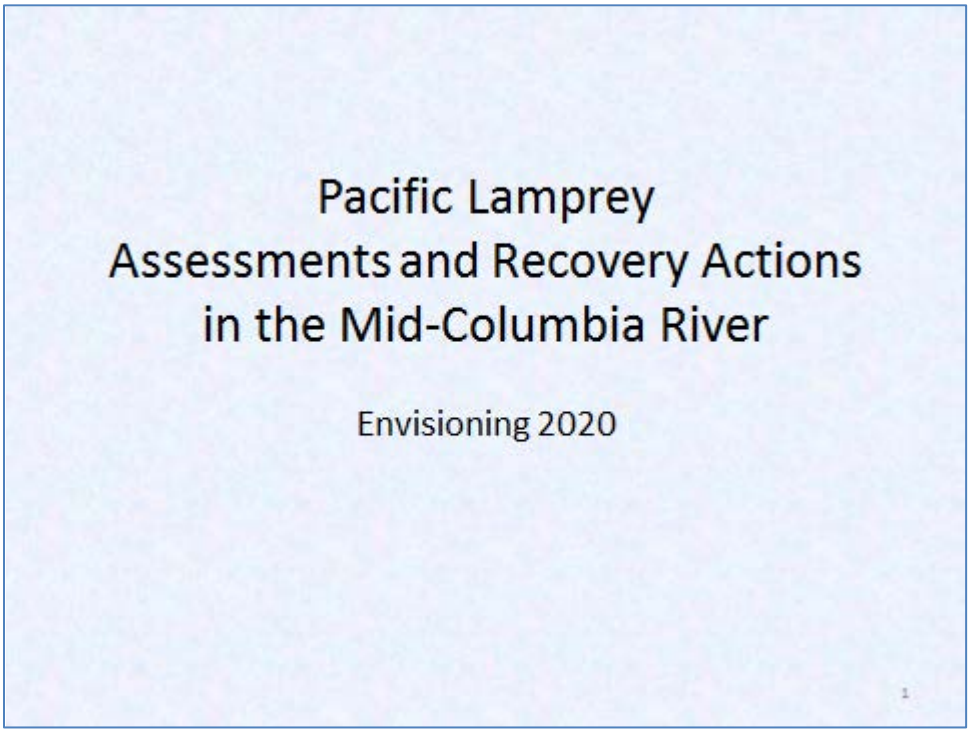
Attachment 1:

Presentation by Patrick Verhey Regarding Pacific Lamprey Assessments and Recovery Actions in the Mid-Columbia River.



Premises

- Forward looking planning is central towards certainty and steady progress.
- A coordinated approach in understanding critical uncertainties is more cost efficient and biologically effective than a patch-work approach.
- We have a responsibility to optimize, if not maximize, the amount of information we can obtain from each tagged fish.
- The Settlement Agreements obligate the **Parties** to move forward with reasonable progress towards reasonable actions.
- PUD contributions to NNI and / or Regional Participation is anticipated in the Settlement Agreements and is part of the Settlement Agreements intent to Protect, Mitigate and Enhance.
- Future technical discussions are intended to refine Objectives, Tasks, Costs and responsibilities – so information included in this presentation is DRAFT and for discussion purposes only.

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Premises

- Hydro-electric projects do have a negative, albeit undefined, effect on local populations of lamprey abundance and spatial distribution.
  - Passage is less than 100%,
  - Substantial numbers of adults not accounted for in reservoirs,
  - Turbine boil environment likely enhancement for predation.
- Translocation is the basic means for acquiring adults for needed evaluations concerning passage and losses in reservoirs.
- Translocation is a short-term and cost effective way to protect, mitigate and enhance (re-introduce) local populations.
- Translocation is a regional effort, requiring regional participation and also requires appropriate level of monitoring.
- Settlement Agreements understood all Project Effects not known – and through Adaptive Management – Settlements obligate investigation where there is probable cause.

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Primary Objectives – 7 Years

Mainstem Adults

1. Mainstem Fishway Entrance, Passage and Exit Efficiency
2. Proportion of Adults Ascending Tributaries
3. Fate of Adults in Reservoirs

Mainstem Juveniles

4. Predation on Juveniles in Tailrace
5. Juvenile Occupancy and Use of Reservoir Habitat

Tributary

6. Establish Regional Baseline / Status and Trend Information
7. Adult Passage in Tributary Streams
8. Juvenile Entrainment: Dryden Ditch / Other Irrigation Structures

Supplementation

9. Adult Translocation Research (Wenatchee & Methow)
10. Artificial Propagation Research (YN- CTUIR facilities & Wenatchee)

