Northwest **Power** and **Conservation** Council

September 7, 2016

MEMORANDUM

TO: **Council Members**

FROM: **Lynn Palensky**

SUBJECT: **Summer conditions wrap up – lessons learned and management decisions to prevent/reduce summer fish mortalities**

BACKGROUND:

Presenters: Lynn Palensky (Council staff), Michael Garrity (WDFW), Paul Kline (IDFG), Tom Rien (ODFW), Dan Feil (USACE), Trevor Condor (NOAA), and Paul Wagner (FPAC Co-Chair NOAA)

Summary: Fish and wildlife managers and river operators will provide a wrap up of summer conditions, operations and fish passage from the 2016 summer 2016. This briefing will focus on what was excepted vs what happened; how we prepared for 2015-like temperatures, what actions were taken, and what we learned for moving forward to facilitate fish passage and prevent/reduce summer fish mortalities. General outline for presentation:

- Expectations vs. what happened *(temps, climate, fish passage)*
- Operational changes at dams
- Preventative measures or preparedness *activities (non-dam*)
- Fish mortalities observed/reported (salmon, sturgeon and others)
- Changes/advances in outreach, communication, and networking
- Regional policy/support and needs
- Lessons learned and follow up needs *(what worked, what didn't)*

We will also hear specifically from NOAA on final survival rate estimates for PIT-tagged adults, and from the Corps of Engineers on the success of their actions to cool adult ladder temps in the lower Snake River water at Little Goose and Lower Granite dams (see attached news release).

851 S.W. Sixth Avenue, Suite 1100
Portland, Oregon 97204-1348
www.nwcouncil.org

Steve Crow
Executive Director

503-222-5161
800-452-5161
Fax: 503-820-2370

Montana report: Waters within the Montana portion of the Columbia have fared pretty well this summer and there are currently no drought related angling restrictions or water body closures. Elsewhere in the State, cold water fisheries are at risk in the Yellowstone River drainage where fish kills, brought on by an outbreak of proliferative kidney disease (exacerbated by record low stream flows and high water temps.), have resulted in a complete closure to all public river use.
See http://fwp.mt.gov/news/newsReleases/headlines/nr_4278.html

Relevance: It is important to understand current physical conditions and trends in climate to manage the hydro system in a way that helps facilitate safe fish passage. Water temperatures should be monitored daily during the warmer months to prepare for swift, short-term shifts in dam operations to keep the water cooler at the critical times and in the key places to facilitate safe fish passage. The briefing is focused primarily on mainstem reaches.

Work plan: The daily assessment and management actions associated with summer fish returns and passage align with two specific strategies under *Ecosystem Function* strategy in the program: Climate change and Mainstem hydrosystem flow and passage operations. The communication and discussion of an *early warning system* to prevent fish mortalities aligns with the Regional Coordination Forum (RCF) coordination.

Background: The May 12, Regional Coordination Forum meeting began with a presentation from the Coordinators of the *Klamath Fish Health Assessment Team (KFHAT) regarding their work in the Klamath Basin of Oregon and California. KFHAT is an interdisciplinary team of scientists who monitor river conditions and other factors to evaluate fish health and the potential for fish kill. They use a color coded system (green, yellow, orange, red) to assess risk. As risk increases, they step up their level of engagement to include frequent phone calls, more exchange of information, recommendations for resource management actions, and finally, implementation of a Response Plan. The Response Plan's main focus is adding cold water to the system and curtailing agricultural withdrawals.*

To prevent fish mortalities like we saw in summer 2015, the RCF was interested in exploring a similar effort for the Columbia Basin. A follow-up phone call with regional coordinators and other interested parties was planned for May 26th to discuss coordination opportunities. Since that meeting:

1) Fish managers and river operators briefed the fish and wildlife committee in June, July and August on current summer conditions and agreed-upon actions taken to facilitate fish passage and prevent/reduce summer fish mortalities due to water temperatures.

2) The Council has worked on a prototype for a river conditions web page that pulls existing water temperature data, fish migration information and other real-time data for a high-level summary of conditions in the Columbia River.

More Info:

- Fish Passage Center: http://www.fpc.org/
- Fish Passage Advisory Committee: http://www.fpc.org/fpaclinks.html
- New release from USACE on helping salmon survive this year by cooling lower Snake River water at Little Goose and Lower Granite dams adult fish ladders - Walla Walla District news release
- USACE's Technical Management Team (TMT) website

UPDATE ON 2016 SOCKEYE SALMON PASSAGE, WATER TEMPERATURES, & ACTIONS TO REDUCE FISH MORTALITIES

OREGON
Fish & Wildlife

Montana Fish, Wildlife & Parks

IDAHO
FISH & GAME

Washington Department of
FISH and WILDLIFE

COLUMBIA BASIN
FISHERY AGENCIES AND TRIBES

Outline

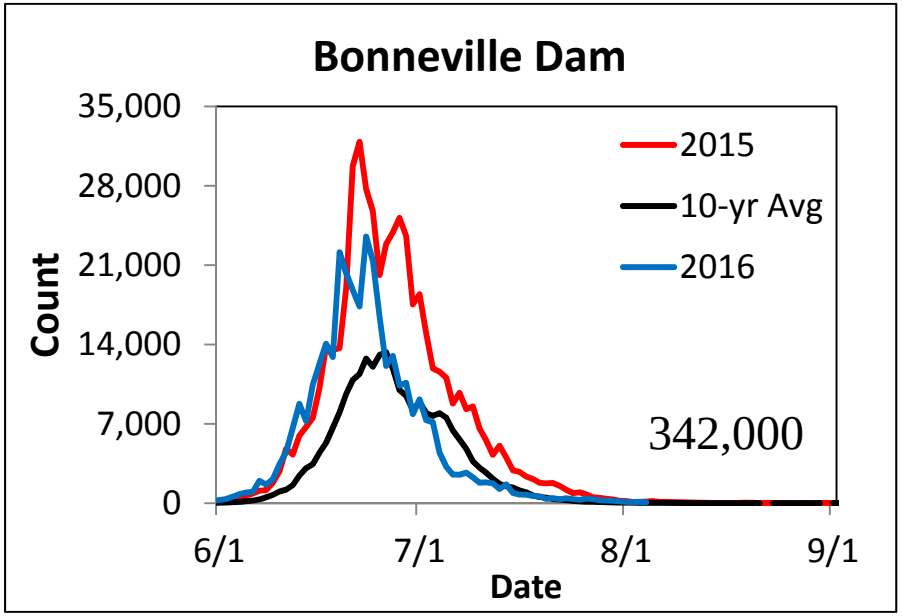
- 2016 Sockeye Salmon Run Size Update
- 2016 Manager Actions
- 2016 Water Temperatures
- Mortality Monitoring & Disease Sampling
- Managers Updates
- Outlook
- Summary

