Grant County
PUBLIC UTILITY DISTRICT
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Fall Chinook Working Group

Conference Call

Thursday, 30 April 2026
10:00 a.m. – 11:45 p.m.

FINAL MINUTES

Technical Members

Kelsey Swieca, NMFS	Joe Skalicky/Don Anglin, USFWS
Jeff Fryer, CRITFC	Keely Murdoch, YN
Leah Sullivan, BPA	TBD, American Rivers
Tom Kahler, DPUD	TBD, CPUD
Bill Tweit/Todd Miller, WDFW	Dani Evenson, ADFG
Melissa Peterson, WDOE	Rod O'Connor/Gabe Temple, GPUD
Tracy Hillman, Facilitator	

Meeting Attendees

Rod O'Connor, GPUD	Shaun Harrington, GPUD
Tom Kahler, DPUD	Pete McHugh, CRITFC
Todd Miller, WDFW	Tim Taylor, GPUD
Keely Murdoch, YN	Tammy Mackey, BPA
Jeannette Finley, CTCR	Kelsey Swieca, NMFS
Dani Evenson, ADFG	Melissa Peterson, Ecology
Joseph Akers, GPUD	Cady Hernandex-Brito, GPUD
Zak Robinson, CRITFC	Gabe Temple, GPUD
Jeff Fryer, CRITFC	Leah Sullivan, BPA
Erin Harris, GPUD	Tracy Hillman, Chair

Action Items:

- Grant PUD will provide updates on the HRFCPPA Periods and Flow Constraints.
- Zak Robinson will send his PowerPoint presentation to Tracy Hillman for distribution to the FCWG.

- Jeff Fryer will notify the FCWG whether the 2026 Hanford Reach tagging project receives final approval and proceeds.
- Tracy Hillman will send a calendar invitation confirming the next FCWG meeting on 5 October 2026.

Decision Items:

- None.

I. Welcome and Introductions

Tracy Hillman welcomed everyone to the meeting and identified all attendees.

II. Agenda Review

The FCWG reviewed and approved the April agenda.

III. Review Action Items

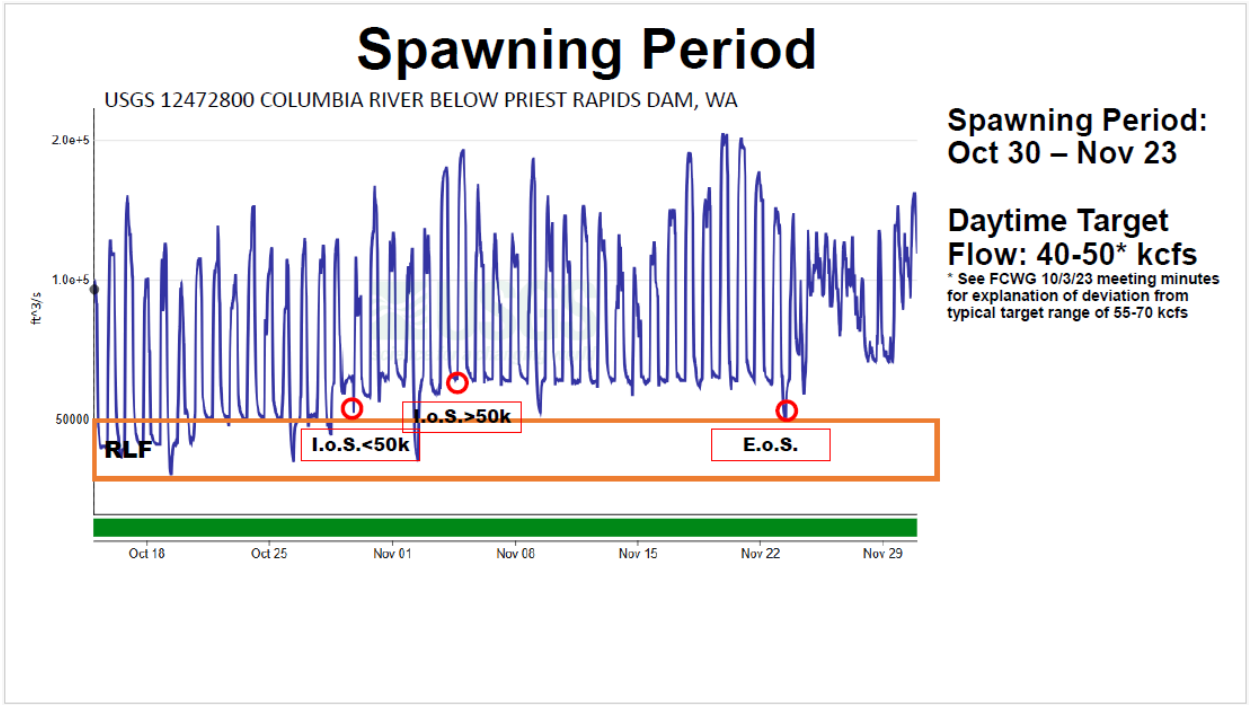
The FCWG reviewed the following action items from the October 2025 meeting:

- Rod O'Connor will provide updates on the HRFCPPA Periods and Flow Constraints. **Ongoing**
- The draft 2024-2025 HRFCPPA Report was sent to FCWG members, and they have 30 days to review it and provide comments to Rod O'Connor. **Completed**
- The 2024 draft Priest Rapids Hatchery M&E Report was sent to FCWG members, and they have 30 days to review it and provide comments to Gabe Temple. **Completed**
- Members will contact Jeff Fryer if interested in presenting Hanford Reach-related studies or contributing information to the proposed AFS symposium. **Completed**

IV. Hanford Reach Activities

2025 Vernita Bar Spawning Surveys – Gabe Temple provided an update on the 2025 spawning season and Vernita Bar redd surveys. Reverse load factoring was implemented beginning in mid-October, allowing decreased daytime flows and increased nighttime flows from Priest Rapids Dam so fish could spawn lower in the river channel.

Gabe then described fall Chinook Salmon spawning surveys conducted in 2025. He said the spawning period was from 19 October to 23 November 2025. Flows were reduced on Sundays during the spawning period to allow survey crews, including Grant PUD staff, Washington Department of Fish and Wildlife staff, and volunteers from other organizations to conduce redd surveys. The initiation of spawning (I.o.S.) for both the <50 kcfs and the >50 kcfs bands are circled in the figure. The end of spawning (E.o.S.) occurred on 23 November.

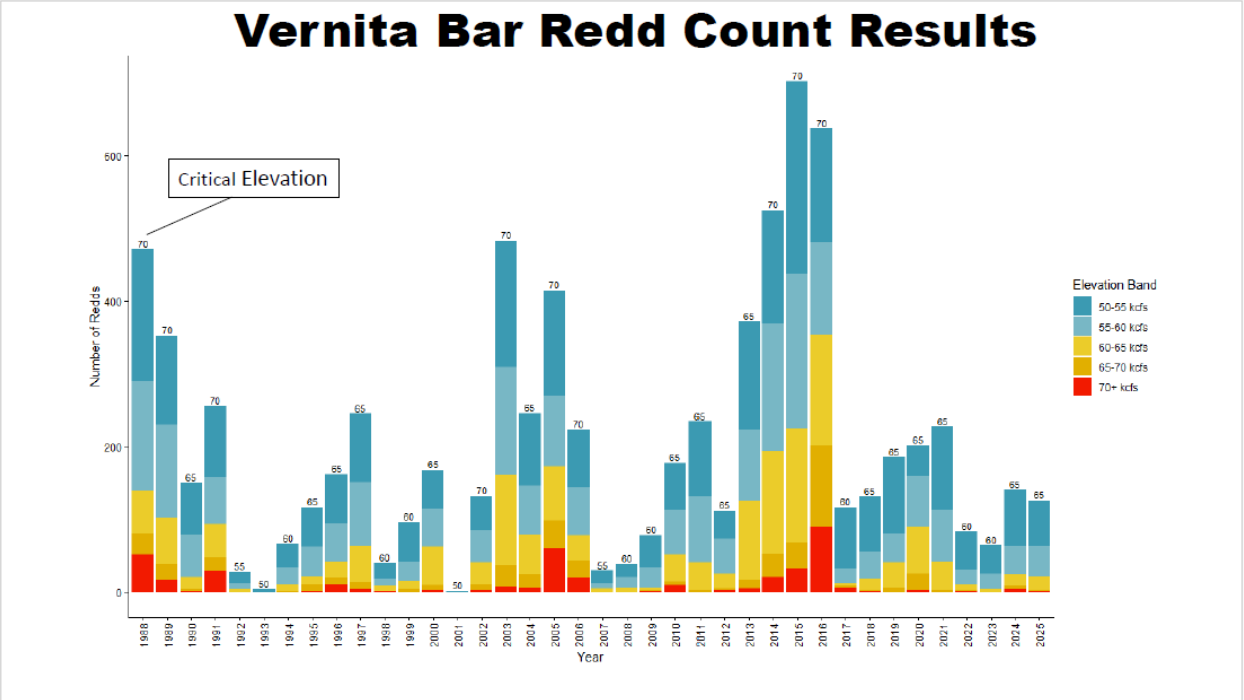


The following table shows the final Vernita Bar redd counts for 2025. Most redds were documented in the 50,000 to 60,000 cfs elevation bands, which was consistent with previous years. The total Vernita Bar redd count in 2025 was 126 redds.

Final Vernita Bar Redd Count Results 2025

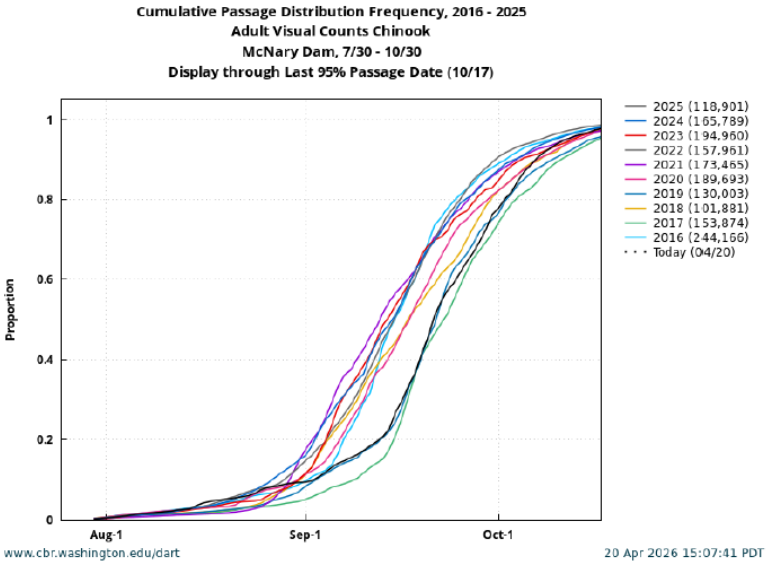
Transect	Redd Count by Flow Elevation (kcfs)						Total
	(36 – 50)	(50 – 55)	(55 – 60)	(60 – 65)	(65 – 70)	(Above 70)	
Above A	--	9	12	4	0	0	25
A – AB	--	18	7	1	0	0	26
AB – B	--	25	16	12	1	1	55
Below B	--	7	3	1	0	0	11
C	--	4	4	1	0	0	9
Totals	--	***63***	***42***	***19***	***1***	***1***	***126***

Gabe then showed the number of redds counted on Vernita Bar (and within different flow bands) over time (see Figure below). He noted that the total count in 2025 was considerably less than counts in 2013-2016, but near the median for counts in 2017-2024.



