REGIONAL TECHNICAL TEAM MEETING
FINAL JULY MEETING SUMMARY

Date: Wednesday, 13 July 2022
Time: 9:00 AM to 11:45 AM
Location: Hybrid In-Person/Webinar

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Members Present: John Arterburn, Tom Kahler, Brandon Rogers, Catherine Willard, Carlos Polivka, Amanda Barg, Jeremy Cram, and Tracy Hillman (Chair)

Others Present: Tracy Bowerman/UCSRB, Dave Hecker/UCSRB, Ryan Niemeyer/UCSRB, Mike Kaputa/CCNRD, Cole Province/DOE, Mike Kane/CCNRD, Jeff Jorgensen/NOAA, Bruce Merighi/Chelan CAC, Alan Schmidt/Chelan CAC, Kristen Kirkby/CF, Larry Hill, Leah Hemberry/Chelan CAC, Jim Johnson, Keith Truscott/Chelan CAC, Kai Ross/Cramer Fish Sciences, Sean Welch/BPA, Phil Roni/Cramer Fish Sciences, and Amanda Ward/UCSRB

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Agenda Items for August Meeting:
- Presentations for large cap funding SRFB projects.
- Mark Sorel—presentation on Wenatchee River spring Chinook salmon population modeling.

Possible future meeting topics:
- September: large cap virtual field tours and scoring SRFB projects.
- October: potentially cancelled (some RTT members out of the country).
- November: possible workshop to talk about floodplain restoration approaches, including Beavers, BDAs, alluvial water storage model, BRAT model, recent beaver projects, and recent alluvial storage projects including some site visits in the afternoon.
- December(?): Follow up from Cramer Fish Sciences work to fill prioritization data gaps after field validation.

Tracy Hillman welcomed everyone to the meeting. RTT members reviewed and approved the draft agenda. There were no June meeting notes to approve. Members reviewed actions items and gave updates.

Action Item Updates:
- *Ryan Niemeyer will reach out to Paul Powers to ask about sharing existing relative elevation model data and potentially generating relative elevation model data in additional reaches.*

RTT & UCSRB Updates

Update Fall SRFB Large Cap Funding Grant Round

The UC region has received final information that the region will receive $4,794,000 during the fall large cap grant round. The region will submit a single proposal of >$5 million, or multiple proposals that collectively total at least $5 million. RCO has approved two scenarios for funding multiple projects. The first is "Split Funding" – two or more projects in separate or the same subbasin with a collective total project cost that exceeds $5 million. In this case, the CACs would need to rank both projects first and second. The second is "Bundled Funding" – two or more projects in the same subbasin are submitted as a single application by one or more sponsors. In the bundled scenario, the sponsor(s) must articulate how the projects complement one another. Preliminary designs need to be submitted to RCO by 1 September 2022. No carry over allocations to 2023 are allowed. Manual 18 largely applies except the required match is waived; however, because the project request needs to exceed $5 million, this effectively requires at least a $206,000 share. Cost increases, assessments, monitoring, and capacity requests are not eligible. Acquisitions are eligible. The time to complete allocated funds is not to exceed 5 years.

A sponsor asked whether the region could have discrete project components within the $5 million request. Dave Hecker explained that there seems to be some flexibility in what types of projects qualify for this funding opportunity.

Dave Hecker shared the timeline and deadlines for the application process (attached). Of note, the 14 September RTT meeting will include site tours in the morning and RTT project scoring in the afternoon. October 1st is the deadline for the ranked list to be submitted.

RTT members asked if UCSRB could share the JotForm with the RTT prior to the September RTT meeting. This will give the RTT time to review the projects in anticipation of the virtual site tours. RTT members discussed the possibility of hosting preliminary presentations during the August RTT meeting and inviting CAC members. After some discussion, the RTT decided to request that sponsors give a preliminary presentation about projects during the August RTT meeting to provide sponsors with feedback early enough that they could incorporate changes into their JotForm and PRISM applications. The September RTT meeting will be set aside for virtual site tours and presentations in the morning and RTT scoring in the afternoon.