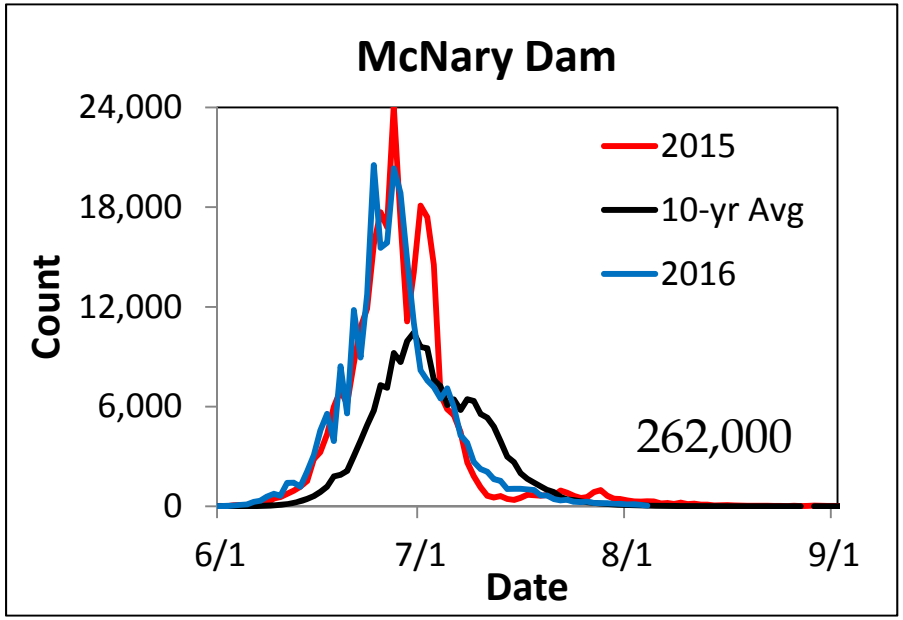
2016 Update

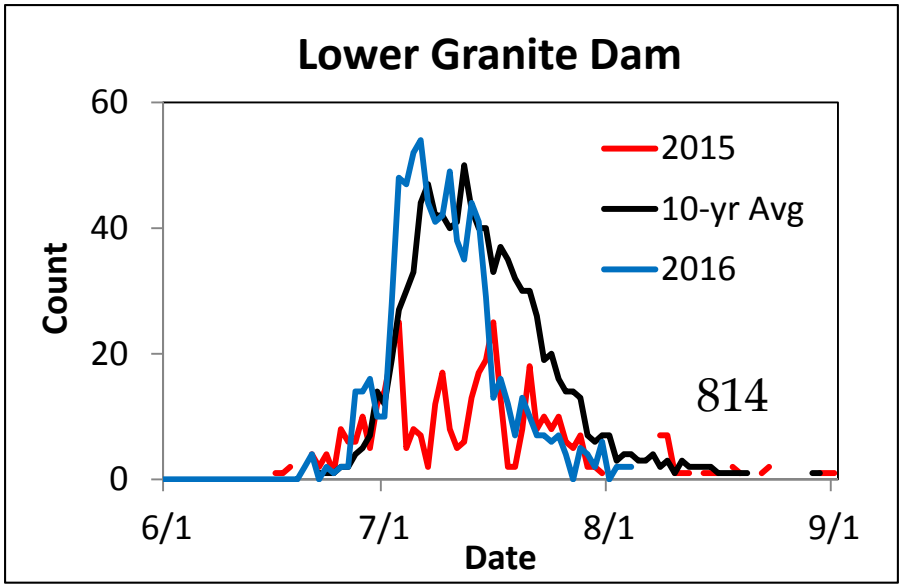
- Total sockeye BON return was ~500,000 in 2015 with a forecast of ~110,000 for 2016.
- Total run size at BON was ~342,000 for 2016.

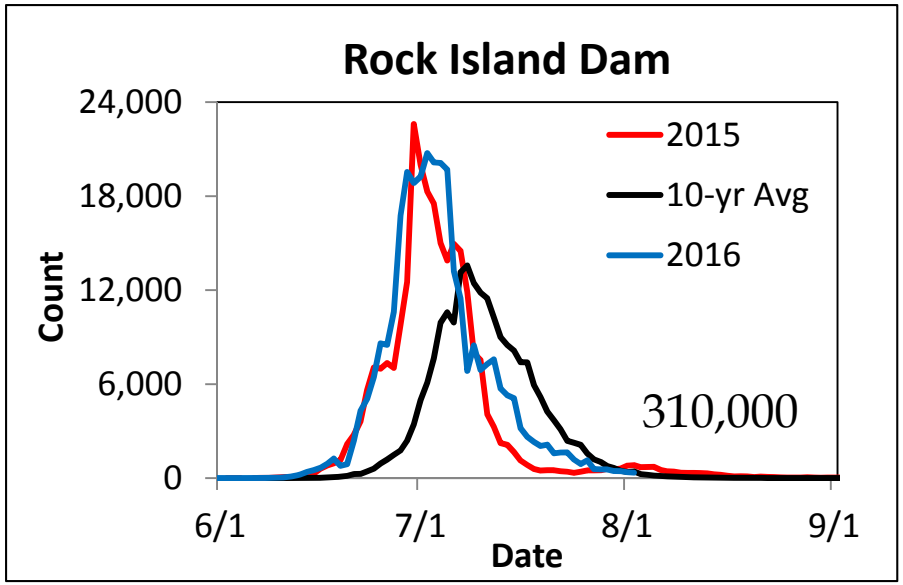
- Snake River sockeye BON return was ~4,000 in 2015 with a forecast of 1,348 for 2016.
- Updated run size at BON is ~ 1,032 for 2016.

