Willamette Action Team for Ecosystem Restoration (WATER)
Research, Monitoring and Evaluation (RM&E)
March 23, 2017

http://www.nwd-wc.usace.army.mil/tmt/documents/FPOM/2010/Willamette_Coordination/Willamette%20RME/RME.html

Facilitator's Summary

ACTION	BY WHOM?	BY WHEN?
Review 2/23 joint Steering /RM&E Team meeting summary and provide edits.	RME team	4/6
Follow-up with the Corps regarding the status of written decisions for elevated Issues 1 & 2 and with the Steering Team on Issue 3.	DS Consulting	4/13
Ricardo will hold a check-in call with the researchers and Diana Dishman regarding the Middle Fork PSM study status. Ricardo will report back to the RM&E team.	Ricardo	May, 2017
Connect with Chuck P. and Dan S. regarding the Middle Fork Critical Path. Emily will send an email to connect everyone.	Stephanie, Rich Mike	Before April 13 ST meeting
Draft concept papers for Lookout Point Operation alternatives.	Fenton	May, 2017
Work internally to finalize the EA, discuss sediment issues and solutions, and to clarify the decision pathway; then circle back to the RM&E Team.	Corps	April meeting (?)
Circulate ODFW/OSU proposal to RM&E team for input.	Diana/Stephanie	ASAP

Participants in the Room: Leslie Bach (NPCC), Stephanie Burchfield (NMFS), Diana Dishman (NMFS), Mike Hudson (USFWS), Fenton Khan (USACE), Christine Petersen (BPA), Rich Piaskowski (USACE), Ricardo Walker (USACE);

Participants on the Phone: Jim Myers (NMFS), Jim Peterson (OSU), Mary Karen Scullion (USACE), Cameron Sharpe (ODFW), Lawrence Schwabe (Grand Ronde), Greg Taylor (USACE),

Facilitation & Notes: Emily Stranz and Nancy Pionk, DS Consulting

Review of Meeting Summaries
RM&E members present approved the 1/5, 1/19 and 1/26 meeting summaries.

RM&E members also wanted to provide edits to the 2/23 joint Steering and RM&E Team meeting summary and will send the edits to Emily by April 6.

→ **ACTION:** RM&E members will provide edits to the 2/23/17 Joint Steering and RM&E Team summary by April 6.

Regarding the 2/23 joint Steering and RM&E Team meeting, it was noted that the Corps' has not yet provided written documentation of their decisions on Issues 1 (On-going analysis and reporting of paired release returning adults) or 2 (Annual parentage analysis, spawning surveys and screw trapping). Additionally, the RM&E Team is still unclear on the decision on Issue 3 (Green Peter outplanting, parentage, spawning surveys and screw trapping): it was clarified that the research is required, however, it was not clear if the Steering Team felt that it should be added to the FY18 RM&E schedule.

→ **ACTION:** DS Consulting will follow-up with the Corps and Steering Team regarding the status of the written decisions for Issues 1 and 2, and whether to not to implement the Green Peter research in FY18. They will do so at the April 13th Steering Team meeting.

FY 18 Priorities and Sub-Basin Planning
The RM&E team determined that it would not be necessary to do a sub-basin chart for Middle Fork RM&E Plan, as they have already clarified the RM&E needed for the Middle Fork. The team filled out the Willamette Basin RPA chart (see attached document), focusing on the research needs and questions for the basin.

The group clarified the process for making RM&E decisions:

1. The RM&E team identifies the priorities for which to develop concept papers.
2. The RM&E team reviews, discusses, and prioritizes concept papers, signaling where there is consensus and where there is difference of opinion as to the biological/technical need.
3. The RM&E Team provides the list of concept papers to the Steering Team, who will decide what to fund (with consideration of funding source constraints);
4. Differences will be resolved by the Steering Team or elevated to the Managers' Forum.

South Santiam Sub-Basin: The team reviewed the RPA Chart for the South Santiam Sub-Basin to further determine priorities and specific RM&E needed in FY18. They focused on identifying the priority projects, data gaps, and projects that do not need to be pursued in FY18.

Adult Passage
How can we improve adult collection? Will the surface water from Foster meet temperature and water chemistry needs for adult attraction?
Fenton reported that preliminary results of the University of Idaho study suggest a temperature issue in the Foster forebay. The fish may not be getting the signal to go to South Santiam. The study should be complete by the end of the year and he thinks that they are close to answering the temperature question and may not need additional years of data. Corps biologists and some members of the RM&E Team considered temporarily adding Foster forebay surface water to the ladder and conduct a study to see if the warmer temperature in the ladder attracted more adult fish into the ladder. Fenton spoke with Corps hydraulic engineers and the engineers did not think it would be an easy task to add surface water for a study because adding any water will affect the ladder hydraulics.