Action Items:
- *Dave Hecker will ask RCO to clarify whether phase 1 of a multi-phase project could be funded throughout the large cap funding opportunity.*
- *Dave Hecker will update the Large Cap Grant Round timeline to include sponsor presentations to RTT during the August 10th RTT meeting.*

MaDMC and Prioritization Work Group Meetings and Update on Prioritization Data Gaps

Ryan Niemeyer gave a brief update from the MaDMC meeting that was held on 21 June and Prioritization Work Group meeting that was held on 28 June. The MaDMC decided that Level 2 surveys were only adequate to cover substrate (% gravel/%cobble), wood (count of wood by size) and pool spacing. The group decided that floodplain and riparian data gaps would be better filled using remote sensing (LiDAR) data. UCSRB is looking for funding to contract out work to evaluate riparian condition and floodplain metrics using remote sensing. UCSRB staff are also helping coordinate to have Cascade

Fisheries, Cramer Fish Sciences, and possibly a subcontractor with support from CCNRD to help fill many of the remaining Level 2 survey data gaps, at least in Tier 1 Assessment Units.

Ryan asked the RTT if they have any thoughts about having additional subcontractors collect those data and whether the group had any concerns about a potential lack of data consistency that could arise from multiple people collecting the data. One RTT member indicated that given the spatial structure of the data gaps throughout the region, it is not practical for one entity to collect all the data and the region will have to accept that there will be some inconsistencies. Others agreed, provided everyone is using the same methods and protocols. There are some metrics that are less precise than others, most notably bankfull width. Cross training among crews is always helpful; it might be useful for any new practitioners to spend a few days in the field with Cascade Fisheries or USFS crews doing level 2 surveys.

John Arterburn updated the group that LiDAR data gaps in the Okanogan and Methow will be filled over the next 2 years. He suggested Ryan Niemeyer call Ryan Klett to make contact with the person who is leading that effort state-wide.

Action Items:
- ***Ryan Niemeyer will contact folks conducting the state-wide LiDAR collection effort to find out whether the remaining data gaps in the Wenatchee and Entiat will be completed.***

Meet New UCSRB Executive Director

Amanda Ward, the new Executive Director at UCSRB, introduced herself and talked about her varied background working as the Director of the Foster Creek Conservation District for five years, and multiple other projects she has overseen in New Zealand and Australia.

Upcoming Presentations: Beavers and Floodplains

The group discussed the desire for a regional discussion around water storage and floodplain reconnection projects. Mike Kaputa shared plans by local partners to meet and discuss projects and to visit sites on Chumstick and Eagle creeks. UCSRB was already planning to hold a fall lessons-learned workshop to benefit sponsors—the two ideas could be combined to have the fall workshop focus on floodplain reconnection projects. The original idea was brought up by the IT, so the workshop should include sponsors, IT members, funders, and RTT members (noting that there is already a lot of overlap). UCSRB is also working to organize a Floodplain workshop, with the intent to bring in presenters who would discuss the latest science and examples of the range of methods for reconnecting floodplains and cultivate discussions around when to implement what type of project. This is tentatively planned for late January 2023.

Action Items:
- ***Tracy Bowerman will follow up to learn more about the Yakima basin annual conference and pass on info to local partners.***
- ***Tracy Bowerman will continue work to organize a Floodplain workshop.***
- ***Dave Hecker will follow up with Ecology regarding their annual lessons-learned conference and see how to integrate.***
- ***Dave Hecker/Tracy Bowerman will coordinate with Mike Kaputa, Alexa Whipple, and others to coordinate the potential fall lessons-learned workshop focused on beavers, floodplains, and alluvial water storage. Tentative date is during the November RTT meeting.***

CAC-RTT SRFB Scoring and Ranking Debrief

Dave Hecker reminded the group during last year's SRFB grant round, both RTT and CAC thought it would be valuable to have more dialogue about the year's SRFB grant round process and outcome after the CAC scoring was completed. Dave showed the final ranked list that was approved by the joint CAC and the final ranked list after the projects that were fully funded by BPA were removed from the list. The removed projects were Goodwin Side Channel and Goose Creek Watershed Restoration. This year was unique in that additional funds were allocated by the state at the last minute and as a result, all projects that were submitted to the SRFB grant round were funded.

The group then held a discussion about the process. Tracy Hillman noted that the two CAC meetings used the RTT Question and Answer period quite differently. During the Chelan CAC, the RTT member was there only to respond to CAC questions at the beginning of the meeting. This year, there was only one questions from a CAC member. In contrast, the RTT representative to the Okanogan CAC described each of the projects to the CAC prior to the sponsor presentations. UCSRB staff noted that it is not expected that the RTT member give an overview of projects (the sponsors do that) and this year was unusual because there were only three projects in Okanogan County so there was time for the RTT representative to do this.