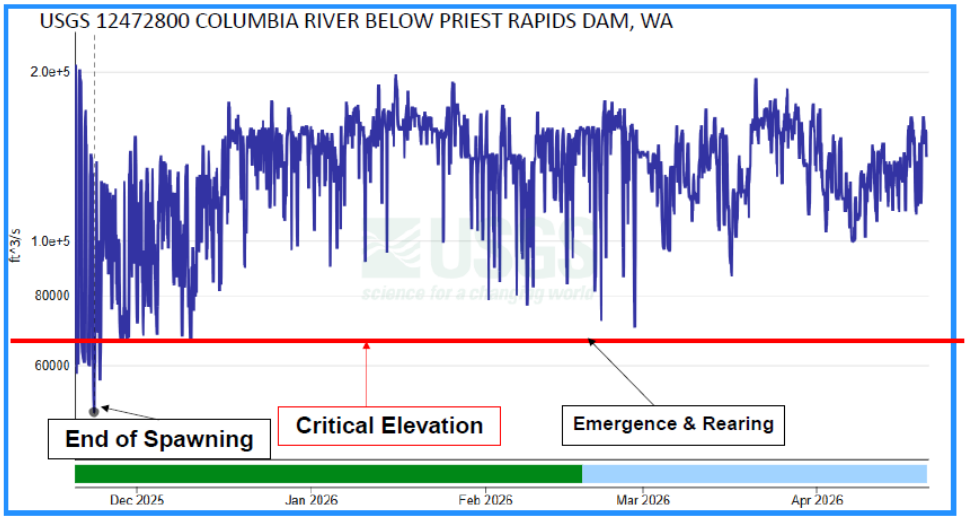
Gabe also talked about run timing. He used percent passage of adult fall Chinook Salmon at McNary Dam to assess run timing and noted that the run in 2025 started slightly earlier than average but then stalled through the months of August and September (see Figure below). The run picked up in October. Gabe said that warmer water temperatures and possibly other environmental conditions affected run timing in 2025.

Fall Chinook MCN Passage Timing 2016-2025

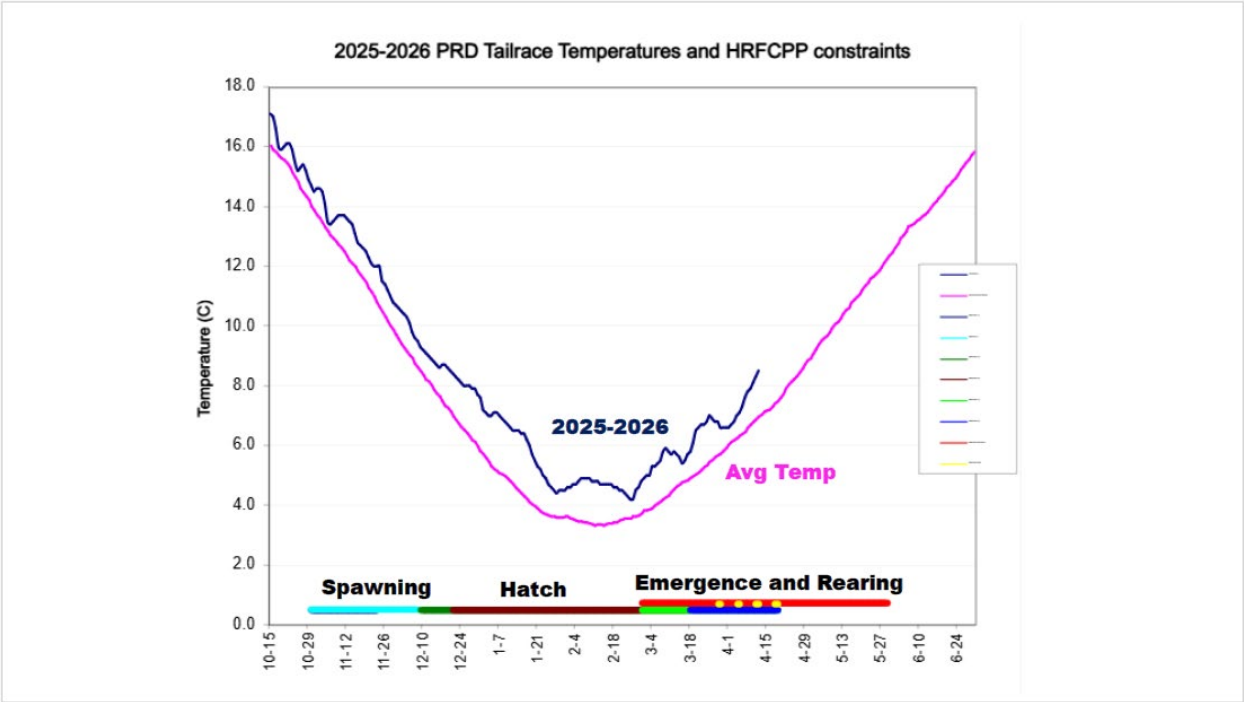


2025-2026 Protection Program Update – Gabe Temple said there were no issues meeting flow constraints during the spawning, incubation, emergence, and rearing periods due to the amount of water moving through the system. The critical elevation of 65 kcfs was held through emergence and rearing, and there were no flow violations (see figure below).

Critical Elevation



Gabe then described the temperature conditions on the Hanford Reach in 2025-2026. Water temperatures throughout the spawning, hatching, emergence, and rearing periods were above normal (see Figure below). The warmer water temperatures advanced developmental timing, resulting in earlier emergence and faster than average developmental rates. Rod O'Connor pointed out that the four yellow dots in the figure represent the Chief Joseph Accumulated Deficiency (CJAD II) weekends, which are special operating condition weekends during the developmental season.

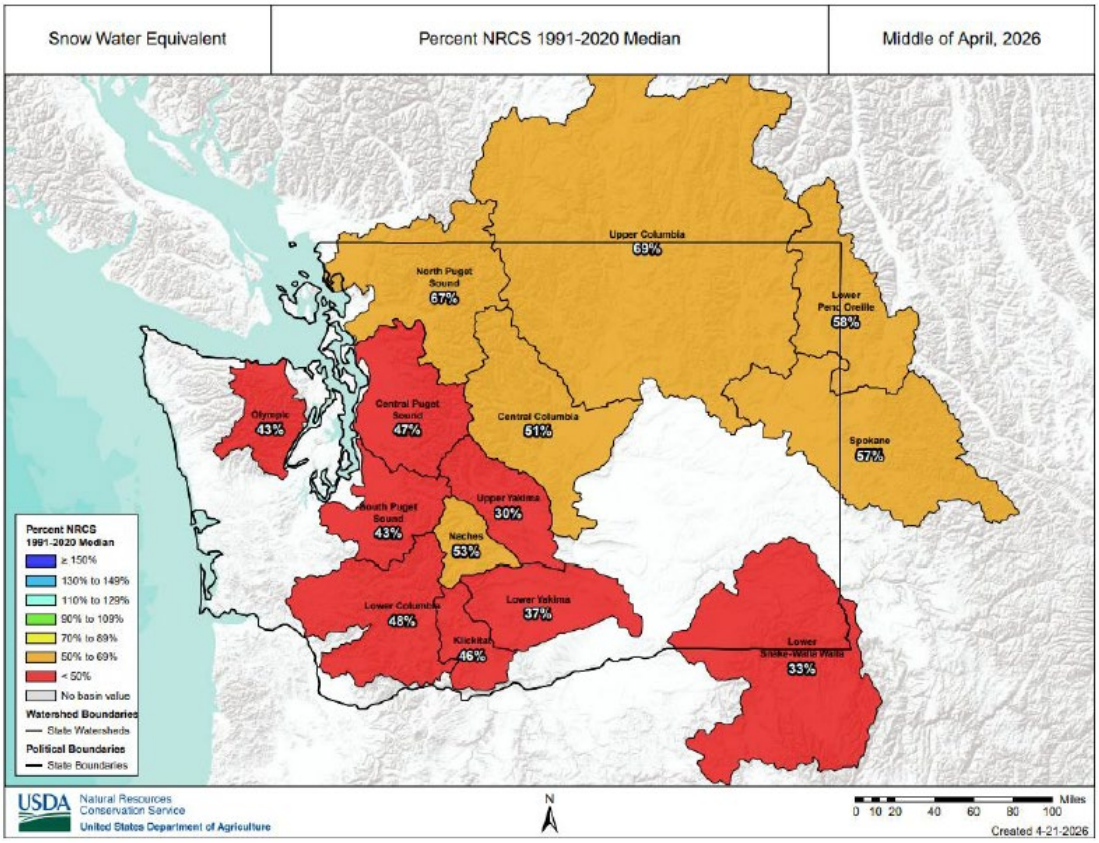


In review, Gabe showed the status and projected dates of the HRFCPPA periods (see Tables below). He pointed out that the warm water temperatures resulted in hatching and emergence occurring earlier than normal. Incubation and emergence flow management periods have been completed, and the program is now fully in the rearing period. Rearing is projected to end on 29 May 2026, which is earlier than normal. He also provided a comparison between 2025-2026 conditions and average conditions.