Sockeye Salmon Passage





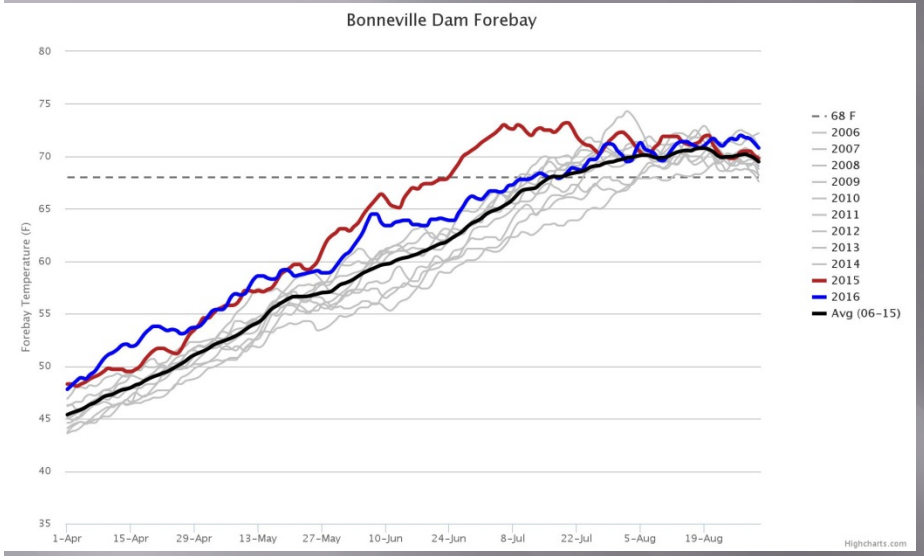


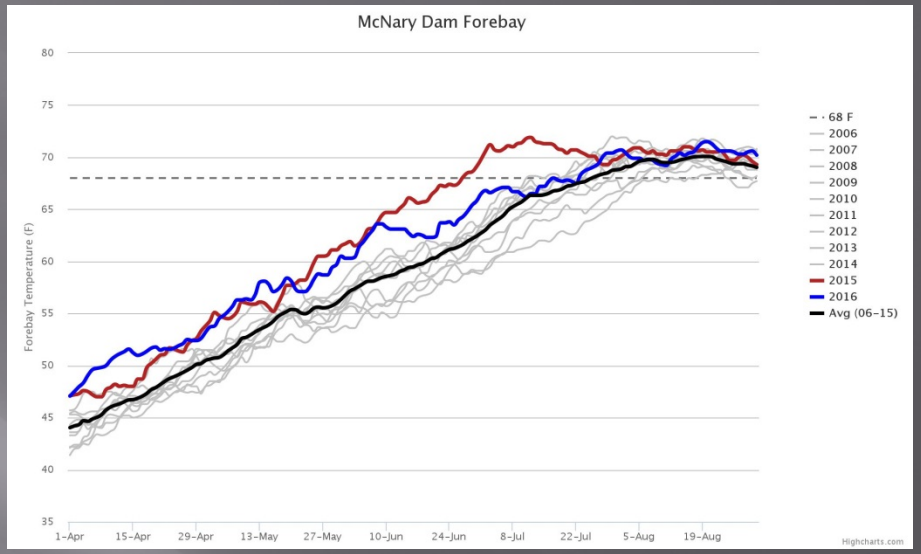


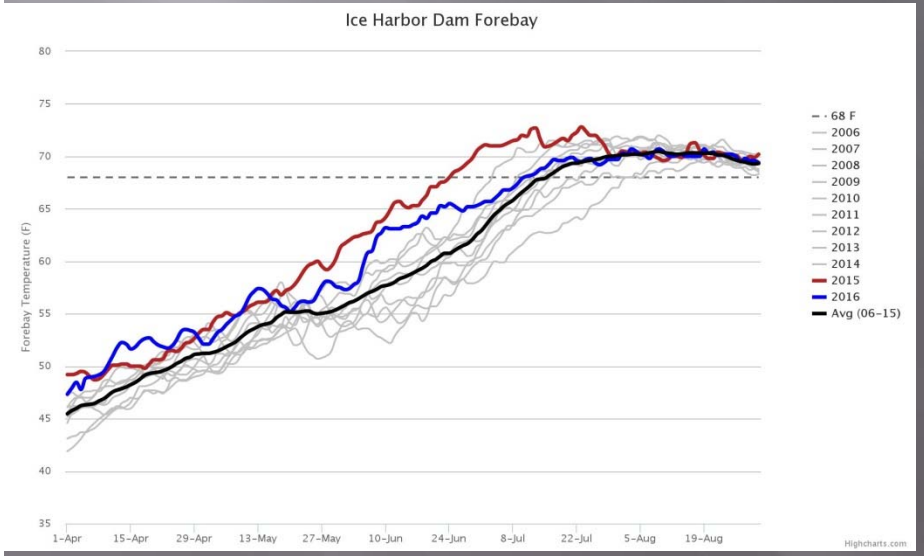
2016 Regional Technical Teams Actions

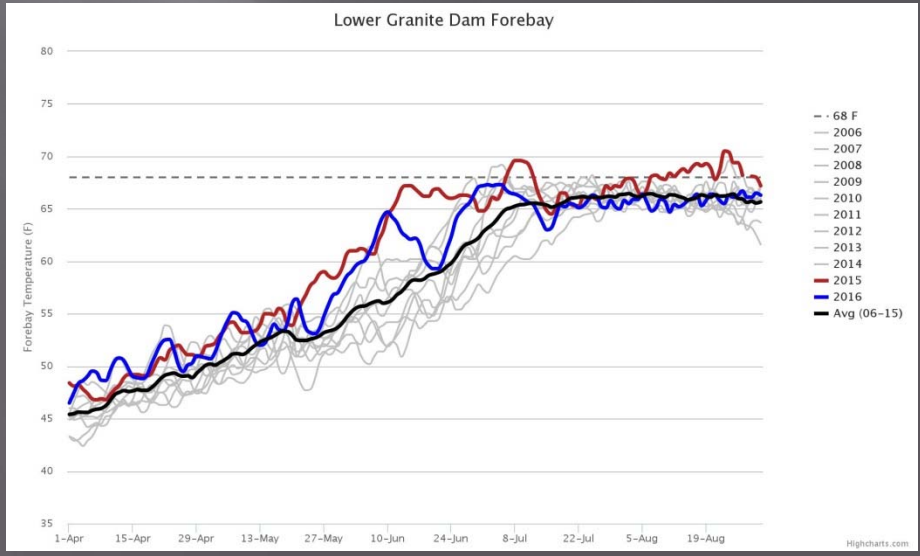
- As water temperatures approach 68 degrees in the LGR tailrace the COE managed discharges from DWR to keep temps < 68 degrees (DWR releases began June 27, 2016).
- COE began pumping cold water from deep in dam forebays into fish ladders at LWG and LGS on June 9th and July 1st, respectively.
- No passage emergency declared for Snake River sockeye; therefore no transportation from LWG to Idaho.

2016 Water Temperatures (FPC)









Monitoring Fish Mortalities

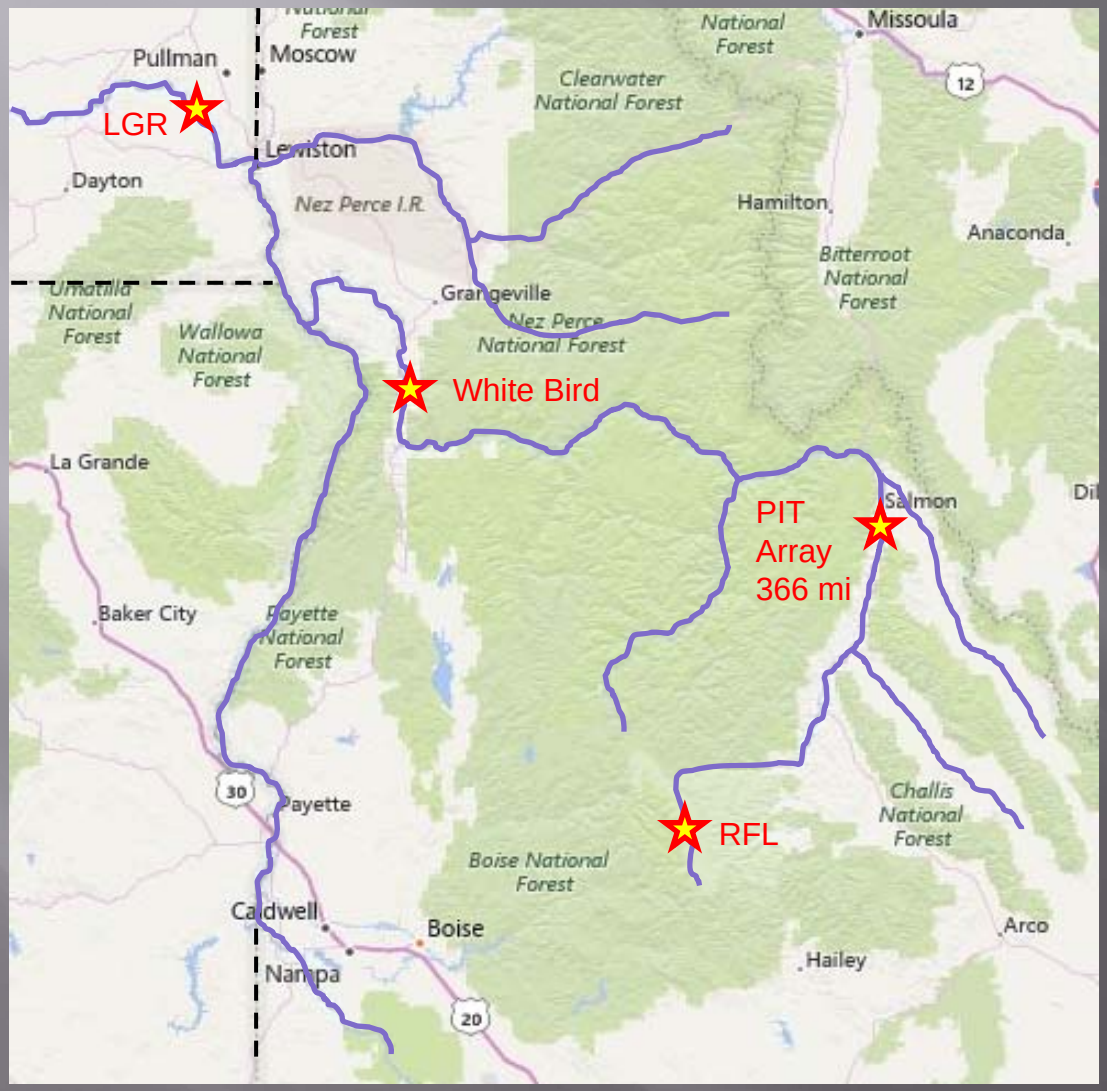
- Anglers participating in the northern pikeminnow sport reward fishery were surveyed for observed fish mortalities from Astoria to LWG. Results from June 20 – Sept. 4 indicated mortalities within the natural range.

