



**PRCC Habitat Subcommittee
 Conference Call**

**Thursday, 11 September 2025
 1:00 p.m. – 3:30 p.m.**

Final Meeting Minutes

PRCC Habitat Subcommittee Members

Tracy Bowerman, Shelby Fowler (alt), USFWS	Chris Fisher, CTCR
Dave Duvall, Deanne Pavlik-Kunkel (alt), GPUD	Brandon Rogers, Hans Smith (alt), YN
Scott Carlon, NMFS/NOAA ¹	Carl Merkle, CTUIR
Jeremy Cram, Cody Gillin (alt), WDFW	Erin Harris, GPUD
Nathan and Clayton Buck, Wanapum	Tracy Hillman, BioAnalysts, Chair

Meeting Attendees

Chris Fisher, CTCR	Dave Duvall, GPUD
Jeremy Cram, WDFW	Tracy Bowerman, USFWS
Brandon Rogers, YN	Chris Mott, GPUD
Mark Ingman, Cascadia Conservation District*	Mousa Diabat, NV5 Geospatial*
Erin Harris, GPUD	Tracy Hillman, BioAnalysts, Chair

* Guest who joined the PRCC Habitat Subcommittee meeting for the Wenatchee-Okanogan Comprehensive Thermal IR Surveys for Cold Water Species discussion.

Action Items:

- Tracy Hillman will share the agenda for the habitat projects tour in Canada as soon as it is available.

¹ Scott provided his votes on decision items after the meeting.

Decision Items²:

- **Decision:** PRCC Habitat Subcommittee members approved \$258,000 for the Wenatchee-Okanogan Comprehensive Thermal IR Surveys for Cold Water Species Project with the condition that the surveys occur during winter. Funding for this project will come from Fund 602.
- **Decision:** PRCC Habitat Subcommittee members approved \$1,000 for sponsorship for the 2026 Upper Columbia Science Conference. Funding for the conference will come from Fund 602.

I. Welcome and Introductions

Tracy Hillman welcomed everyone to the meeting and participants introduced themselves.

II. Agenda Review

The PRCC Habitat Subcommittee reviewed and approved the September meeting agenda.

III. August Meeting Notes

PRCC HabSC members reviewed and approved the 14 August 2025 meeting notes.

IV. Review Action Items

The PRCC HabSC reviewed the following action items from the August meeting:

- Members will identify questions for Cascadia Conservation District regarding the Wenatchee and Okanogan Comprehensive Thermal IR Surveys for Cold Water Species specification sheet and provide those to Tracy Hillman by Friday, 22 August 2025. **Complete. Questions were compiled and shared with Cascadia Conservation District on 22 August.**
- Tracy Hillman will share the updated project tracking list with the PRCC HabSC. **Complete. The project tracking spreadsheet was provided to the PRCC HabSC following the August meeting.**

V. Project Updates

Members of the PRCC HabSC provided the following updates on funded projects:

- **Primary Appraiser (Pacific Appraisal Associates)** – Dave Duvall reported that there is no update on Pacific Appraisal Associates projects.
- **Primary Appraiser (Noble Ag Land Valuation)** – Dave Duvall reported that Mark Noble is currently reviewing the appraisal contract.
- **ORRI VDS Backwatering Project** – Chris Fisher reported that there is no update on this project.
- **Lower Wenatchee Instream Flow Enhancement Project, Phase II Project** – Tracy Bowerman reported that the sponsor (Trout Unlimited; TU) continues to prepare for project implementation beginning on 1 October. The sponsor is working with landowners adjacent to the ditch to get approval for construction access. They are also coordinating with USFWS on federal cultural compliance for the project. They anticipate approval from USFWS in early September. Finally, the sponsor continued to track the final draft of the Trust Water Right Agreement. They anticipate approval of the final revision and execution in September.

² All decision items listed here were approved by PRCC HabSC members.