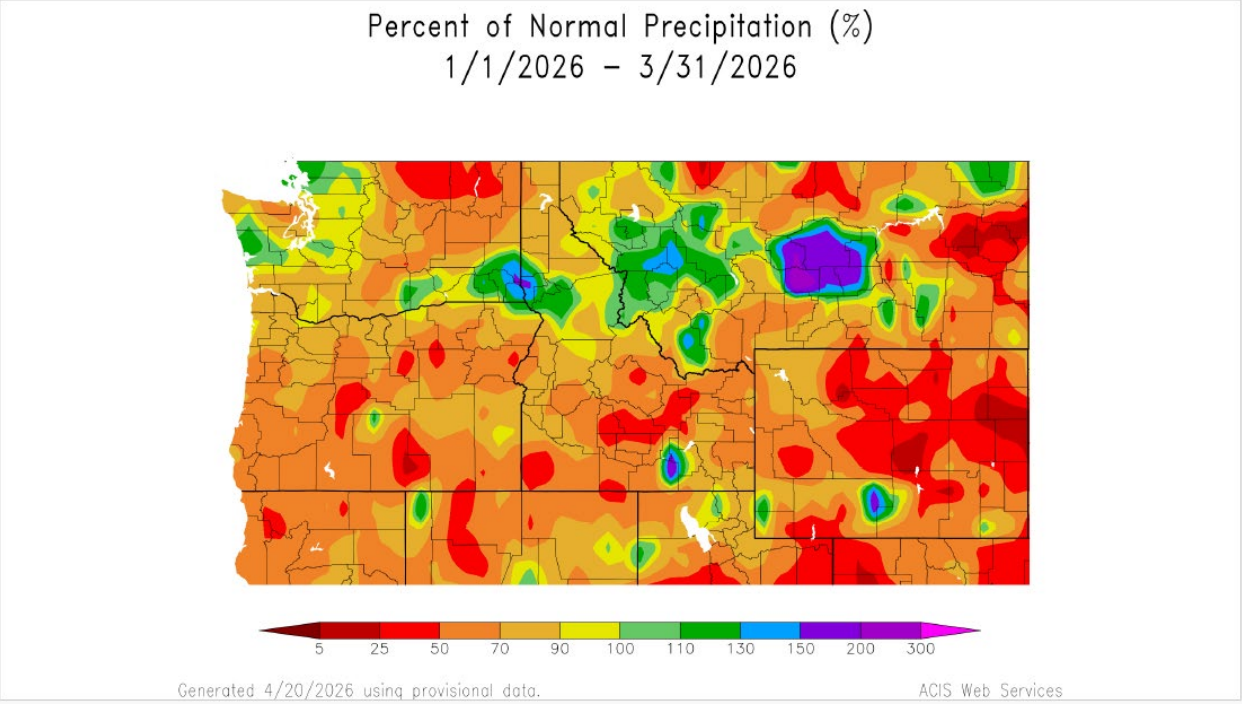
HRFCPPA Period	Begin	End	Status of Constraint	Primary Flow Constraint
Spawning Period	10/30/2025	11/23/2025	Completed	• 55 – 70 kcfs during daylight hours.
Pre-Hatch Period (above and below 50 kcfs)	10/30/2025	1/23/2026	Completed	• No less than the Critical Elevation for 8 hours on weekdays and 12 hours on weekends, no two consecutive periods.
Post-Hatch Period (below 50 kcfs)	12/9/2025	4/18/2026	Completed	• No less than 15 cm below the 50 kcfs elevation.
Post-Hatch Period (above 50 kcfs)	2/28/2026	4/19/2026	Completed	• No less than 15 cm below the Critical Elevation.
Emergence Period (below 50 kcfs)	2/28/2026	4/19/2026	Completed	• No less than the Critical Elevation or 50 kcfs elevation, whichever is greater.
Emergence Period (above 50 kcfs)	3/18/2026	4/19/2026	Completed	• No less than the Critical Elevation.
Rearing Period	2/28/2026	5/29/2026	Currently in effect	• See flow fluctuation table in Figure 1.
Weekend Constraints	3/28/2026	4/19/2026	Completed	• Weekend minimum flow no less than the daily hourly minimum from Mon-Thursday of the previous week.

Protection Dates	Initiation of Spawning	End Spawning	Begin Hatching	Begin Emergence	End Emergence	End Protections
Average	10/23	11/22	12/3	3/17	5/12	6/13
2025-2026	10/30	11/23	12/9	2/28	4/19	5/29

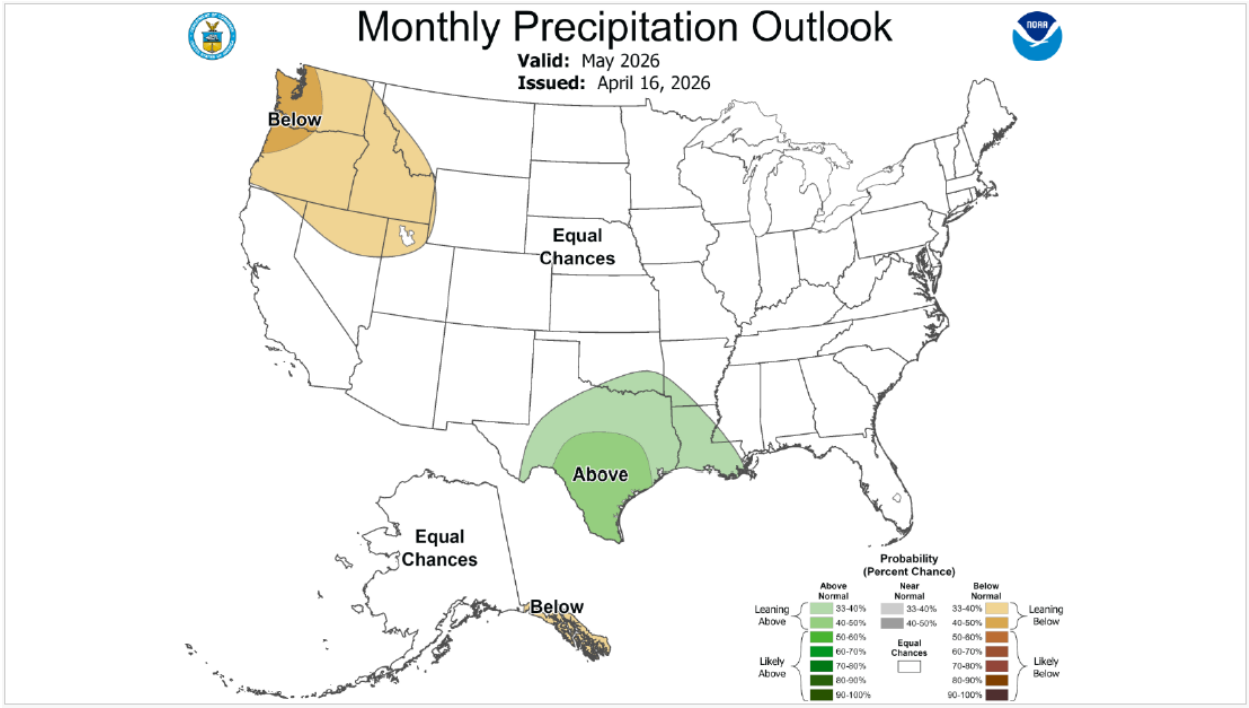
Gabe described water and climatic conditions within the Upper Columbia River Basin. The snow-water equivalent in the basin is well below normal and does not look good (see Figures below).

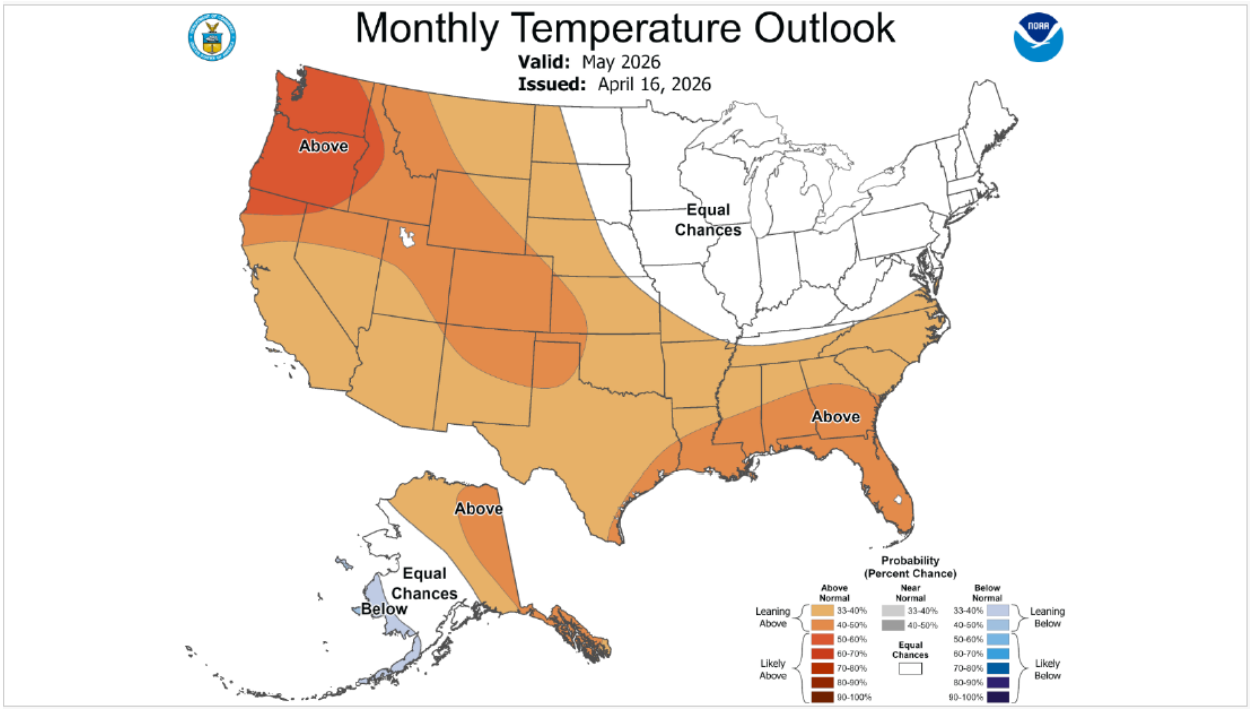


The percent of normal precipitation for the period 1 January to 31 Marcy 2026 varied considerably within Washington State but was low within the Columbia River (see Figure below). Most of the precipitation was to the south and east of the project area.

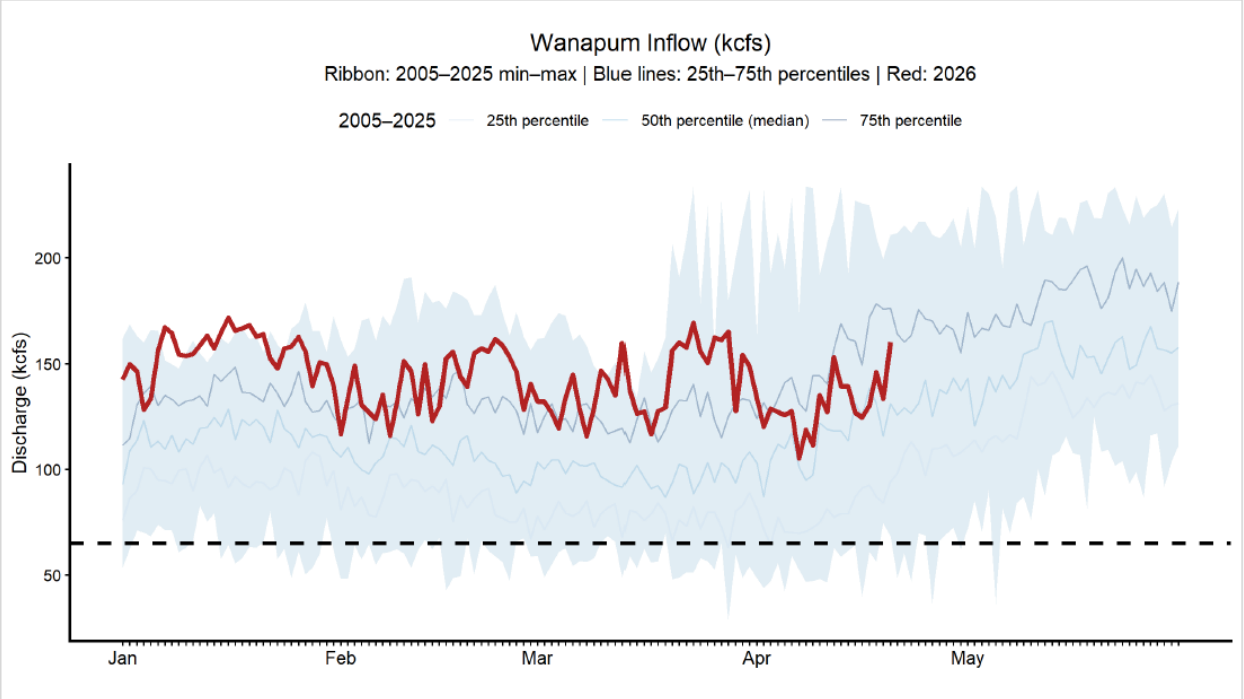


The monthly precipitation is forecasted to be below normal in the project area in May, while temperatures are expected to be above normal in May (see Figures below).