Location	Angler Surveys	Sturgeon Mortalities	Salmon Mortalities
Below BON	4604	11	19
BON-MCN	1843	6	4
IHR-LWG	491	2	4

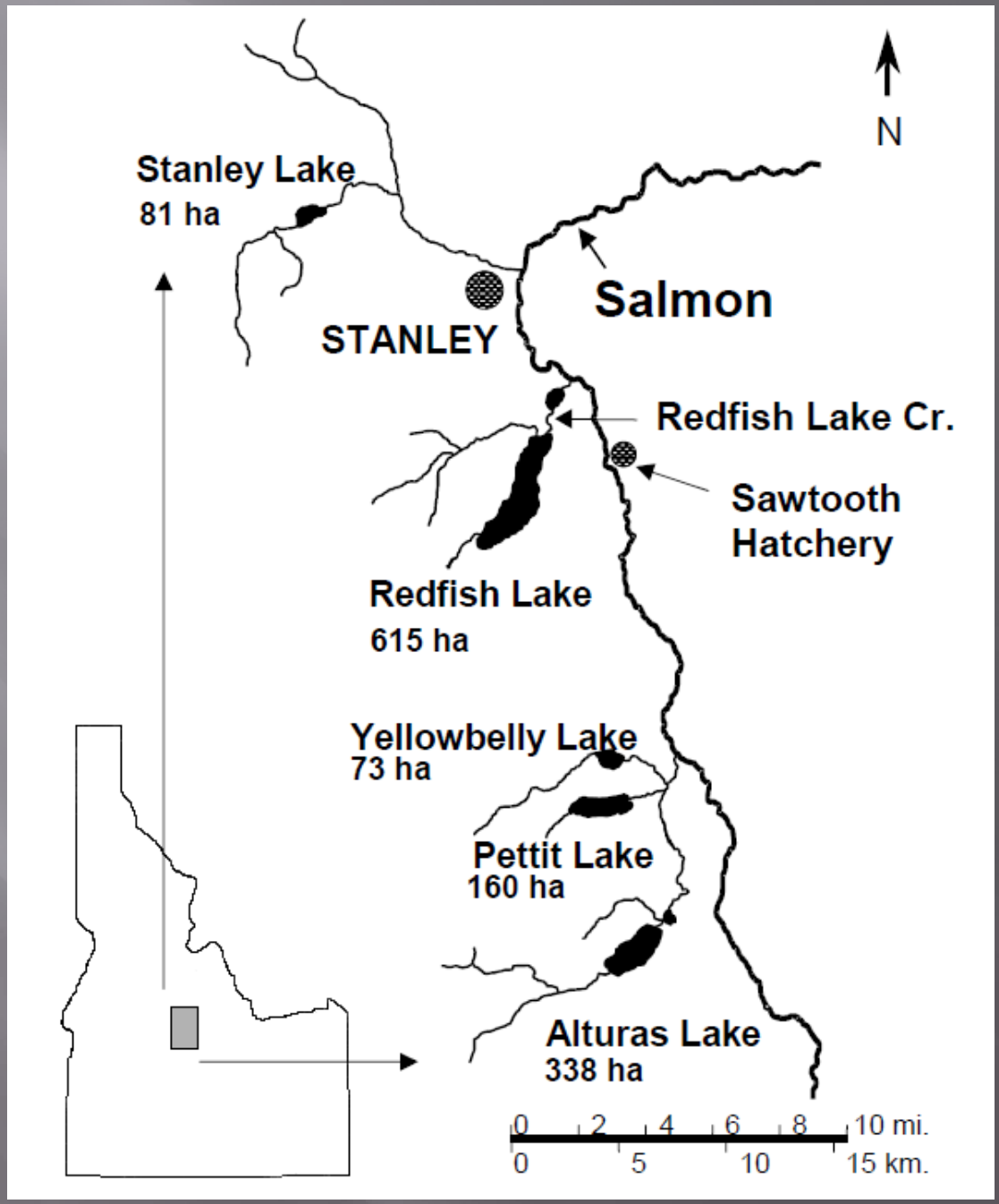
Manager Updates

- Washington
- Idaho
- Oregon
- NOAA
- Corps of Engineers

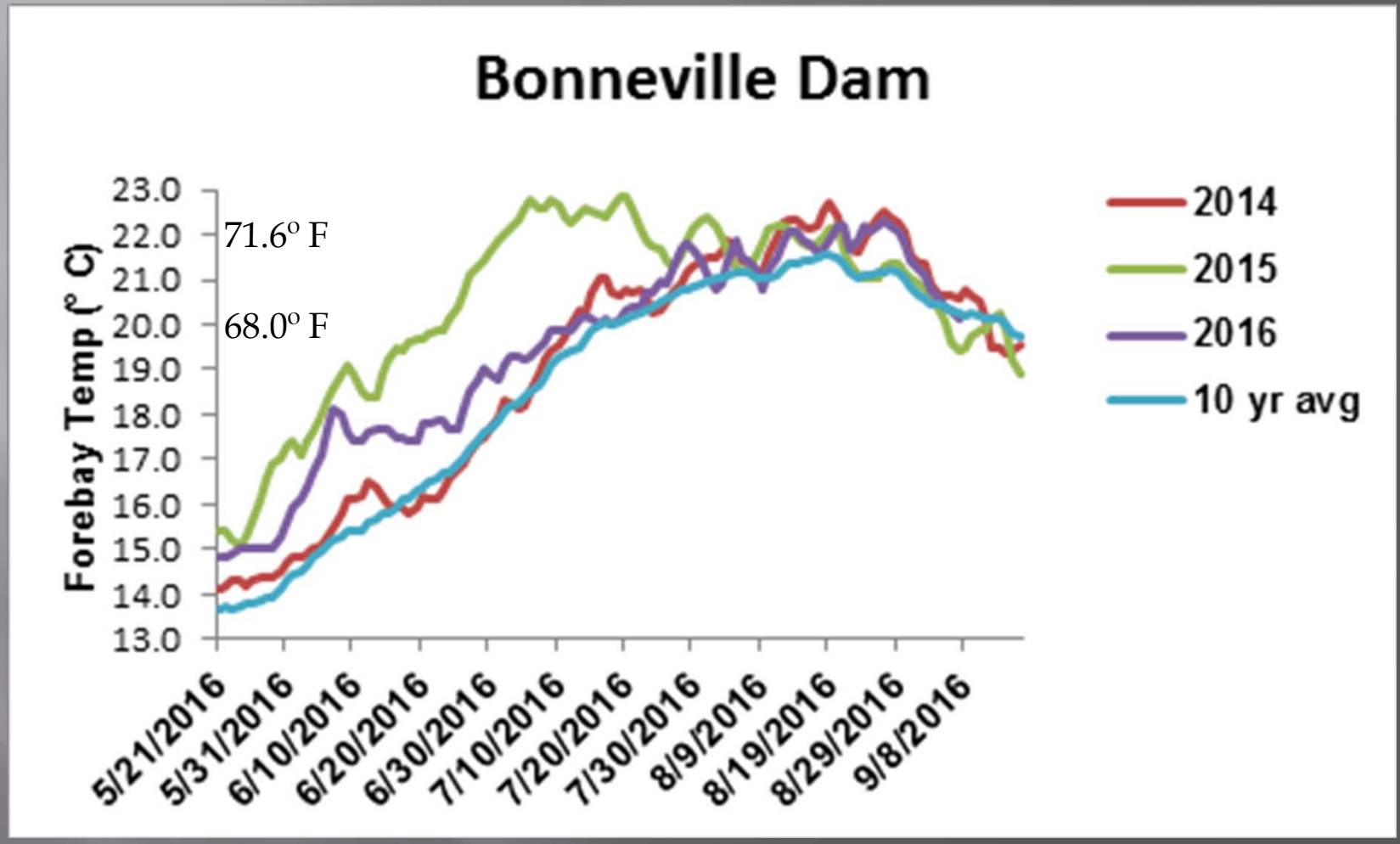
Idaho Update



- LGR to RFL 460 miles
  - ~ 6,000 ft gain
  - 37d travel time
- Temp gage @ White Bird
- PIT interrogation site near Salmon


N
Stanley Lake
81 ha
STANLEY
Salmon
Redfish Lake Cr.
Sawtooth
Hatchery
Redfish Lake
615 ha
Yellowbelly Lake
73 ha
Pettit Lake
160 ha
Alturas Lake
338 ha
0 2 4 6 8 10 mi.
0 5 10 15 km.