Ian is also forming a Project Design Team (PDT) to research structural fixes to increase the water temperature in the fish ladder. The ladder is designed for certain hydraulic flows and any change in flows could affect the hydraulics in the ladder, thus a PDT is being put together to explore options in more depth. The PDT is included in the FY18 budget. The group concluded that the current study and PDT analysis will inform a decision on whether additional research is needed in FY18, at this point it is too early to determine.

- Concept for FY18: Evaluate the response of the fish to test modifications.

What are the impacts/benefits of releasing adults to Foster reservoir?
Fenton noted that the Corps plans to fund University of Idaho to trace how the fish arrive at Green Peter and South Santiam, to assess the fallback. The intent is to finish the research this year and depending on the results there may or may not be enough data. The group noted that this data will not be vital in FY18 regardless and could be continued, if needed, in FY19.

What is the spawning success above Green Peter? What is juvenile migration timing, size of entry, and production of fish above Green Peter?

The team clarified that there is a concept paper developed for spawning surveys above Green Peter, however, this is a policy question that was elevated (Issue 3) and must be decided by the Steering Team. Some Tech Team members are interested in seeing studies on spawning success in FY18.

→ **ACTION**: DS Consulting will follow up with the Steering Team to clarify their guidance on this policy issue and potential RM&E for FY18.

- Concept Paper for FY18 (already developed): Evaluate the success/feasibility of downstream fish passage.

How can pHOS be reduced above and below FOS?
Currently, there is data on the unmarked hatchery Chinook upstream of the dam and the downstream hatchery returns that are not entering the trap; there is also 3-4 years of pedigree data that helps distinguish the fish and where they came from. The group noted that there is a need to get better passage through the ladder and until then, the only changes that could be made to improve pHOS are management changes. The group determined that management direction was needed from the Steering Team, as there are multiple decisions that impact effective management of pHOS. There could be additional data needed after the ladder is fixed.

- Potential Future Concept (after the ladder fix)**:** Evaluate the change in origin of fish above and below the dam.

Can the hatchery mark rate be improved?
The team agreed that this was not a high priority for FY18. They were interested in checking to see if the hatchery is using the same protocols for marking as is used in the Columbia River hatcheries, as they have refined their methods over the years. *[Facilitator's Note: Cameron Sharpe shared (during editing) that this has already occurred. High mis-clip rates were traced back to hand clipping of a large proportion of the SSNT Chinook at Willamette Hatchery. Clipping switched to the auto-trailers for the 2015 brood (juveniles to be released in 2017). A measurable decrease in pHOS above Foster should be apparent in 2019, 2018 for jacks.]*

What are the factors that explain the declines in winter steelhead?
There is not a strong hypothesis at this time. The last year of spawning surveys do not appear to be as effective as the video counts were, however, the Corps is planning to fund another year of winter steelhead spawning surveys.

- **Concept for FY18:** Investigate what factors explain the decline in winter steelhead in the South Santiam, North Santiam and Willamette system.

<u>Juvenile Fish Passage</u>
Foster Fish Weir: What is the collection efficiency and injury/survival rate with the new weir?
The Team noted this as important to help determine how to operate the dam for multiple purposes. They want to make sure that issues are not created by trying to solve others, thus, a comprehensive study of the effectiveness of the weir is necessary. It was suggested that the study follow the same protocols/study design used to test the existing weir.

- **Concept for FY18:** Test the effectiveness of the new fish weir. Study needs to consider:
  - influences to the temperature regime
  - downstream flow
  - downstream and upstream passage rates
  - impact on TDG

How and when do we reintroduce and achieve downstream passage at Green Peter? Can volitional high-head passage be achieved and effective enough to meet passage goals? What ere the factors that explain declines in winter steelhead?
These questions will in part be informed by studies on the effectiveness of the new Foster fish weir. It was noted that in regards to volitional high head passage, there is a delayed mortality effect from the bypass pipe. There are no genetic pedigree study plans for FY18; however, there will be a crude assessment of delayed mortality from active tag tracking as fish move past the project.

Downstream Flow
Should flow targets be revised? Should we consider reach specific survival targets? Are current BiOp or flood control ramping rates stranding fish? Have all needed flows been addressed (e-flows)? How do we ensure sufficient water to meet BiOp targets for incubation?
The SWIFT team is working on flow issues in the South Santiam and their review will clarify objectives and study needs.