- **Peshastin Creek RM 2.5 Project** – Tracy Bowerman indicated that Cascade Fisheries (CF) continued to coordinate with the Corps to work through Clean Water Act permitting and Section 106 compliance of the National Historic Preservation Act. In July, their consultant edited the cultural report based on a meeting with the Corps archeologist and the Department of Archaeology and Historic Preservation (DAHP). The cultural report was submitted to the Corps and final consultation was initiated on 21 July. The sponsor heard from the Federal Emergency Management Agency (FEMA) that their technical review of the sponsor’s Conditional Letter of Map Revision (CLOMR) application is complete. The sponsor will publish a legal notice as part of the CLOMR process. The design engineer completed the draft final design, and the sponsor is currently reviewing the designs. The sponsor continues to work through permitting steps, which include ongoing work with FEMA and Chelan County on CLOMR approval, work with WDFW on Hydraulic Project Approval (HPA), and work with Ecology on the 401 water-quality certification.
- **Bockoven Entiat and Stormy Acquisition Projects** – Jeremy Cram reported that there is no update on this project. The landowner has put the sale on pause.
- **Canyon Creek Culvert Design and Construction Project** – Tracy Bowerman indicated the sponsor (CF) is working to gather follow-up comments from the Forest Service. The review by the Forest Service has been delayed because of staff shortages and wildfire demands. The sponsor hopes to convene a Forest Service review group this fall to identify a preferred alternative. They will then prepare a 60% design.
- **Eagle Rocks Habitat Enhancement Project** – Tracy Bowerman said the sponsor (Methow Salmon Recovery Foundation; MSRF) continues to work on maintenance of plantings, including weed management, irrigation, and protection. They are also reaching out to landowners on final site restoration and project acceptance.
- **Kedrowski Acquisition Project** – Tracy Bowerman indicated that the sponsor (MSRF) reported that the landowners have signed the sale agreement. The Title was initiated through CW Title. The sponsor anticipates closing before 30 November.
- **Bartsch Acquisition – Lower Twisp River – Reach 2A Project** – Dave Duvall said the sponsor (MSRF) closed the purchase of the property on 18 March 2025. This project is complete and can be closed once the sponsor submits the final invoice. Dave added that the sponsor completed a walk-through inspection, reviewed survey flagging to confirm that access restriction can be enforced, completed 2D analysis for future restoration work, and contacted a company that moves homes (Boss Construction). They should soon receive a cost estimate for moving the home.
- **Skyline Screen and Fish Return Upgrades Project** – Tracy Bowerman reported that the sponsor (MSRF) coordinated with landowners regarding staging and access. The sponsor also confirmed with the board of directors the early shutdown of irrigation delivery and construction schedule. The sponsor is currently working through material acquisitions and budget reconciliation. Construction should begin in September.
- **Penticton Dam Fish Passage Construction** – Chris Fisher reported that the fishway was completed last month. The sponsor (ONA) held a fishway opening celebration on 18 August. The sponsor is in the process of installing the Riverwatcher and transducer and final electrical work. They will also add plantings and signage. Photos of the completed fishway are provided in Attachment 1.
- **ORRI Okanogan Falls** – Dave Duvall said there is no update on this project.

- **White River Ohme Acquisition** – Dave Duvall said the sponsor (Chelan Douglas Land Trust; CDLT) reported that the landowner signed the sale agreement. They hope to close before the end of 2025.
- **Enloe Dam Sediment Analysis and 30% Design** – Chris Fisher reported that the sponsor (TU) continues to make progress on this project. To secure a permit from Ecology, they need to conduct additional testing of sediments with different concentrations of arsenic in the sediments. Lab tests will be conducted with zooplankton and *O. mykiss*. The preferred alternative is to remove the dam with full sediment release.
- **Methow River Riparian Stewardship** – Dave Duvall reported that the sponsor (MSRF) is coordinating with other funding partners on outreach and site access. They are working on riparian fencing and cleanup, and they are using SRFB funds to remove the existing structure on the Stanley property.
- **M2@3R Habitat Construction** – Dave Duvall indicated that the sponsor (MSRF) is coordinating with the landowners and the Methow Conservancy. They are also scheduling a required site visit.
- **Libby Creek Fish-Passage Barrier Dam Removal** – Tracy Bowerman reported that the sponsor (CF) is working on WDFW and Army Corps of Engineers permit applications. The USFWS engineer will develop a final design this fall (currently at 60%). The engineer will meet with WDFW on 16 September to review design plans for the fish screen.
- **Methow River – Integrated CMZ Project** – Dave Duvall reminded the PRCC HabSC that last month the sponsor (MSRF) received word from Ecology that they are only able to fund a portion of the project due to a reduction in the allocated state budget funding. The sponsor will re-apply for funding during the next funding cycle (2026). Therefore, this project is on hold until the sponsor secures additional funding.