Idaho Update



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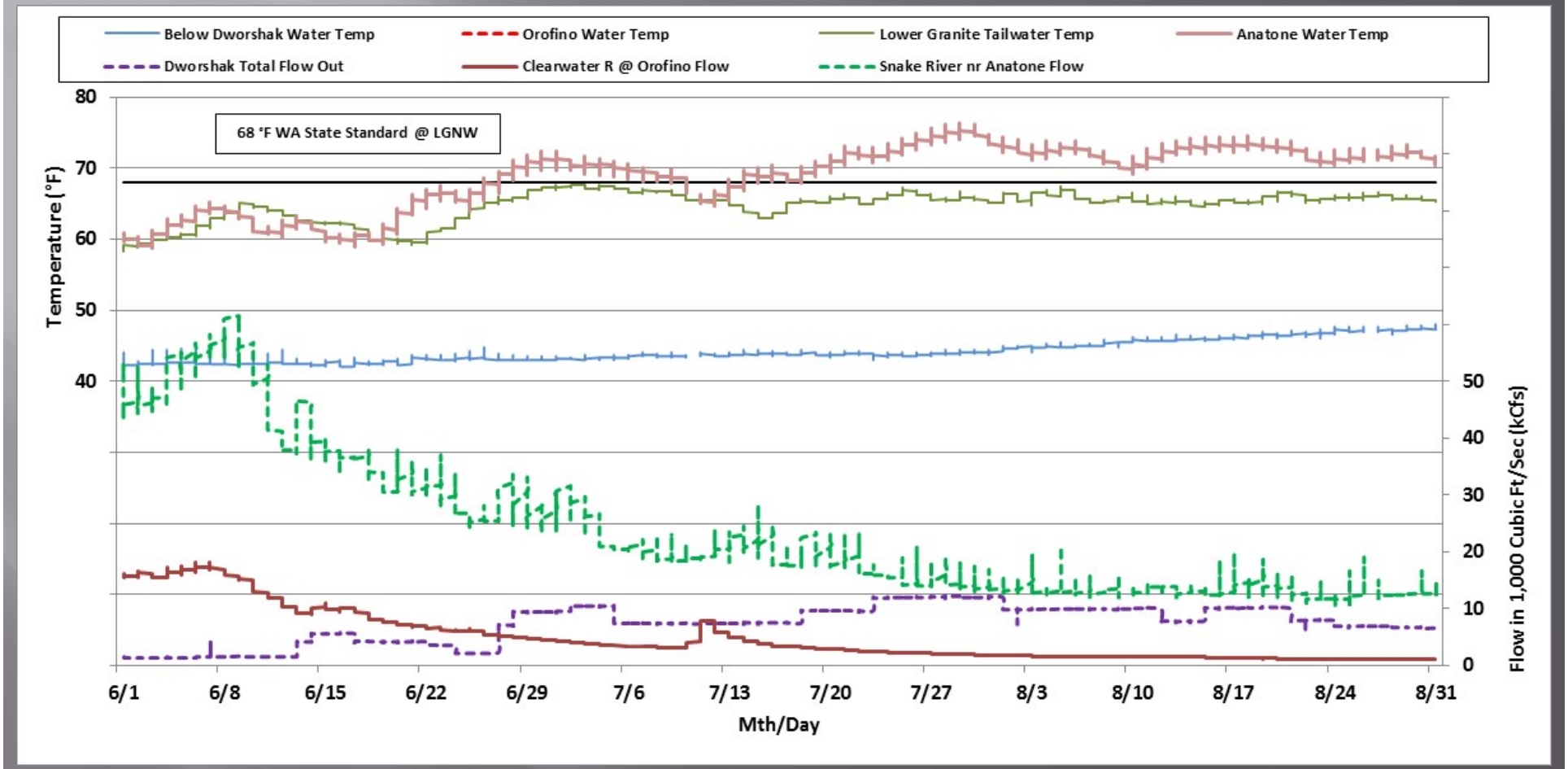

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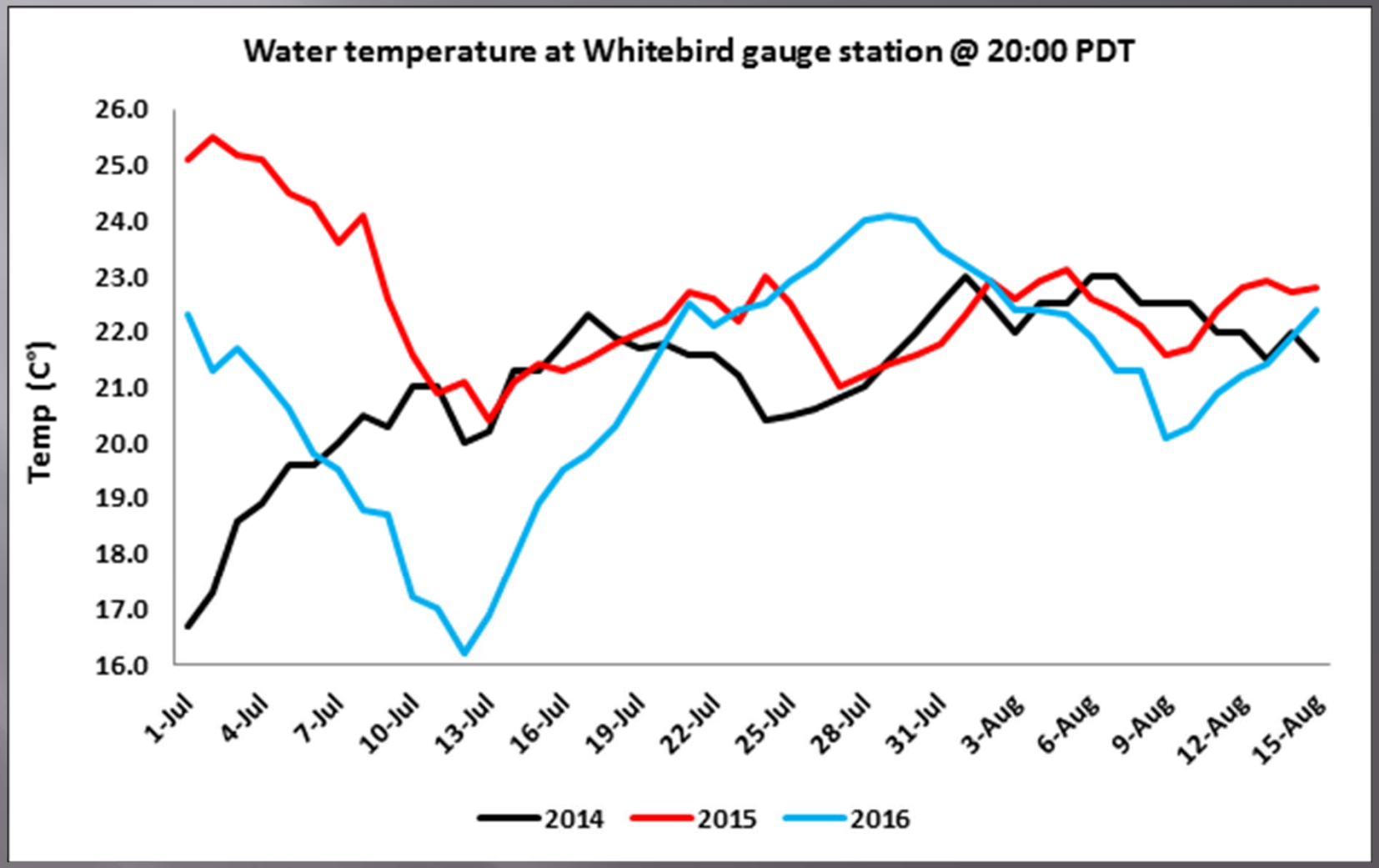