Gabe then showed the amount of flow entering Wanapum Reservoir and noted that the inflow has been relatively high despite the snow water equivalent and precipitation forecast (see Figure below). He pointed out that the inflows are greater than the flows necessary to maintain the critical elevation and flow criteria. Grant PUD has been able to maintain target flows throughout the Hanford Reach.



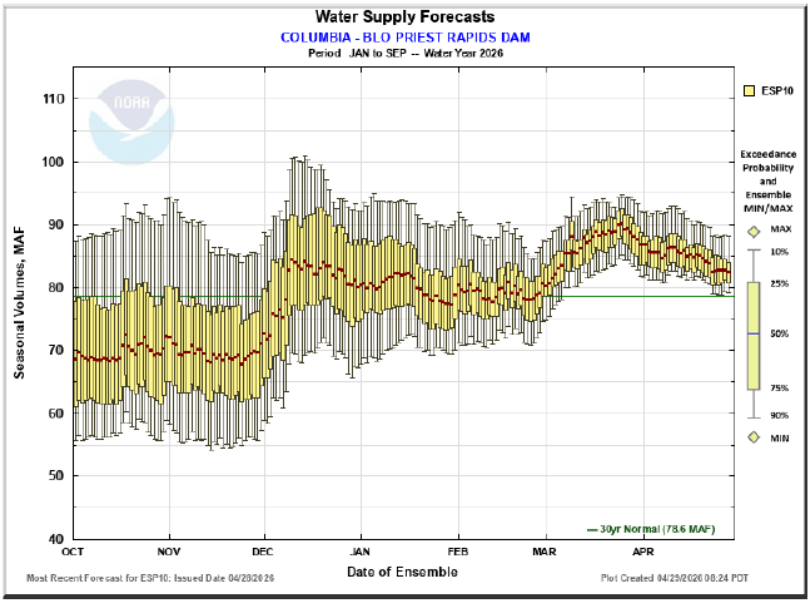
Gabe provided the following summary:

- The spawning period was from 30 October through 23 November 2025.
- Most redds were observed in the 50-60 kcfs elevations (N = 105 of 126 total).
- Reverse load factoring and critical elevation was set at 65 kcfs.
- River temperatures were consistently above average through January.
- Emergence occurred about 2 weeks earlier than normal.
- There is less than median snowpack for April.
- Precipitation is expected to be less than normal, and temperatures are expected to be higher than normal.
- A warm, dry, late spring and summer is expected.

Gabe said Grant PUD will continue to provide updates on the HRFCPPA Periods and Flow Constraints. He indicated that all temperature and flow data are displayed on the Grant PUD website: https://www.grantpud.org/water-quality.

River Management – Shaun Harrington provided a river management and water supply update. Early water year forecasts initially indicated a drier year, but atmospheric river events in December increased regional water supply expectations. He showed the following figure, which identifies the daily runoff forecasts at Priest Rapids Dam. The horizontal green line in the figures represents the 30-year normal flow condition. He said the two atmospheric river events (December and March) are evident in the figure. However, the lack of snowpack is causing a decrease in runoff through April.

Water Supply Forecast

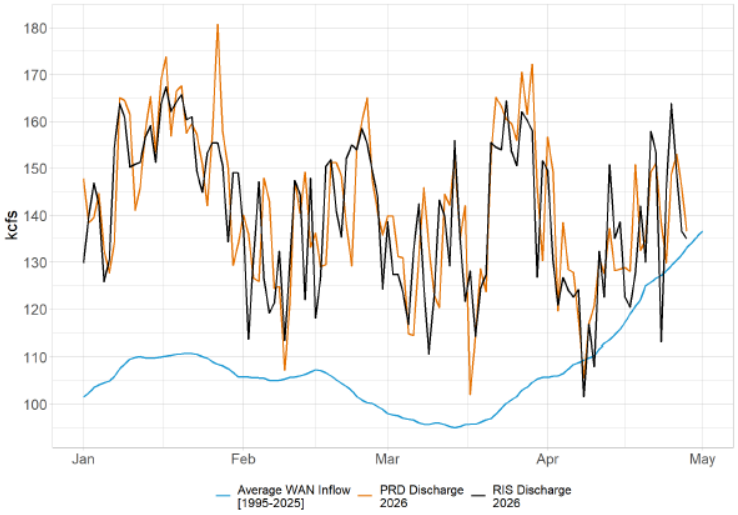


Northwest River Forecast Center

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Shaun then showed the following figure, which identifies daily inflows compared to average inflows. This figure demonstrates that inflows to Wanapum in 2026 have been well above the average inflows during the period 1995-2025. These conditions made it relatively easy to meet the flow constraints.

Daily Inflows Relative to Average

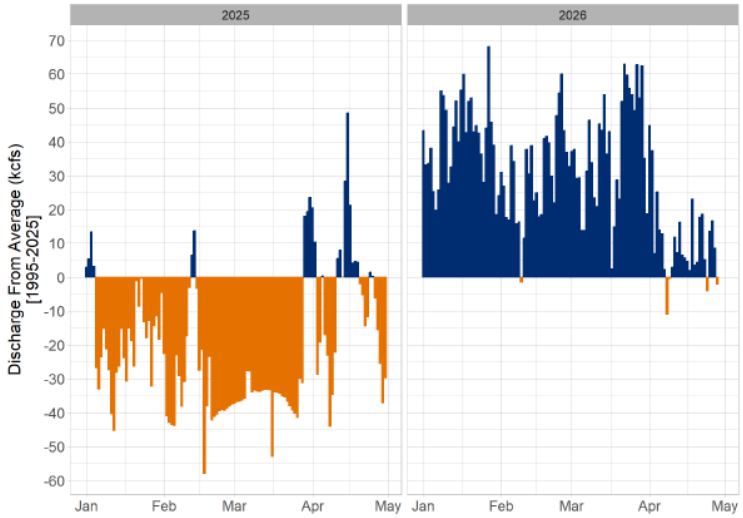


- 2026 inflows have been well above the 1995-2025 average

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The following figure compares the delta between the observed values and average (1995-2025) inflows. Shaun pointed out that the 2026 inflows were significantly higher than the 2025 inflows.

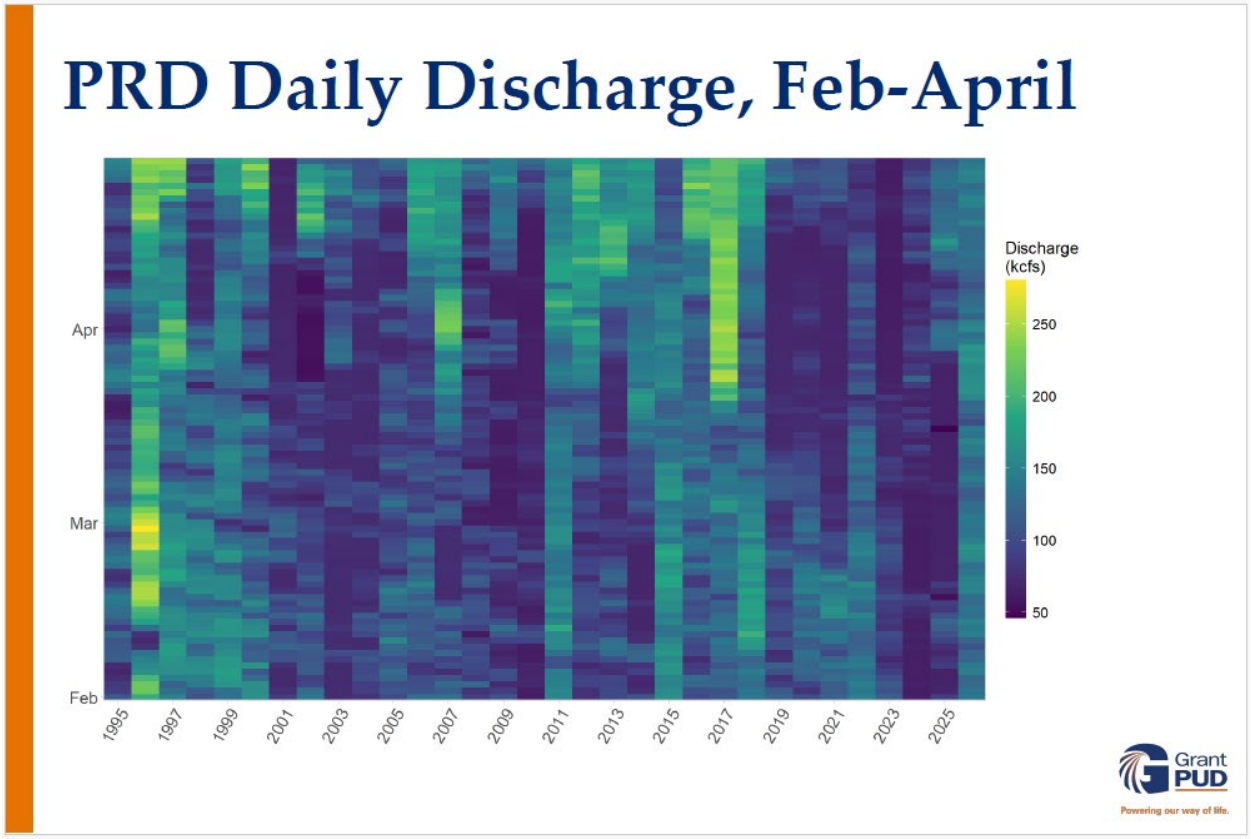
Observed Inflow Delta to 1995-2025 Average