VI. Restoration/Protection Projects

Wenatchee-Okanogan Comprehensive Thermal IR Surveys for Cold Water Species

Last month the PRCC HabSC received a specification sheet from Cascadia Conservation District (CCD) titled, “Wenatchee-Okanogan Comprehensive Thermal IR Surveys for Cold Water Species.” Mark Ingman, CCD, joined the meeting last month and gave a presentation on the proposed work. Following the presentation, members discussed the proposed work and determined that they needed more information before they could decide on whether to fund the work. They identified questions for the sponsor and asked the sponsor to join the meeting today to respond to the questions. Those questions were shared with the sponsor on 22 August.

Mark Ingman and Dr. Mousa Diabat (Technical Domain Expert at NV5 Geospatial) joined the meeting to respond to the PRCC HabSC’s questions. Below is a summary of their responses to the questions.

1. *Is there an advantage of flying during the late fall/early winter to conduct thermal IR surveys? Surface flows during the fall/winter period are near the annual low discharge; thus, groundwater input (particularly smaller inputs) would be more detectable (less mixing with low surface discharge) and location of the point sources would be more definitive.*

Response: Mousa indicated that the timing of the surveys depends on the objective of the study. If the objective is to identify summer low-flow rearing habitat for salmonids, a summer survey would be most appropriate. However, if the objective is to identify winter rearing habitat for

salmonids, a winter survey would be most important. He added that winter surveys would use fixed-wing aircraft, while summer surveys would use a helicopter. Winter surveys would be conducted during night or early morning and before stream icing. He also noted that summer surveys will identify thermal anomalies such as cold-water tributaries and groundwater inputs along the stream margins or in shallow water. Winter surveys will only pick up groundwater inputs.

2. *Although it was mentioned that water temperature could be detected to a depth of 10 feet, the HabSC questions whether the sensitivity to detect groundwater inputs would be greater during the fall/winter period. During the fall/early winter, surface water temperatures are in the upper 30s-low 40s and groundwater temperature is ~ 50°F. Because of the warmer groundwater temperature and colder surrounding surface water, groundwater is anticipated to rise to the surface with less mixing and therefore should be easier to detect than during the summer when groundwater would be colder than surface water and would remain near the riverbed and become diluted by surrounding warmer surface water. The signature of this groundwater input may be obscure during the summer and would more likely be detected during the winter.*

Response: Mousa indicated that thermal IR surveys measure surface water temperatures. During summer, cold-water inputs in deep water would be detected at the surface where there is rapid mixing of water or downstream from the thermal input if there is less mixing. Deeper groundwater inputs would likely be easier to identify during winter surveys, but other thermal anomalies such as cold-water inputs from tributaries would be missed. The goal of a winter survey would be to conduct the survey when there is a large contrast between the thermal anomaly and the surface waters. This would need to occur before ice forms. He added that during fall, the contrast between thermal anomalies and surface waters is small. That is, both groundwater inputs and surface waters will be ~50°F.

3. *During the late fall/early winter, there would be less foliage on riparian trees and bushes. The HabSC is not certain how, if at all, leaves would affect the results of the thermal IR surveys, but undoubtedly there would be a less obstructed view of the water surface during the fall/winter than during the summer, particularly for small streams (< 10 m).*

Response: Mousa indicated that vegetation can obscure thermal IR surveys. Conducting surveys when there is less vegetation would provide more information about temperatures of surface waters along the margins that are shaded by vegetation during the summer. This is less of a problem in larger streams than in smaller streams.