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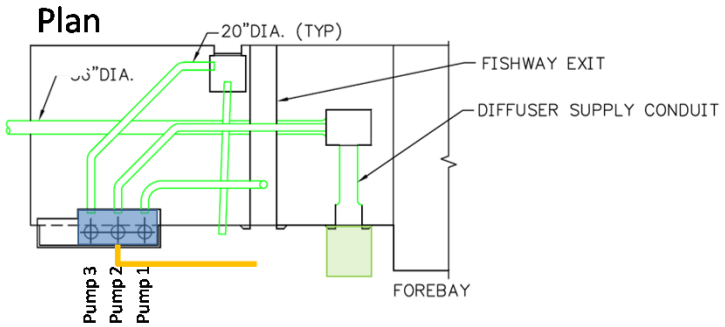
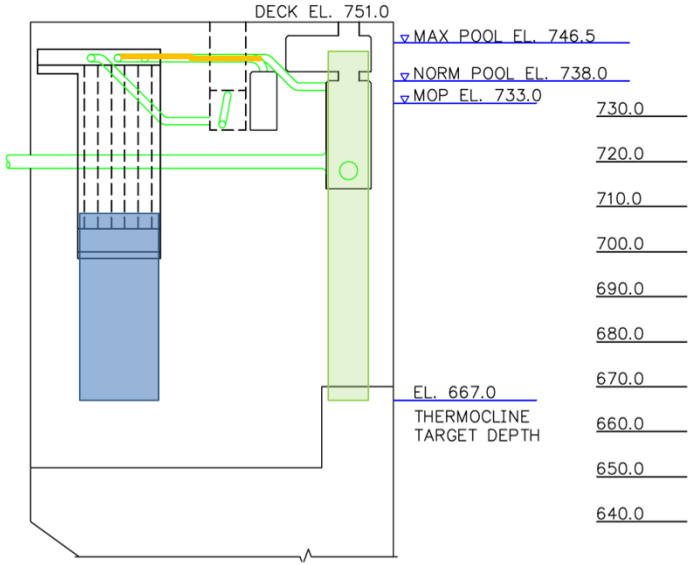
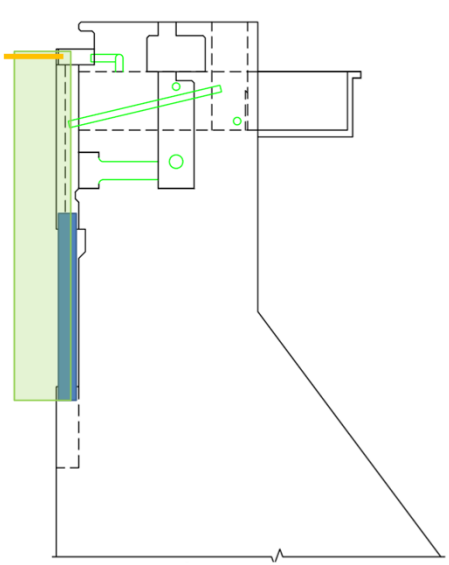


Diffuser 14 Chimney

Pump Intake Extension

Pump Plumbing





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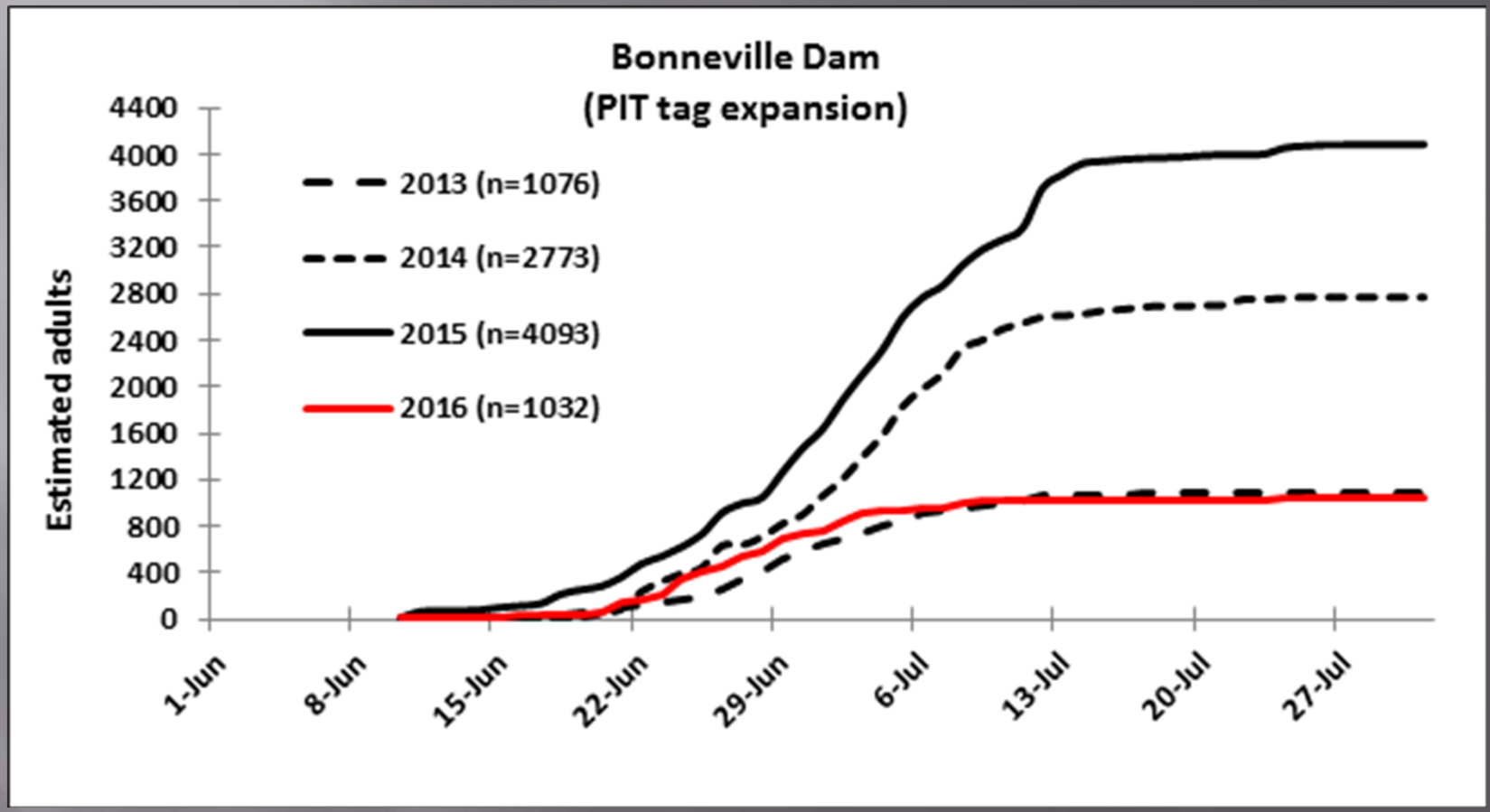