John Arterburn voiced a concern that given the large number of projects and anticipated additional funding expected next year, the group might give additional consideration as to how it can ensure that projects are of high quality. The group discussed whether there is a mechanism that can be put in place to prevent projects of questionable biological benefit from moving forward. The RTT currently has a cutoff of 44 or 45 points, below which the RTT recommends to the CAC to not fund the project. RTT members discussed the possibility of revisiting that threshold in the future.

Keith Truscott shared similar sentiments related to the CAC scoring. He suggested establishing some guidelines for what it takes to get in the final grant round and establish a minimum requirement for RTT scores so that the region doesn't settle for projects that are not going to make a difference for the resource.

The group generally discussed that if we are going to get more funding in upcoming years, we might need to reconsider the decisions for minimum scores required for projects to be funded and re-evaluate how the round is carried out. Both the RTT and CAC could create clear rules and guidelines moving forward.

Tracy Hillman acknowledged that it is difficult for sponsors to secure funding to scope out potential projects and develop conceptual designs. In addition, the RTT struggles with scoring conceptual designs because it is unclear what level of biological benefit can be achieved when the sponsor is still working through the feasibility aspects of the project. These types of projects are often better submitted as an assessment, which has a different scoring system, but less funding. CAC members agreed that many of the design projects really left the question about what the biological benefit was going to be for the fish and there was a real lack of clarity for those projects. There was some concern that if SRFB funds the conceptual designs, there is a subsequent expectation by the sponsor that those projects will get funded for implementation. Hopefully, sponsors recognize that these projects might not score well once the review teams have more information on which to make their decisions.

Additionally, given that there will be more funding next year, the RTT might also need to identify a maximum number of projects they can adequately review and score. Sponsors would like clarity on whether there is an upper limit on cost of a project submitted to SRFB. Sponsors might make larger

monetary requests for fewer projects given that there is more money available so the number of projects may actually be fewer next year.

Prioritization Data Gaps: Cramer Fish Sciences Update and Preliminary Results on Remote Sensing of Pools, Substrate, and Wood

Kai Ross, Cramer Fish Sciences, presented briefly on remote sensing, modeling, and validation of the data gaps that UCSRB contracted with Cramer Fish Sciences to fill. The goal is to fill in three prioritization data metrics in stream networks using remote sensing: Large Woody Material, Dominant Substrate, and Pool Frequency and Quality. Each of these metrics is evaluated in stream reaches within three categories: Adequate, At-risk, and Unacceptable.

Remote sensing can be used to estimate these data metrics, but some are harder to estimate than others. Naturally, there are issues with stream size and discernability, which leads to more qualitative assessments, relying on a visual comparison to other classified reaches. The latter is a weaker argument but can be used to develop a model.

To build a model, Kai first needed to relate classified reaches to unclassified reaches. The model used underlying attributes from the Beechie and Amaki model for Columbia River Basin, such as bankfull width. He then applied random forest models to build a predictive model for the metrics of interest. Random forest models are popular, foundational to machine learning, well-suited for large datasets, and perfect for categorical conditions. Random forests basically grow a forest of regression trees using bootstrap aggregates (build little models based on pieces of the data). For each set of data, it builds a regression tree and then averages results to make final predictions. Random forest randomizes the parameters as well, which forces the first few splits in the tree to have some variance. In essence, you take a CART model, bootstrap the data, bootstrap the parameters, and end up with a random forest.

Some of the advantages of Random Forest models are: they work well off the shelf with minimal tuning; they handle nonparametric data; they are robust to outliers and correlated parameters (don't have to spend a lot of time cleaning data); and validation is part of the modeling process. Disadvantages include: they are predictive models not descriptive (you are not left with a description of why); they are non-deterministic—results will vary every time you run the model but shouldn't vary by much; they are difficult to record, transfer, and distribute; they can be seen as a "black box" analysis; and there are out of range issues.

Kai reviewed available imagery and noted potential predictions and evidence. He built random forest models for all 3 metrics and the models are currently being tuned. There appears to be good evidence of delineation using physical characteristics base on the draft results. The Beechie and Imaki habitat model data were used as an input (i.e., he mapped the classification onto Beechie and Imaki data). He set aside 30% of the entire dataset for external validation, and the remaining 70% was used for training. Results are presented in a confusion matrix. Cohen's kappa was used as a measure of overall performance (ranges from 0.0 – 1.0).

