mary.K.Scullion@usace.army.mil> Cc: Taylor, Gregory A CIV USARMY CENWP (US) <Gregory.A.Taylor@usace.army.mil>  
<mailto:Gregory.A.Taylor@usace.army.mil>  
<Christopher.E.Walker@usace.army.mil>  
<mailto:Christopher.E.Walker@usace.army.mil> > >; Elise Kelly  
<elise.x.kelley@state.or.us> <mailto:kelly.e.reis@state.or.us> > >; Jeffrey Ziller <Jeffrey.S.Ziller@state.or.us>  
<mailto:Jeffrey.S.Ziller@state.or.us> Subject: [Non-DoD Source] Re: Fall Creek Release Plan

Good afternoon, all.

Thank you for the clear and informative modeling results of proposed targets at or below the BiOp minimums for Albany and below Foster in the South Santiam during September and October. We note the lower alternative targets at Albany and in the South Santiam may maintain elevations that are above the minimum conservation pool floor and avoid dipping into the power pool during September. In some cases (e.g. Hills Creek) they may also allow elevations to remain above the minimum conservation pool floor throughout October.

We appreciate that the Corps has mostly met the Albany target to date in August, and we would like to see flows that stay nearer to 85% of the Albany Congressionally authorized minimum flows during September. We understand lower flows are in part due to unanticipated drought conditions in the upper basin. We would like to see flows that maximize Chinook spawner success in the Fall Creek area below the dam. If this means lower mainstem flows initially from this subbasin, any retained storage could help in October. Showing use of all sources, including Hills Creek, to meet a higher Albany target would be informative.

Given the model projects little to no precipitation through Nov 1st, could we see alternatives with more precipitation? And if possible, running some alternatives for the South Santiam would help us see if the higher spawning and incubation flows risk pool elevations close to minimum power pool.

For the South Santiam, the recommended proposal outflow of 1100 cfs rather than the target of 1500 cfs will be challenging for Chinook spawning. While model results show possibly drafting below the minimum conservation pool in late October rather than in early October under the BiOp target flows, higher flows will increase viable spawning areas. Could you provide spawning flow runs of 1300 and 1200 cfs, dropping by 200 cfs in early October for incubation? Another possible scenario would be to step up from the current 800 cfs to these higher flows in 100 cfs/day over the first days of September, as spawning has yet to start.

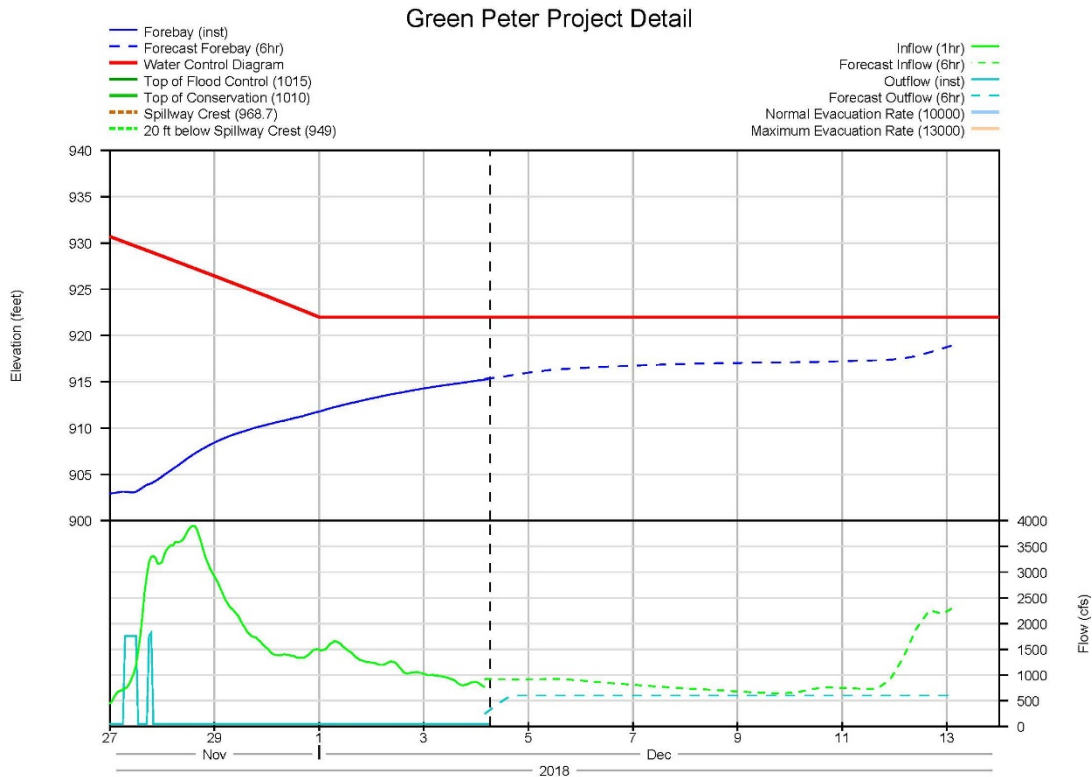
We also understand that the Corps may select to release Congressionally authorized minimum flows, or inflow, whichever is higher, if Foster elevations are in the power pool. The information provided from the Water Control Manual of Congressionally Authorized flows at 400 cfs in July-November would be considerably lower than BiOp targets, unless rainfall in September and October precipitation provides inflow.

The NOAA Climate Prediction Center forecast for the next month, and two following months shows 33-40% probability of below normal precipitation, and warmer temperatures (attached). Unfortunately neither are good news for fish nor the river levels, yet they unlikely to be as dry as the drought in 2015, with almost no rainfall. We will plan to continue to work together to see how flows will change during September.

Many thanks, Anne

## Final results

Flow changes will be implemented as coordinated. This will be reassessed and adaptively managed throughout September and into the fall through the Flow Management and Water Quality Team. As of 04 December 2018 flows below Foster Dam in the South Santiam were around 1,000 cfs and the elevation in Green Peter Reservoir is within the power pool.



Please email or call with questions or concerns.

Thank you,

Chris Walker  
NWP Operations Division Fishery Section  
503.808.4316  
[Christopher.E.Walker@usace.army.mil](mailto:Christopher.E.Walker@usace.army.mil)