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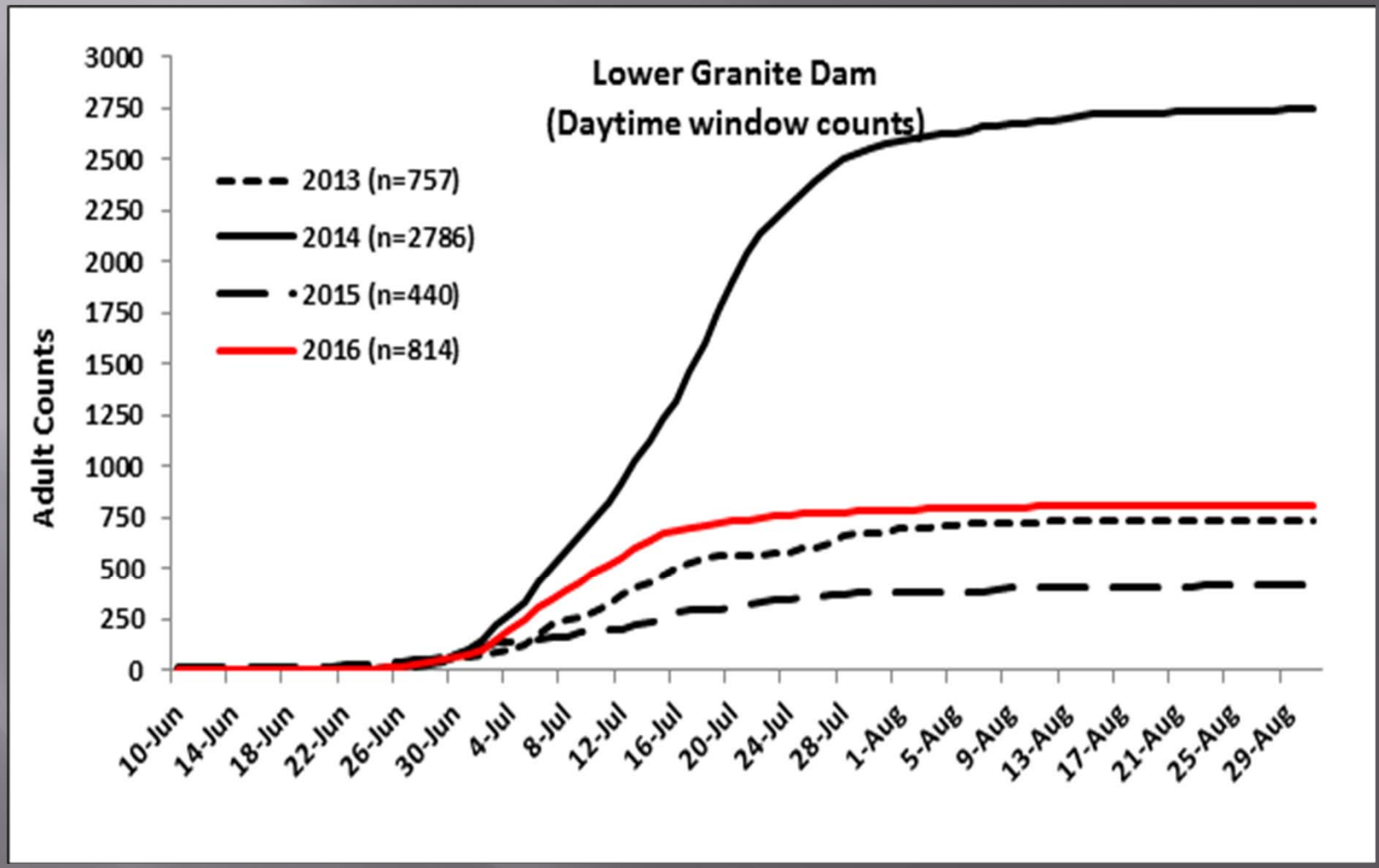


Idaho Update

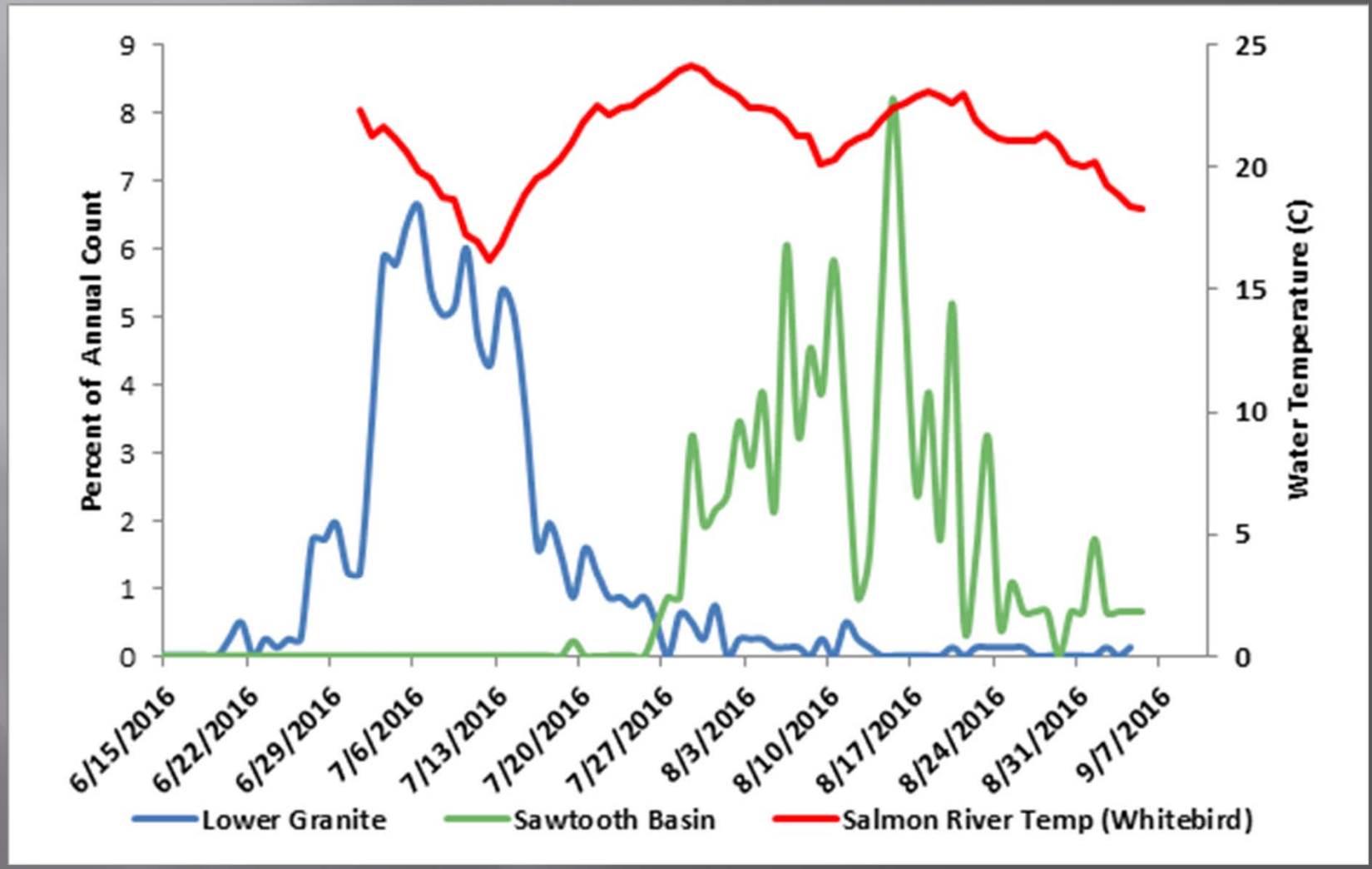
Table 2.

	2008-2014 Average	2015	2016
McNary – Ice Harbor	97%	60%	98%
Ice Harbor-L. Granite	91%	41%	95%

Table 3.