Preliminary results: Woody material had a decent representation in all categories, skewed toward unacceptable and at risk, with a bootstrap accuracy of 94% and kappa of 0.86. There was higher accuracy of the unacceptable category than the acceptable. Substrate data had few examples of unacceptable in dataset, so that skewed the training dataset. Accuracy on the unacceptable category should be viewed cautiously because of the limitations in the data. However, the accuracy was also high (T = 93%, kappa >0.80). Pools had fair representation among categories and had good accuracy (T = 92%, Kappa = 0.88).

Overall, these are very strong results from random forest model. Next steps include field validation and model extensions. Kai will also consider input data sources, review spatial patterns in misclassified reaches, and explore causal mechanisms. Variable importance plots can be used to further investigate relationships between variables.

Questions: John asked about the level of precision because the model is built on a model? Kai responded that the Beechie and Amaki model outputs are the crosswalk between the data with known habitat ranks and those with missing data. The model used prioritization results, related those to the Beechie and Amaki data, and then used those relationships to then ask what model would predict how Beechie and Amaki data would classify reaches without data. This approach could be extended to include continuous and other types of data. Thus, based on current evaluations and diagnostics, the model is quite precise and accurate.

The RTT would like a follow up from Kai after the validation and field collection has been completed but given the due date for the report (mid-September), it is unlikely that the RTT can review the data before the report is finished.

Action Items:
- ***Ryan Niemeyer will share raw wood/mile and substrate data so Cramer can generate predicted continuous variables with the random forest tree model.***
- ***Ryan Niemeyer will schedule with Kai Ross to give an update on the field data and results after the work is completed (possibly December RTT).***

Tracy Hillman adjourned the meeting at 11:45. The next RTT meeting will be held on August 10, 2022.

**UPPER COLUMBIA SRFB FALL 2022 LARGE CAP GRANT ROUND FUNDING SCHEDULE**

DATE	ACTIVITY/MILESTONE	PARTICIPANTS	LOCATION	FACILITATOR
**JULY**				
July 6	**Action:** Regional Pre-application (JotForm) available on UCSRB website (*precursor to gaining PRISM access*)	Sponsors	Online/Email	LE
July 6 - 25	**Action:** UCSRB distributes guidance via email and at July WATs	LE, Sponsors,	Email & WATs	LE
**AUGUST**				
August 10	**Meeting:** Presentations to RTT and CACs (Initial feedback opportunity)	Sponsors, RTT, CACs	RTT Meeting	RTT
August 12	**Deadline:** Regional Pre-Application (JotForm) due (*precursor to gaining PRISM access*)	Sponsors, LE	JotForm	LE
August 30	**Deadline:** PRISM Applications due	Sponsors, LE	PRISM	LE, RCO
**SEPTEMBER**				
September 14 (morning)	**Meeting:** Sponsors conduct virtual site tours	Sponsors, LE, RTT, CACs, SRFB Review Panel	Virtual	LE
September 14 (afternoon)	**Meeting:** RTT project Scoring	RTT, CAC, LE	RTT Meeting	RTT
September 23	**Action:** SRFB Review Panel Comments Distributed	SRFB Review Panel, LE, Sponsors	Emails/ PRISM	LE
September 28	**Meeting:** CAC project ranking	CAC's, LE	TBD	LE
**OCTOBER**				
October 1	**Deadline:** Ranked funding list submitted to RCO	LE	Email/ PRISM	LE

UPPER COLUMBIA SRFB FALL 2022 LARGE CAP GRANT ROUND FUNDING SCHEDULE

DATE	ACTIVITY/MILESTONE	PARTICIPANTS	LOCATION	FACILITATOR
October - TBD	Meeting: (optional) Phone calls with SRFB Review Panel - feedback	Sponsors, SRFB Review Panel, LE	Conference Call	LE
NOVEMBER				
November	**Action:** Applicants resolve any substantive concerns from SRFB Review Panel	SRFB Review Panel, RCO	N/A	RCO
DECEMBER				
December 1	**Deadline:** Resubmittal Deadline; Completed Preliminary Designs due	Sponsors	PRISM	LE
December 7-8	**Action:** SRFB Decisions	LE	Olympia, WA	RCO

Acronyms
CAC- Citizen's Advisory Committee
LE- Lead Entity Coordinator/Program
RCO - Recreation and Conservation Office
RTT- Upper Columbia Regional Technical Team
SRFB - Salmon Recovery Funding Board
SRFB Review Panel - State Review Panel
TRIB- Tributary Committees
UC- Upper Columbia Region
UCSRB - Upper Columbia Salmon Recovery Board

Timeline Legend	
Meetings	Blue
Deadlines	Red
Actions	Yellow