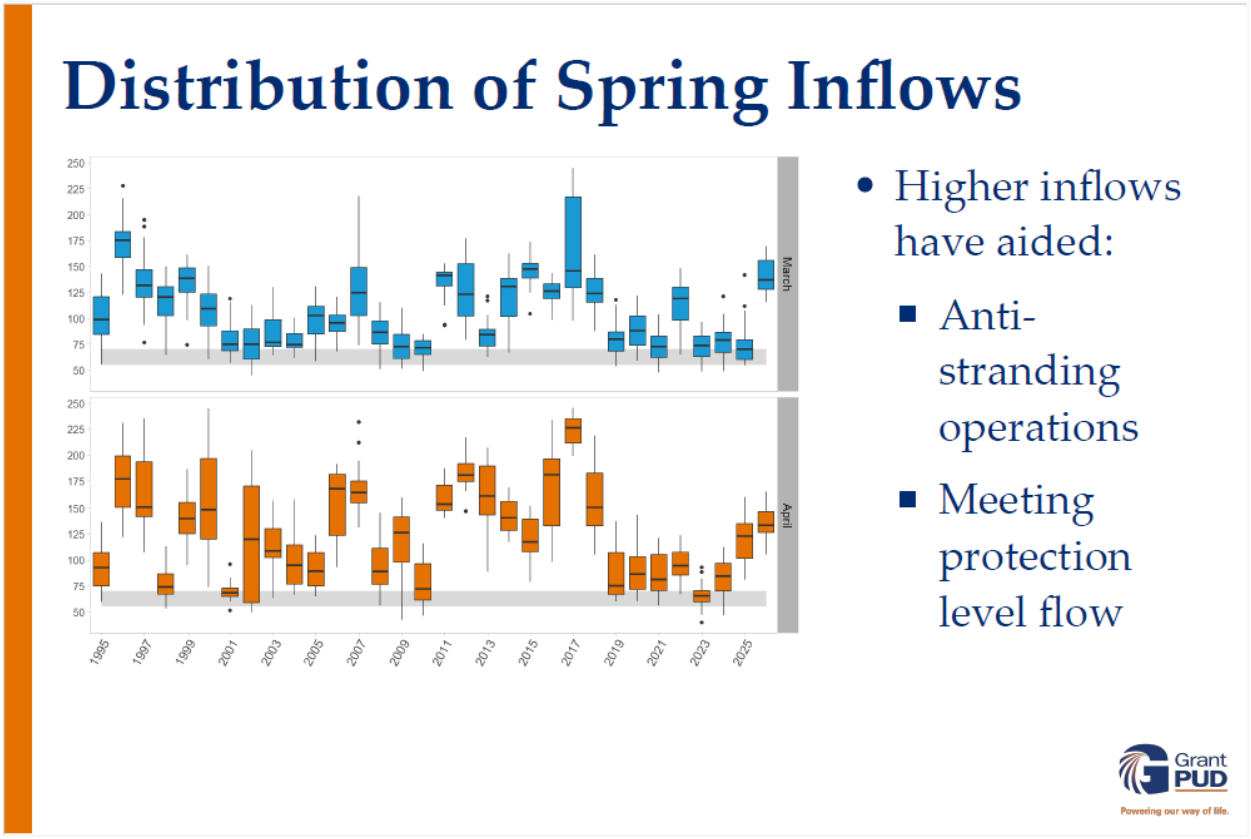
- 2026 inflows significantly higher than 2025

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Shaun presented the following heat map, which shows the daily average outflow from Priest Rapids Dam for the period 1995-2026 during February, March, and April. The darker colors represent below normal flow conditions. In 2026, the colors are lighter, indicating more normal flow conditions in 2026.

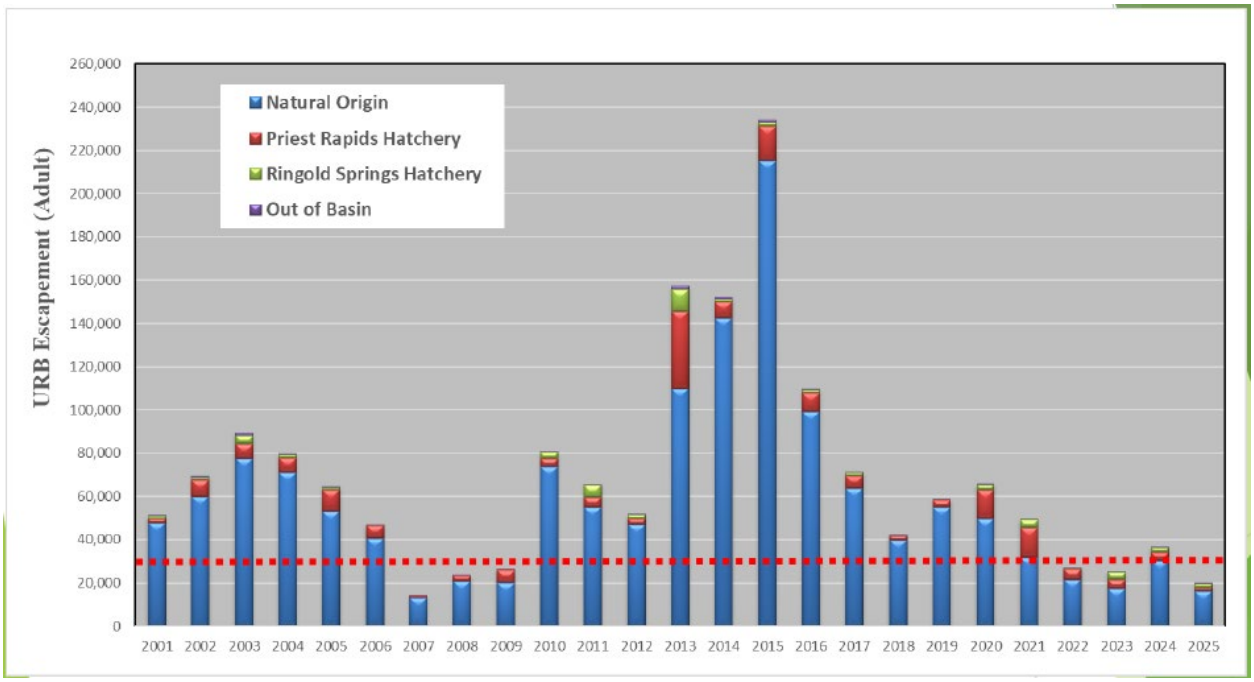


He then showed the following figure, which identifies inflows into Wanapum during March and April for years 1995-2026. Shaun reminded the group that the critical elevation was set at 65 kcfs (horizontal gray line, which also captures the stranding band; 55-70 kcfs). He noted that 2026 has been very different from 2025, when spring flows were well below normal. During the past three years, inflows during March made it difficult to meet flow criteria. This was not an issue this year.

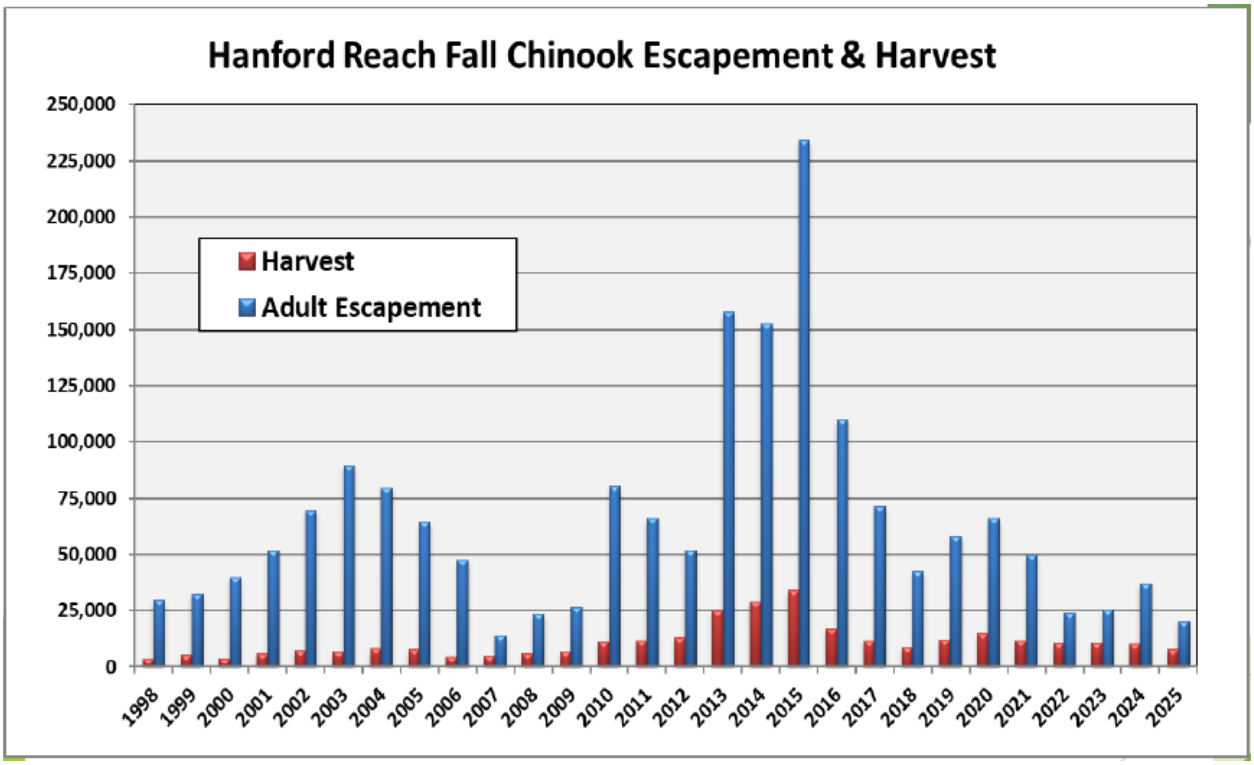


Shaun concluded by stating that the higher flows this year have made it easier to meet protection level flows and have also improved operational flexibility.

2025 Fall Chinook Salmon Escapement Review – Todd Miller indicated that the escapement of fall Chinook Salmon to the Hanford Reach in 2025 was below the goal of 31,000 adults (see Figure below). Forecasting was difficult last year because of the delay of fish crossing McNary Dam. Dani Evenson asked about the low escapement on the Reach and whether there is discussion about meeting PNI requirements given the low escapement. Todd responded that they still collect natural-origin broodstock on the Reach (ABC fishery) to increase the proportion of natural-origin fish in the broodstock.



Todd also showed in the following figure the adult escapement and harvest of fall Chinook Salmon. He noted that harvest has been relatively constant over the last five years.



Todd then showed the following table, which shows the origin of the escapement of fall Chinook Salmon to the Reach from 2001-2025. About 87% of the escapement consisted of natural-origin returns. This is higher than the proportion of natural-origin fish returning in 2023 and 2024.

Origin of Escapement (Adult + Jack)						
Year	NORs	pHOS	% Hatchery Origin			
			Combined	PRH	RSRF	OOB
2001	0.934	0.066	0.066	0.040	0.020	0.006
2002	0.875	0.125	0.125	0.096	0.022	0.007
2003	0.883	0.117	0.117	0.066	0.037	0.014
2004	0.901	0.099	0.099	0.079	0.019	0.001
2005	0.844	0.156	0.156	0.139	0.016	0.002
2006	0.876	0.124	0.124	0.114	0.006	0.004
2007	0.935	0.065	0.065	0.062	0.000	0.003
2008	0.913	0.087	0.087	0.085	0.000	0.002
2009	0.826	0.174	0.174	0.158	0.009	0.007
2010	0.924	0.076	0.076	0.042	0.033	0.001
2011	0.849	0.151	0.151	0.067	0.079	0.005
2012	0.882	0.118	0.118	0.070	0.042	0.006
2013	0.713	0.287	0.287	0.215	0.059	0.013
2014	0.931	0.069	0.069	0.051	0.013	0.005
2015	0.925	0.075	0.075	0.064	0.007	0.004
2016	0.903	0.097	0.097	0.077	0.012	0.007
2017	0.896	0.104	0.104	0.081	0.021	0.003
2018	0.913	0.087	0.087	0.076	0.003	0.009
2019	0.940	0.060	0.060	0.051	0.005	0.004
2020	0.766	0.234	0.234	0.192	0.034	0.009
2021	0.708	0.292	0.292	0.229	0.060	0.003
2022	0.846	0.154	0.154	0.128	0.016	0.011
2023	0.758	0.292	0.292	0.229	0.060	0.003
2024	0.771	0.229	0.229	0.084	0.128	0.017
2025	0.866	0.134	0.134	0.049	0.069	0.016

2026 Fall Chinook Salmon Run Projections – Todd Miller said the 2026 forecast is like the prior year for the natural-origin component (see Figure below). He said they are expecting about 58,147 fall Chinook Salmon to the Reach in 2026. About 27,138 of these are expected to be natural-origin fish. They are estimating a return of 22,669 Priest Rapids fish and 8,340 Ringold Springs fish. He noted that Ringold Springs fish are 100% marked.