4. *Is there a possibility the surveys could be extended into Canada on the Okanagan and Similkameen rivers? There are likely several issues with conducting surveys in Canada, but it may be worth exploring.*

Response: Mousa indicated that surveys can be conducted in Canada provided the aircraft does not have to land in Canada. Therefore, the length of stream to be surveyed in Canada would be limited by the aircrafts fuel capacity and burn rate. Mousa did say that landing in Canada can be done but would require coordination with Canada.

5. *What are the tradeoffs between summer and winter flights in terms of identifying thermal anomalies?*

Response: Mousa said this was addressed earlier. The largest difference would be the types of thermal patches or anomalies that are detected during the summer and winter surveys.

6. *When the data are collected, we end up with a snapshot of thermal anomalies. How do these thermal anomalies change across the hydrograph and relative to water withdrawals?*

Response: Mousa agreed that a single survey is a snapshot in time. He said if the objective is to evaluate trends over time, multiple surveys would need to be conducted over time (seasonally or annually). He said this would be very expensive. A single survey provides thermal information at a specific point in time. Therefore, irrigation returns would be detected at that time only provided they are cooler than or warmer than the receiving surface waters. Tracy Bowerman noted that thermal anomalies can change over time depending on stream flows, land uses, season, and climate change. She identified Pole Creek (tributary to the Entiat River) as an example. Pole Creek was identified as a warm thermal anomaly during the Entiat thermal IR survey, but she recently snorkeled the Entiat River and found that Pole Creek was much colder than the Entiat River. Mousa agreed that temperatures vary over time based on several factors. Chris Fisher indicated that surveys in winter would not be influenced by irrigation returns. Tracy Bowerman said it will be important to provide context (stream flows, date, etc.) when analyzing the thermal data.

7. *How can summer surveys account for irrigation practices?*

Response: Mousa said the data can be analyzed to identify cold or warm water inputs from irrigation returns. Again, these would only apply during the time of the survey. They would not be able to evaluate temporal changes in thermal anomalies associated with irrigation practices with a single survey.

Members thanked Mark and Mousa for responding to the PRCC HabSC questions. After Mark and Mousa left the meeting, members reviewed the specification sheet and discussed the merits of the proposed project. The total cost of the project is \$457,780. The sponsor requested \$258,000 from the PRCC HabSC. The PRCC HabSC approved \$258,000 for the project with a condition on the funding. The PRCC HabSC believes the greatest amount of useful information will come from collecting thermal data during the winter. Winter surveys, especially on the Okanogan River, will identify groundwater inputs, which would be more difficult to identify during summer surveys. In addition, as Chris Fisher pointed out, identifying groundwater inputs may be most important for enhancing summer Chinook Salmon spawning habitat in the Okanogan River. Therefore, the PRCC HabSC requires that their funds be used to conduct winter surveys. However, if the sponsor believes summer surveys would be more appropriate, based on their discussions with the Watershed Action Teams and others, they need to provide justification to the PRCC HabSC that a pivot to summer surveys is appropriate. The PRCC HabSC will consider the information and decide whether the funds can be used to conduct summer surveys.

Decision: *PRCC Habitat Subcommittee members approved \$258,000 for the Wenatchee-Okanogan Comprehensive Thermal IR Surveys for Cold Water Species Project with the condition that the surveys occur during winter. Funding for this project will come from Fund 602.*

VII. Administration and Information Updates

Upper Columbia Science Conference

Tracy Hillman reported that the Upper Columbia Salmon Recovery Board (Board) will hold the Upper Columbia Science Conference on 21-22 January 2026 in Leavenworth, Washington. Ryan Niemeyer, Board staff) sent an email to Tracy Hillman asking whether the PRCC HabSC would be willing to help sponsor the conference. Members discussed the request, and in keeping with their support for past conferences, they chose to contribute \$1,000 to the 2026 conference.

Decision: PRCC Habitat Subcommittee members approved \$1,000 for sponsorship for the 2026 Upper Columbia Science Conference. Funding for this project will come from Fund 602.

Okanagan Habitat Tour in Canada

Tracy Hillman indicated that the habitat tour in Canada is scheduled for 8-9 October. Because of the tour, there will be no regular PRCC HabSC in October. Those planning to attend the tour include Chris Fisher, Dave Duvall, Chris Mott, Tracy Hillman, Tom Kahler, John Rohrback, and Catherine Willard. Chris Fisher will provide an agenda for the tour later this month.