Downstream Water Quality
What is the effect of TDG discharge at FOS on Chinook and steelhead downstream? What percentage of the redds are experiencing high levels of TDG above 105-110%? How do attraction limits change if water is too cold? How can temperature be addressed?
TDG data is being collected for FY17. There may be a need for an additional study after the new FOS weir becomes operational (3/1/2018). The current plan is to monitor the USGS station; if TDG looks higher/different than pre-weir, then the RM&E team would like to explore a study concept.

- Potential Future Concept (after the weir fix)**:** Consider for FY19 depending on data from USGS Station after new weir is operational.

Hatchery Management
What is the effect of summer steelhead on winter steelhead?
Exploring the effect of summer steelhead on winter steelhead should be considered as part of the study concept that explores the factors contributing to winter steelhead declines. The group also noted that this question is in part a policy question for the Steering Team due to the current litigation: how will the current summer steelhead management lawsuit affect the study? Should the study be delayed until the after a court decision?

- **Concept Paper for FY18:** What is the effect of summer steelhead on winter steelhead? How does this contribute to other factors contributing to the decline in winter steelhead?

How would spawning surveys be used in the future?
There is already a concept paper for this study, and NMFS will dust it off for consideration in FY18 (spring chinook spawning survey.

- **Concept Paper for FY18:** Evaluate reintroduction success for spring Chinook.

Middle Fork Spring Chinook Run Pre-Spawn Mortality Study
Cameron Sharpe, ODFW, and Jim Peterson, OSU, presented a revised Middle Fork pre-spawn mortality study proposal, incorporating changes to adjust for the low run forecast. They provided a short report that detailed the factors and approach considered. Two factors: density of fish during transport and seasonal timing of outplanting, were selected as the most critical and tractable and were proposed as the focus of research in 2017. A third factor, duration of transport, is also being considered for study if adequate numbers of fish are available. The revised proposal plans three treatments (previously five – the Aquis-20 vs. CO2 and crowding/handling protocols at Dexter treatments were dropped). . Their calculations show there is a 50% chance of having enough fish at the Dexter trap if there are 5,000-6,000 fish over Willamette Falls by the end of April. The probability only reaches 75% when there are 15,000 fish over Willamette Falls. It is projected that the total run size over Willamette Falls will be 30,000 fish. They aim

to start trapping in May/June. Additionally, the Fall Creek trap will be installed and they plan to continue including spawning surveys upstream and downstream of Fall Creek Dam as part of this study effort.
In response to questions from the RM&E Team, Cam and Jim clarified:

- The long and short transport treatment does not include releases above Hills Creek Reservoir, nor does it specifically study Hills Creek transport.
- Jim and Cameron think density of fish in the migratory corridor and, especially, stacking up below the dams, is an issue but the effect might not be apparent with a low run size. They are not sure they can address in-river density with the low run.
    - In response to question of whether they could do the transport density treatment with fewer replicates if needed, Jim and Cam felt that 3 replicates was the minimum needed.
- Even with a low run, they expect to be able to conduct at least two treatments.
- If there are not sufficient fish for the treatments, they could still do the Falls Creek spawning surveys to compare pre-trap and post-trap counts. The assumption is that construction will not affect the current operations at the existing traps.
    - The RM&E Team supported conducting the Fall Creek spawning surveys regardless of the returns.

Jim and Cameron plan to review the returns again in mid to late April to reassess their study plan. A final decision will be made in early May to determine if the study happens at all. They will include NMFS in these conversations, as take will be required. Additionally, Rich mentioned that the Corps plans to conduct the full study in FY18.

→ **ACTION:** The Corps will schedule a check-in call with the researchers and Diana Dishman in May; they will circle back to the RM&E team with their decisions.

Middle Fork RM&E Plan Critical Path Update
Emily reported that the Steering Team looked at another iteration of the Critical Path and provided edits to Chuck. There is interest in making sure that the path is clear on what needs to be done and when, and any decision points. The desire of both the Steering Team and RM&E Team is to proceed with the three passage approaches as concurrently as possible. Chuck plans to work with Bernadette, Dan, and Mark on another iteration with the intent to bring it to the Steering Team on 4/13/17. The Steering Team decided to present the path to the Managers' Forum at their April meeting for a process and content approval. The RM&E team expressed that they feel it is necessary to provide technical input before the path is presented to the Managers, to ensure that it is consistent with the RM&E plan.

→ **ACTION:** Rich, Stephanie and Mike will work with Chuck and Dan to crosswalk the Critical Path and RM&E plan before the 4/13/17 Steering Team meeting.