2026 URB Forecasted Returns to the Hanford Reach

Estimated return to escapement (stream), sport fishery, and hatcheries
Adult return estimates do not include strays except the combined totals

2026 URB Fall Chinook Returns to the Hanford Reach by Origin

Hanford Reach Natural Origin Fall Chinook					
Age	Age 3	Age 4	Age 5	Age 6	Adult
Return	5,548	17,244	4,346	0	27,138

Priest Rapids Hatchery Origin Fall Chinook					
Age	Age 3	Age 4	Age 5	Age 6	Adult
Return	6,071	15,291	1,307	0	22,669

Ringold Springs Hatchery Origin Fall Chinook					
Age	Age 3	Age 4	Age 5	Age 6	Adult
Return	2,358	5,749	233	0	8,340

Hanford Reach Fall Chinook (natural + hatchery)					
Age	Age 3	Age 4	Age 5	Age 6	Adult
Return	13,977	38,284	5,886	0	58,147

2025 Adult Fall Chinook Returns to the Hanford Reach by Location

Recent 5-year Mean			
Stream	Sport Fishery	Priest Rapids	Ringold Springs
77.6%	20.2%	2.2%	0.0%
21,059	5,482	597	0

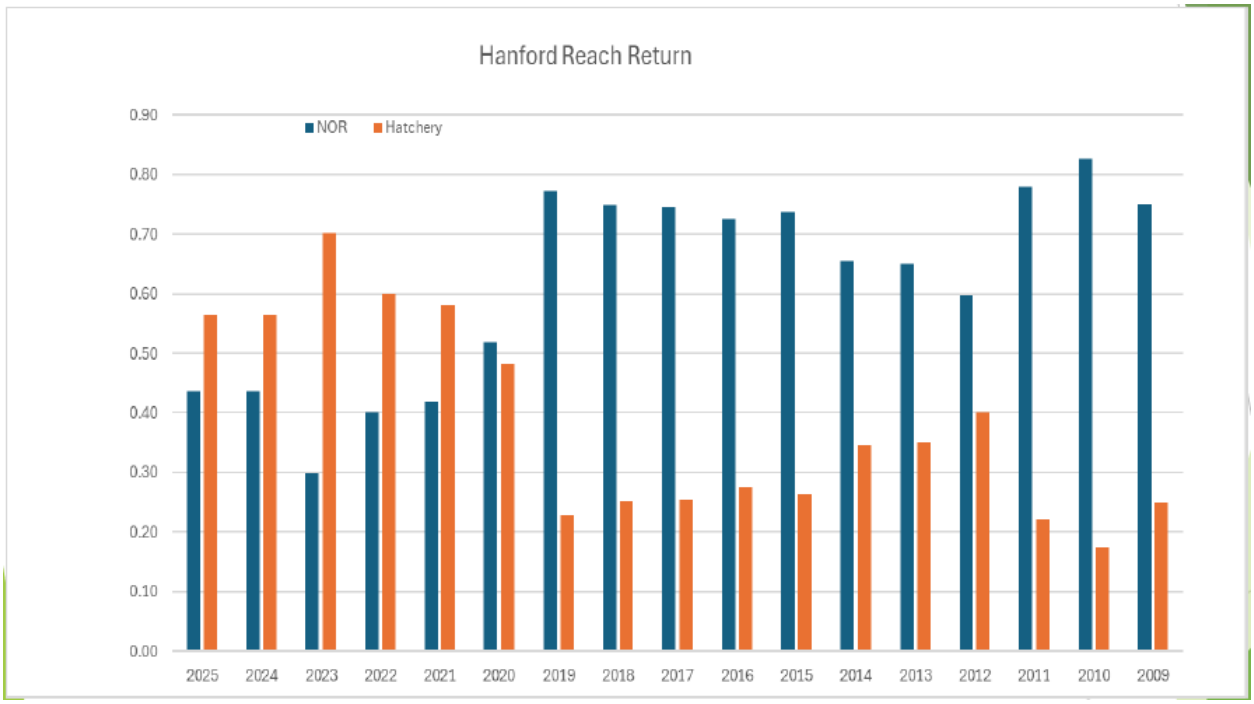
Priest Rapids	Stream	Sport Fishery	Ringold Springs
75.7%	17.0%	7.3%	0.1%
17,160	3,854	1,655	23

Ringold Springs	Stream	Sport Fishery	Priest Rapids
62.0%	20.2%	8.2%	7.1%
5,171	1,685	684	592

Recent 5-year Mean			
Escapement	Sport Fishery	Priest Rapids	Ringold Springs
26,597	7,821	18,350	5,193

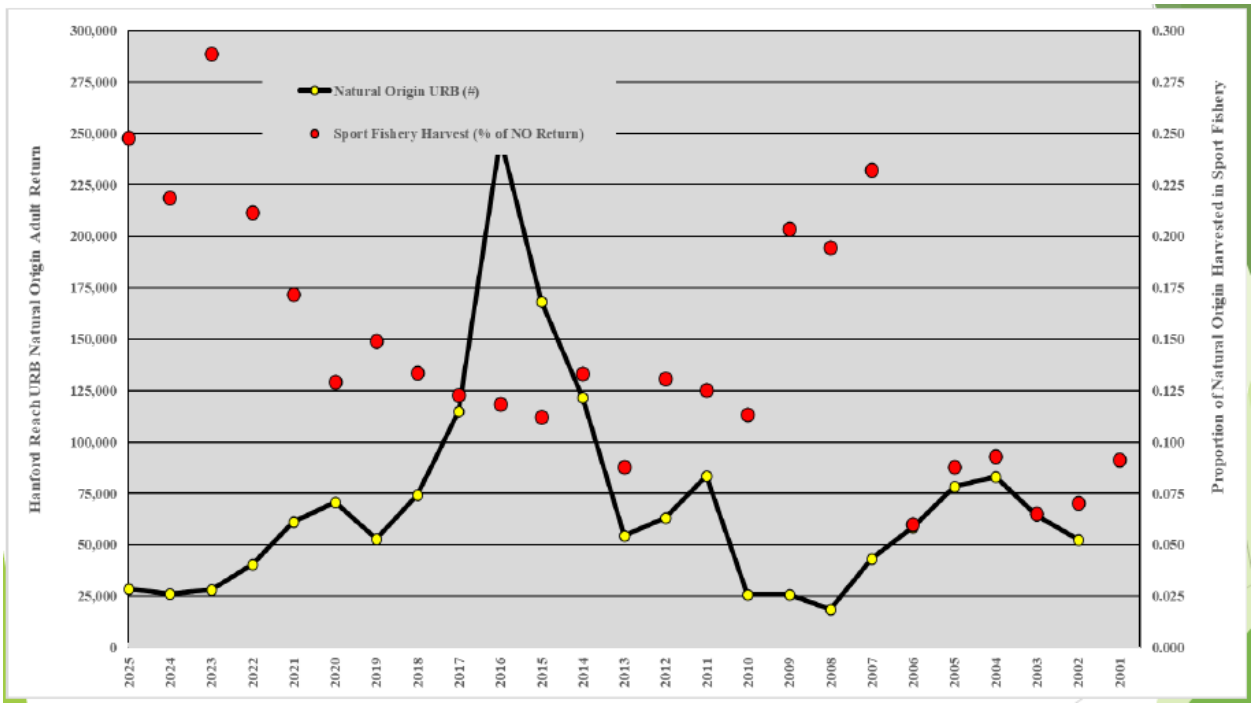
Todd stated that when forecasts are below 36,000 natural-origin returns, fisheries are managed with a one fish limit. In-season checks at McNary Dam will continue to be used to inform fishery management. If 2026 conditions mirror 2025, WDFW may consider a pause or delayed fishery approach until sufficient numbers of fish are observed at McNary Dam.

Reduction in Natural-Origin Returns – Todd Miller showed the following figure, which shows the increasing proportion of hatchery-origin (HO) spawners on the Hanford Reach since 2009. Between 2009 and 2019, natural-origin (NO) fish made up the largest percentage of fall Chinook Salmon on the Reach. Since, 2020, hatchery-origin fish have made up the largest percentage of fish on the Reach. Currently, the split is about 40% NO to 60% HO, while before 2020, the split was closer to 80% NO to 20% HO (based on CWT expansions). Todd indicated that they are seeing similar trends in Snake River fall Chinook Salmon and Upper Columbia summer Chinook Salmon.



Todd believes the reason for the shift in the origin of the escapement is related to warmer water temperatures, degraded substrate conditions (higher levels of fine sediments and aquatic macrophytes), and predation.

Todd added that this change in origin can affect harvest. Because natural-origin fish remain on the spawning grounds, while hatchery-origin fish return to the hatcheries, it is likely more natural-origin fish will be encountered during the fishery on the Reach (see Figure below).



Todd also mentioned that they were awarded funding for a mark-recapture study for expanded adult carcass surveys beginning in fall 2026. The study is intended to improve abundance estimates for natural spawning fall Chinook Salmon and may help address potential size correction bias and origin composition estimates.

CRITFC Tagging Activities (CWTs and PIT-Tags) – Jeff Fryer provided an update on Hanford Reach juvenile tagging activities (see Attachment 1). The project has experienced significant permitting and logistical challenges over the past two years. In 2025, delays and concerns related to cultural resource impacts ultimately led to cancellation of the project.

For 2026, Department of Energy (DOE) restrictions on overnight stays created additional concerns, as fish could not be left unattended for extended periods. Jeff has been working with the U.S. Fish and Wildlife Service on alternative site options. Parking Lot 7, across the river from the DOE site, is currently a likely location, though final approval is still pending.

The 2026 effort is expected to occur from about 25 May through 29 May 2026. Due to short notice and uncertainty, no fish will be tagged with CWTs in 2026. The project will focus on PIT tagging, parentage-based tagging (PBT), and habitat related work. About 40,000 juvenile salmon will need to be captured to PIT tag 10,000 fish. For PBT work, we expect to collect a minimum of 8,000 samples, with the possibility of collecting more.

Jeff noted that the future of tagging at Hanford is uncertain due to site access, staffing, logistics, and the increasing value of genetic approaches. Jeff will keep the FCWG posted on tagging activities in 2026 and in the future.