VIII. Adjourn

Tracy Hillman adjourned the meeting at 3:30 pm.

IX. Next Meeting

The next meeting of the PRCC HabSC will be on 6 November 2025.

Attachment 1

Photos of the Completed Okanagan Lake Dam East Salmon Passage Project (from Zoe Eyjolfson, ONA)



Looking towards east bank (river left) at south end of fishway with vehicle bridge



South end of fishway with high and low flow fish entrance channels



Looking north towards Okanagan Lake at vehicle and pedestrian bridges.



Riffle in fishway.



Pedestrian bridge and approach. Hydroseeded and planting zones.



Grating, fencing and planting zones.



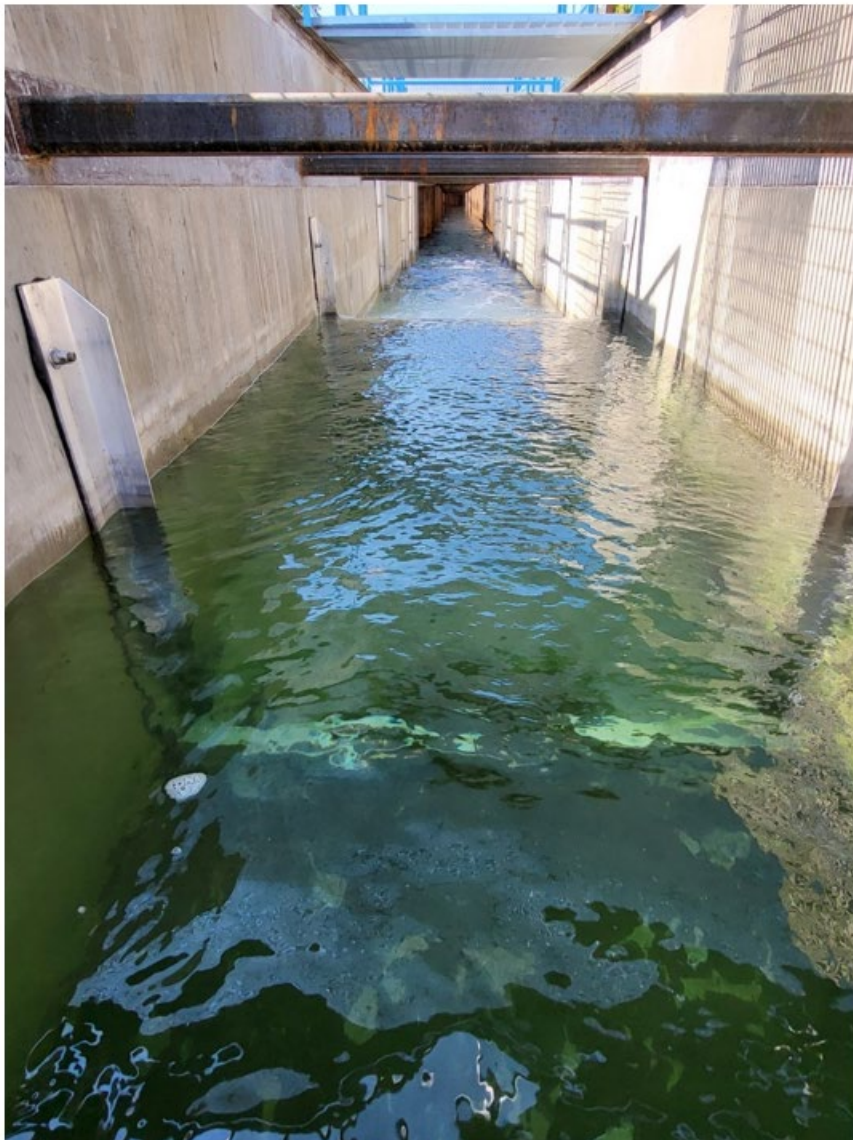
Operational and research area.



Looking down at top stop log, north end into Okanagan Lake.



Trash rack.



Looking downstream through fishway at stop logs.