Operational Alternatives at Lookout Point
Mary Karen Scullion, Corps, provided information about current project operations in the Middle Fork and responded to the team's questions/ideas about operational alternatives at Lookout Point.

Deep Draw Down: Mary Karen reported that when they do deep draw down, the change in elevation is typically 3 feet/day for dam safety. Thus, a 75 foot draw down takes 25 days to accomplish. The normal minimum conservation pool is 825 feet. The capacity of the regulating outlet will be a limiting factor, especially in a large water year. It was noted that they may be able to draw down to a point above the RO, the draw down only needs to be deep enough to encourage the fish to move out; this can be done adaptively during the study year.

Mary Karen noted sediment as a major issue. Once below the minimum power pool, there is a significant amount of sediment that will wash off the banks.

For this option to be considered, a sediment analysis is needed to determine:

- How much sediment would get moved
- Is there a way to do the operation and control sediment?
    - When and how fast should the draw down be?
    - Would it be more feasible to draw down in Sept./Oct.?

The Tech Team is interested in exploring the option of conducting this study in Fall 2017. Fenton noted that the Environmental Assessment is in the works and the Corps is discussing sediment issues internally. All agreed to move forward with coordinating this study for the Fall of 2017 and FY18 until they hear otherwise. It was requested that the Corps clarify their decision pathway: if the EA is complete and the sediment issues are resolved, will it be implemented?

→ **ACTION:** The Corps will work internally to finalize the EA, discuss sediment issues and solutions, and to clarify the decision pathway. They will circle back to the RM&E Team.

Additionally, they group noted that they should tee up a concept paper for FY 18 in case more study is needed. They noted that they will also need to brief the Steering Team on all of the special operations.

Delayed Refill and Spring Fill: This operation would require a draw down in the fall and delaying refill beyond the normal February refill period and instead start refilling in March. It would then fill to the spillway crest and hold there for a period of time before filling completely. The RM&E team outlined two options that would test two run times; however, they noted that both may not be necessary. Mary Karen felt it is important to catch February water, as that is typically when the majority of the runoff takes place. Her recommendation was to fill it like normal and use Hills Creek to manage that elevation. Her concern is that if you draw from Hills Creek to fill Lookout Point, it depletes the Hills Creek supply and thus summer augmentation water.

Another alternative would be to maximize Lookout Point by filling to the spillway crest, then have free ungated spill to help move fish out of the reservoir. Mary Karen noted that the reservoir is too long to influence more than1/4 mile upstream. The RM&E team thought that this operation was the second highest priority to explore, following the deep draw down.

Mary Karen shared that currently, operations are above spillway crest and they plan to continue spilling for another week to try to drop back to rule curve. Stephanie noted that the preference would be to spill as long as possible until they need to drop down for the fry studies.

Conservation Pool: The group discussed holding a year round conservation pool. Mary Karen expressed concern for this operation due to impacts to mainstem flows, water temperatures, hatchery intakes, municipal water supply, and farming and recreation. She noted that they store water in the spring and use it all summer.

Mike noted that the feasibility of changing operations at Dexter also needs to be taken into consideration – they do not want to pass fish at Lookout Point and then trap them in the Dexter reservoir. The group noted that they will also need to determine the feasibility of changing operations at Dexter.

The Corps will incorporate spill at Dexter into the RES_SIM runs. It was noted the RES_SIMs take into account hydrology over the last 80 years and can be sorted for low/best/average flows.

→ **ACTION:** Fenton will draft concept papers for each alternative and bring them back to the RM&E Team in May. Deep draw down is highest priority; followed by delayed refill. The conservation pool alternative is considered a lower priority at this point, so he will not do a concept paper for that alternative.

NMFS Oregon State Study permitting update

Diana and Stephanie shared with the team that NMFS is considering permitting a juvenile habitat study conducted by OSU and ODFW. They wanted the RM&E team to have a chance to provide input on the study, as NMFS would permit the study under the BiOp (however, it is not funded through the Corps). The study would require additional fish take, but not much. Diana did not think that the study would impact the allowable take in a significant way. The study will be electrofishing juveniles and looking at micro-habitats. It should have minimum effects on other studies. They expect adult fish take to be minimal and are trying to sample when adult fish are not present. They also have protocols in place for when adult fish are present.

NMFS will be initiating consultation in two weeks and expect to get permitted in June, so RM&E team input is appreciated as soon as possible.

→ **ACTION:** Diana and Stephanie will circulate the proposal to the RM&E team today. The RM&E team will provide input ASAP.

This summary is respectfully submitted by DS Consulting. Suggested edits are welcome and can be sent to emily@dsconsult.co.