	2008-2014 Avg. Time (d)	2015 Avg. Time (d)	2016 Avg. Time (d)
Ice Harbor – L. Granite	4.5	9.1	5.5

Idaho Update



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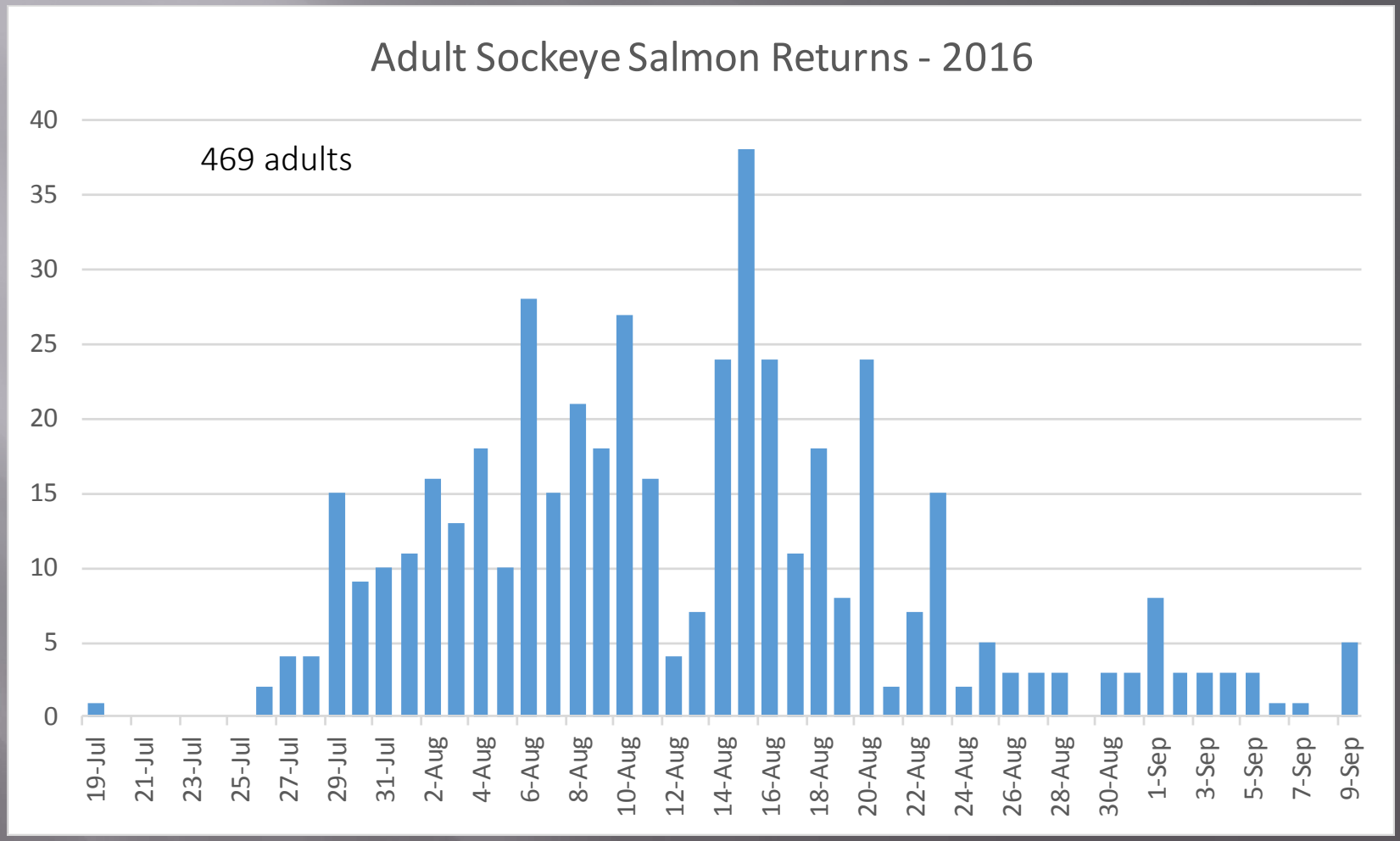

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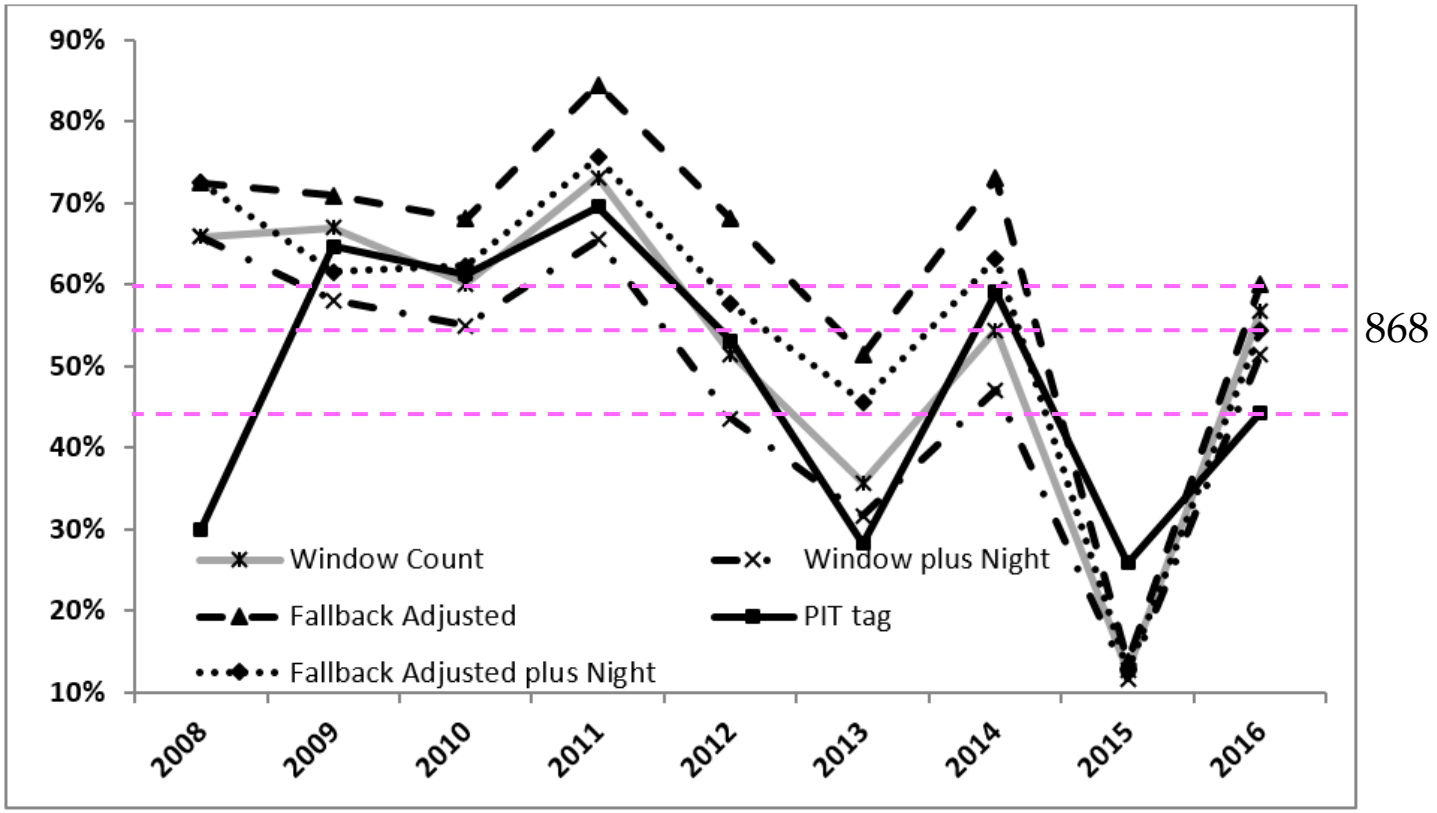

Figure 6. Adult Snake River Sockeye Salmon conversion rates from Lower Granite Dam to the Sawtooth Valley using window counts, adjusted counts, and PIT-tagged returns.

Idaho Update

- Summarizing 2016 Snake River sockeye run:
  - Better than average survival (~ 83%) from BON to LGR.
  - Average survival (~54%) from LGR to Stanley Basin.
  - Better than average survival from BON to Stanley Basin (~44%).
- Lessons Learned:
  - Improved regional communication.
  - Improved understanding of decision making framework for implementing emergency actions.
  - ACOE actions at DWOR, LGR, and LGO effective in reducing risk and improving migration conditions.

Manager Updates

- Washington
- Idaho
- Oregon
- NOAA
- COE

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Summary

- 2016 water temperature less extreme compared to 2015. Sockeye salmon and other fishes are experiencing more normal survivals and conversion rates between dams.
- Continued monitoring of sockeye through September to ensure they reach their spawning destination in Sawtooth Valley, Wenatchee, Okanogan, and Cle Elum lakes.