Dani Evenson thanked Jeff and CRITFC for all their hard work over the last 40 years on this project. She reminded everyone that this is the largest wild Chinook Salmon stock along the Pacific Rim and is also the most productive. She is not sure what the future holds for the tagging project, but she is glad that PIT tagging and genetic analyses are occurring.

PBT Tagging Activities – Zak Robinson gave a presentation on "Extensive Monitoring and Tagging of Hanford Reach Upriver Bright Chinook Salmon" (see Attachment 2). He began by stating that the PBT work is intended to complement, not replace, coded wire tagging. Because the CWT project did not operate last year, the juvenile sampling component required additional coordination.

Zak described four key elements of the genetic work:

1. Establishing a natural-origin parentage-based tagging baseline using carcass samples.
2. Using carcass and juvenile samples for transgenerational mark-recapture escapement estimates.
3. Refining hatchery-origin sex ratio and age-structure estimates using existing hatchery-origin genetic baselines.
4. Evaluating reproductive success and spatial distribution of family groups on the Hanford Reach.

For spawn year 2024, 1,489 carcass tissue samples were collected, with genotypes obtained from 44.7% of the samples. Zak noted that the internal tissue sampling protocol helped address contamination issues.

Juvenile sampling occurred from Richland to Vernita Bar, with genotypes obtained from 5,703 juveniles. All individuals were assigned via genetic stock identification (GSI) to Upper Columbia fall/summer Chinook Salmon and Snake River fall Chinook Salmon. Approximately 1.1% (n = 66) of the juvenile collection was identified as hatchery origin and removed from further analysis.

The single-parent tagging rate was estimated at 3.84% of juveniles. Using an average pre-smolt abundance estimate of approximately 46 million, Zak noted that this would equate to approximately 1.76 million juveniles genetically tagged.

The transgenerational mark-recapture estimate for spawn year 2024 was approximately 34,434 fish on the reach, compared to WDFW's estimate of about 36,000. The coefficient of variation was 6.72%, which is within the CTC guideline of 15%.

Zak reported that although sibling groups clustered in space, they were found across broad spatial areas, including from Richland to Vernita, and that juvenile sampling appeared spatially and temporally representative. Future work will include continuing carcass and juvenile collections, expanding natural-origin PBT baseline and increasing tagging rates, preparing for adult recoveries beginning in 2027, evaluating use of samples from mixed-stock and ocean fisheries, evaluating reproductive success of natural spawners, and refining escapement and effective size estimates.

In summary, Zak indicated that the pilot year provided the start of a natural-origin Hanford Reach PBT baseline with observable tagging rates, provided an independent estimate of escapement and genetic effect size, and provided additional estimates of sex ratios, age-structure, and pHOS of the spawning population. In the next year, they will extend and refine their analyses and process an additional year of samples from carcass recoveries and juvenile collections. Zak thanked the many people and organizations that helped with the studies.

V. Hatchery Activities

Priest Rapids Hatchery Update – Gabe Temple provided a verbal update based on information from Priest Rapids Hatchery staff and Stacey Remple with WDFW. He said the delayed 2025 run resulted in fish arriving at the trap over an extended period. The trap was still effective in collecting the broodstock needed for Priest Rapids Hatchery; however, broodstock held on site matured slowly. One possible explanation discussed by hatchery staff was exterior lighting affecting maturation timing.

Gabe said the delayed egg take resulted in delayed developmental timing through life stages. As a result, planned May releases have been postponed allowing fish to reach appropriate size for tagging and release. The first release from the downstream raceway is scheduled for 2 June 2026. The last release from the upstream raceway is scheduled for 12 June 2026.

Hatchery managers ponded 7.1 million fish, which met the target, and currently there are about 6.9 million fish on hand. Fish are being transferred into raceways. The CWT trailers are on site and are currently tagging fish. Biomark is scheduled to begin PIT tagging next week (May 4-7, and May 18-21).

Gabe also reported that PIT-tag detection infrastructure issues in the hatchery outfall channel have been resolved. The array is now recording fish and updating daily data, and it is expected to be functional for the June releases.

Fish transferred to the downstream raceways are about 75 fish per pound and need to reach the target range of 50 to 60 fish per pound. Fish in the upstream raceway are approximately 200 fish per pound but will have additional time to grow. Hatchery staff expect fish to reach target size for the June releases.

Release Strategy Update – Gabe Temple reported that he and Stacey Remple are working through the release timing evaluation data. Preliminary analysis, including the most recent complete brood year, suggests results remain consistent with prior years. Early release timing continues to show slightly better smolt to adult return rates than later release timing. A more complete update is expected in the next couple of weeks and may be shared with the PRCC Hatchery Subcommittee during their May meeting.

VI. Adjourn

With no additional business to discuss, Tracy Hillman adjourned the meeting at 11:45 am.

VII. Next Meeting

The next meeting of the FCWG will be on 5 October 2026.

Attachment 1

Presentation by Jeff Fryer on Tagging Juvenile Fall Chinook Salmon on the Hanford Reach

Hanford Chinook 2026 CWT and PIT Tag Project?

Jeffrey K. Fryer
Columbia River Inter-Tribal Fish Commission
Portland, OR

FCWG meeting
April 30, 2026

2025 Project Site issues

February 5: Initiated usual pre-season letter to DOE for 2025 use of Hanford site

March 5: Received response indicating DOE has been asked to limit activities while they realign but will get back to us by March 17.

March 17: Response asking for more details which were provided.

March 25: Response saying DOE may not be able to meet the start date and suggesting we plan a backup location. I make preliminary contact with USFWS who did not seem enthusiastic but did not rule out the use of their sites.

April 13: I tour USFWS Sites (White Bluffs, Parking Lot 7) and Vernita on way to Oroville, WA.

April 18: Email from DOE saying that we consider alternative options if dates not flexible and that DOE has identified USFWS sites on opposite of river as well as Vernita Bridge. We reach out to USFWS and find it would require 3 months for possible approval and also reached out to WDFW regarding Ringold and Vernita.

April 24: At a call with DOE and contracting staff, we are told they need to do a cultural resources review which will take 4-5 months.

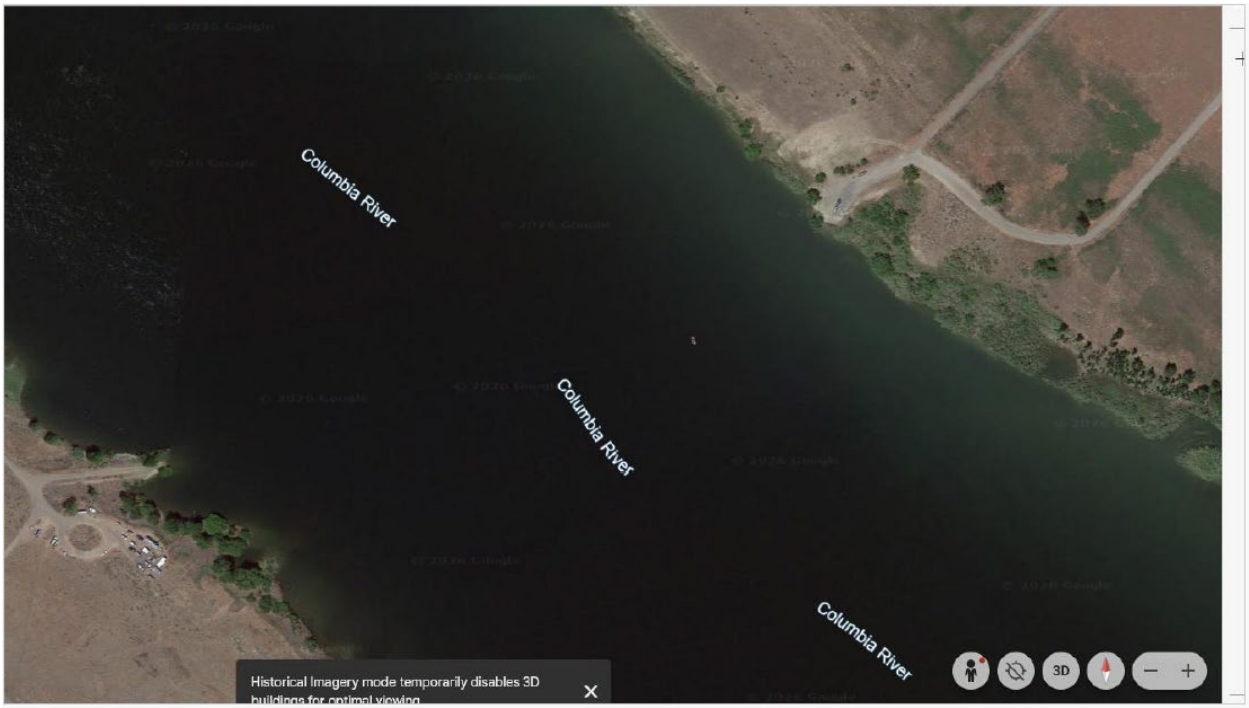
Since then-positive response from WDFW (Todd Miller, Rich Finger, Ringold staff) regarding Ringold and Vernita, however at 4 PM Friday, May 2, we received an email from a WDFW archeologist:

> *"If you plan to do this on WDFW land we will need to review the project for impacts to cultural resources. I will need detailed information on the ground disturbance required (including vertical as well as horizontal disturbance estimates). It sounds like you haven't decided on a location yet but please let us know as soon as you do so that we can review the project and notify the Tribes."* We informed WDFW we would need to put in a grounding stake and eventually told we'd need a review that would last well into June and cancelled the project.

2026 Hanford Project

- Started on getting approval in November for 2026. We were told about a month ago that DOE won't allow overnight stays in 2026 (between 6 PM and 6 AM) requiring us to potentially leave over 80,000 juvenile salmon unattended for 12 hours.
- USFWS suggested first the East Mine PIT Road (Wahluke) site, then Parking Lot 7 Directly across river from DOE which it looks like we'll get approval for.


Wahluke
Columbia River
Arid lands
Ecology Reserve
Ginger
Bettie
Nancy
White Bluffs
Wahluke Ponds
Columbia River
Columbia River
Ruth
Manhattan Project
National Historical...
Pierce
Columbia River
Helen
Airport
Susie
Edna
Pearl
Ethel
Willa
Columbia River


Columbia River
Columbia River
Columbia River
Historical Imagery mode temporarily disables 3D buildings for optimal viewing
3D

Site Score card I put together

	Access to Fishing Areas (Hanford to Vernita)	Proximity to Hotels	Distance for Tagging crew from Toppenish	Proximity to supplies (Tri-Cities/Moses Lake)	Proximity to Release Site downstream of capture areas	Suitable site for setup	Security/ Emergency services	Unweighted Score	Rank
Current Hanford site (DOE)	5	6	4	6	6	6	6	39	1
White Bluffs (DOE)	6	5	4	5	2	4	6	32	2
Ringold (WDFW)	1	5	2	5	5	2	2	22	3
Wahluke (USFWS)	4	6	2	2	1	2	3	20	4
Parking Lot 7 (USFWS)	3	2	1	2	6	3	2	19	5
Jackson Creek Fish camp (Grant PUD/Wanapum Band)	1	4	4	3	1	2	4	19	6
East White Bluffs (USFWS)	6	2	2	2	2	3	2	19	6
Vernita (WDFW)	2	4	5	4	1	1	1	18	8
Scoring: 6-Excellent, 5-Very Good, 4-Good, 3-Neutral/Fair/Unsure, 2-Poor, 1-Very Poor, 0-Not Possible									

2026

- Site will be Parking Lot 7 from roughly May 25 through May 29.
- CWT is too big of a project to turn on with a few weeks notice. Thus, there will be no coded wire tagging in 2026, PIT, PBT, and habitat work only.
- We will only need to capture about 40,000 juvenile Salmon to PIT tag 10,000; PBT will tag a minimum of 8000.

2027

- We will have to start all over again with getting approval from DOE or USFWS!
- We have no tag supervisor for coded wire tagging. Paul Graham would have been available this year and last year but probably not in 2027. WDFW is willing to train someone from CRITFC. Is this a feasible solution?
- I have asked for an opportunity to discuss the future of the Hanford CWT project at an upcoming CTC meeting.

Attachment 2

Presentation by Zak Robinson on Monitoring and Tagging of Hanford Reach Upriver Bright Chinook Salmon



Primary Objectives

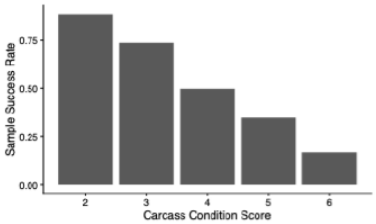
1. "Tag" natural-origin Hanford Reach upriver brights using PBT.
2. Provide an independent estimate of spawner escapement.
3. Refine and supplement estimates of pHOS, sex-ratio, and age structure.
4. Evaluate patterns of reproductive success and spatial distribution of family groups within the Hanford Reach.

1

Natural-origin Hanford Reach PBT Baseline

- WDFW and CRITFC collected and genotyped carcasses (parents in the baseline).
- In 2024, we obtained 1,489 tissue samples and successfully obtained genotypes from 667 unique individuals (44.7%).
- Based on 2024 escapement estimates (36,792):
  - 1.81% of spawning adults are in our baseline. (single-parent tagging rate ~ 3.59%).

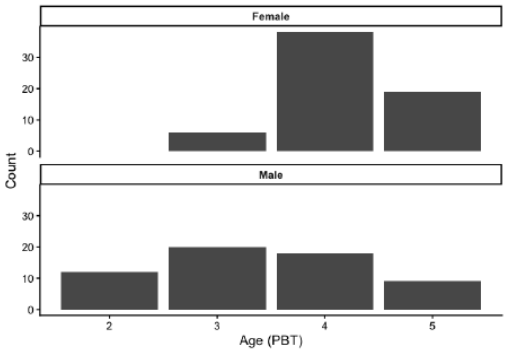




2

Mixed-stock Analyses for Carcass Collection

- 19.2% of Individuals assigned to hatcheries via PBT compared to 15.9% being physically marked.
- The observed sex proportions was 57.7% female and 42.3% male.
- All individuals assigned to Upper Columbia Fall/Summer (94.8%) or Snake River Fall (5.2%) via GSI.



Hatchery	Basin	Run	*n*	
Little White Salmon National Fish Hatchery	Columbia	Fall	4	0.6%
Lyons Ferry Fish Hatchery	Snake	Fall	2	0.3%
Priest Rapids Hatchery	Columbia	Fall	112	16.8%
Ringold Springs State Hatchery	Columbia	Fall	7	1.0%
Umatilla Fish Hatchery	Columbia	Fall	3	0.4%
Putative NOR	–	–	539	80.8%

3

Juvenile Sampling Spring 2025

- Directly observe the PBT tagging rate.
- Determine the proportion of parents that are marked.
- Explore patterns of reproductive success and spatial distribution of family groups.

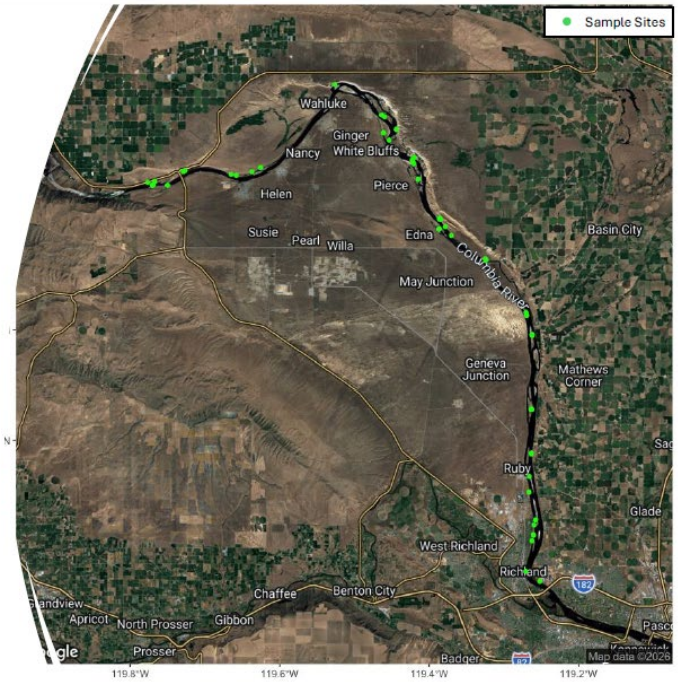




4

Juvenile Results

- Successful genotypes from 5703 individuals.
- All individuals assigned via GSI to:
  - Upper Columbia Fall/Summer (98.4%).
  - Snake River Fall (1.6%).
- 1.1% (*n*=66) of the collection was determined to be of hatchery origin.
  - Priest Rapids BY 2024.



Juvenile Tag Rate Estimation

- Observed Single-parent Tag Rate (t_{SP}):
  - The proportion of juveniles with at least one sampled parent.
- Proportion of Parents Sampled (p_A):

$$p_A = 1 - \sqrt{1 - t_{SP}} \; or \; \frac{POP}{2n}$$

Single-parent tag rate

$$\underbrace{p_A{}^2 + 2\,p_A(1 - p_A)}_{\text{Two-parent tag rate}} + \underbrace{(1 - p_A)^2}_{\text{Proportion untagged}} = 1$$

Satterthwaite et al. (2015)

6

Observed Juvenile Tagging Rates

- 220 parent-offspring pairs, which suggests a single-parent tagging rate of 3.84% (CrI: 3.36% – 4.37%).
- Average pre-smolt abundance from 1986-2004 was 46M (Harnish *et al.* 2012).
- A tag rate of 3.84% on an average year would result in 1.76M juveniles tagged.



7

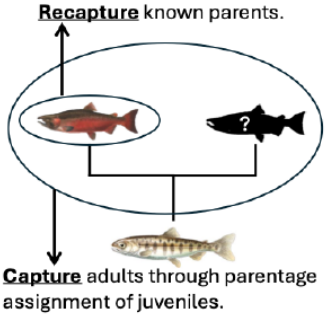
tgMR Spawner Escapement Estimates 2024

- Analogous to traditional two-sample mark-recapture.

$$\widehat{N} = m_j m_A \times \frac{2}{POPs}$$

Bravington *et al.* (2016)

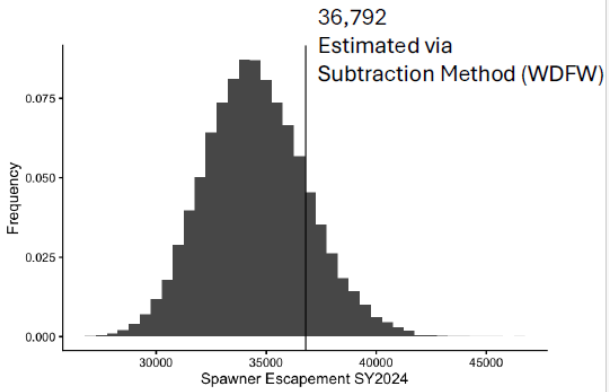




8

tgMR Spawner Escapement Estimates 2024

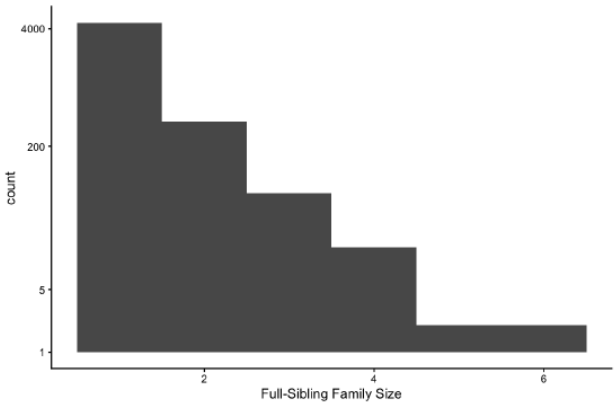
- 1.94% (CrI: 1.70%–2.21%) of spawning adults sampled as carcasses.
- Estimated escapement: **34,434** (30,210 – 39,337).
  - CV = 6.72%



9

Full-Sibling Family Structure

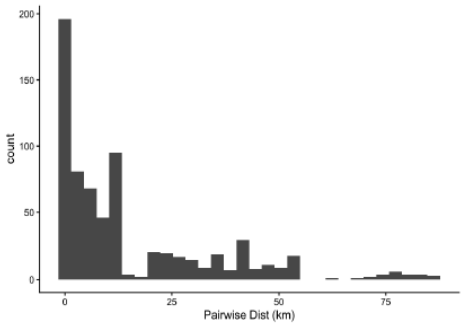
- Limited family structure in sample.
- Maximum of 6 full-siblings in sample.

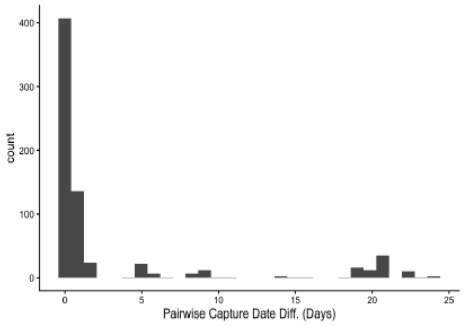


10

Full-Sibling Family Structure

- Families significantly clustered in space (p<0.001) but sampled up to 80+ km apart.
- Families not clustered by sample date (p=0.531).
- Juvenile sampling likely spatially and temporally representative.





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Future Directions

- Expand natural-origin Hanford Reach PBT baseline and increase tagging rates.
- Prepare for PBT recoveries of returning adults starting in 2027 (age 3+).
  - In-river mixture collections (Bonneville AFF).
  - Ocean fisheries off WCVI and SEAK utilize genetic analyses (NOAA, ADFG, CDFO) could recover Hanford PBT fish.
- Evaluate reproductive success of natural spawners.
  - Hatchery- versus natural-origin individuals.
  - Sex differences.
- Refine tgMR escapement and effective size estimates.
  - Evaluate potential sources of bias.



12

Summary: Pilot year in review

- The start of a natural-origin Hanford Reach PBT baseline with observable tagging rates.
- Provided an independent estimates of escapement and genetic effective size.
- Provided additional estimates of sex ratios, age-structure, and pHOS of spawning population.
- In the next year, we will extend and refine our analyses and process an additional year of samples from carcass recoveries and juvenile collections.

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