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Focal Objectives 2014 - 2016

Mainstem Adults

1. Mainstem Fishway Entrance, Passage and Exit Efficiency
2. Proportion of Adults Ascending Tributaries
3. Fate of Adults in Reservoirs

Mainstem Juveniles

4. Predation on Juveniles in Tailrace
5. Juvenile Occupancy and Use of Reservoir Habitat

Tributary

6. Regional Establishment Baseline / Status and Trend Information
7. Adult Passage in Tributary Streams
8. Juvenile Entrainment: Dryden Ditch / Other Irrigation Structures

Supplementation

9. Adult Translocation Research
10. Artificial Propagation Research

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Focal Objectives 2017 - 2020

Mainstem Adults

1. Mainstem Fishway Entrance, Passage and Exit Efficiency
2. Proportion of Adults Ascending Tributaries
3. Fate of Adults in Reservoirs

Mainstem Juveniles

4. Predation on Juveniles in Tailrace
5. Juvenile Occupancy and Use of Reservoir Habitat

Tributary

6. Regional Establishment Baseline / Status and Trend Information
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8. Juvenile Entrainment: Dryden Ditch / Other Irrigation Structures

Supplementation

9. Adult Translocation Research
10. Artificial Propagation Research

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What's the Deal?

Translocation: Objective 9
Supports Objective 1

Dams delay, discourage and/or deter lamprey passage. Mitigation is warranted.

- Translocation of adults.
  - Intended to be short term for now (7 years) but may be a longer term solution as a surrogate for passage.
  - Cost effective. Cost sharing with Yakama Nation.
  - YN will provide expertise, equipment, administrative support in obtaining, maintaining and distributing eels.

$XXX per year for each PUD to support YN collection from lower river (2014 – 2017).

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What's the Deal?

Translocation Monitoring – Objective 9

Supports Objectives 2, 3 and 7

Cannot call translocation "mitigation" unless we know it works. Need appropriate level of monitoring:

- Requires radio-telemetry to understand potential passage impediments, migration behavior and spawning locations.
- Focus on Wenatchee and Methow, 50 tags per basin for three years.
- Approximately 16 – 20 receivers and 6 air surveys over three years.

$XX each year for three years from each PUD to support USFWS in carrying out tributary telemetry studies.

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What's the Deal?

Mainstem Passage Studies Objective 1

Supports Objectives 2, 3, and 9

Existing information for entrance efficiency, in-ladder passage efficiency and (generally) fall back is not yet sufficient. "Losses" between dams is disturbing. More samples will help our understanding, sooner.

- Use translocated fish with various transmitters (HDPIT plus RT and/or FDPIT) to enhance data set at the dams – three years.
- Primary focus:
  - Entrance efficiency,
  - "Fate" of adults in the reservoir (% that enter tributaries),
  - Enhance in-ladder passage dataset.

PUDs fully fund passage studies – working in a coordinated fashion.

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What's the Deal?

Proportion of Adults Ascending Tributaries: Objective 2
Supports Objectives 7 and 9

A high proportion of migrating adults are not accounted for from one dam to the next. Albeit difficult, we have to begin understanding why.

- PRD – RIS = 75% not accounted for
- RIS – RRH = 30% not accounted for
- RRH – WEL = 99.9% not accounted for
- Does not get to the "Fate" question, but an important start.
- Tagged eels from passage and translocated assessments used.
- Receivers established near river mouths to verify ascent.

PUDs support USFWS with existing receivers and financially to operate telemetry equipment, analysis and reporting. Cost rolled in with Objective 9.

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What's the Deal?

Adult Passage in Tributary Streams: Objective 7
Supports Objective 9 and 6 (Baseline)

Passage is an issue with mainstem dams. Evaluating potential passage issues in tributaries is a legitimate offsite – in kind NNI mitigation measure.

- A "seamless" Objective consistent with Translocation. Simply a matter of receiver placement.
- Focus on Dryden, Tumwater, Foghorn, Chewuch.
- 2-Year Assessment period.

PUDs support USFWS with existing receivers and financially to operate telemetry equipment, analysis and reporting. Cost rolled in with Objective 9.

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What's the Deal?

Artificial Propagation: Objective 10

Supports Objective 4, 5, 6, 8 Juvenile Passage and Recovery

Understanding potential juvenile impacts is a Settlement requirement and will require eels. CCPUD Settlement has language (Section 4.2.3) directing specified funds to "provide sufficient numbers of juvenile lamprey for these evaluations".

- The RRFF has spent $80,000 for the development of "Pacific Lamprey Artificial Propagation and Rearing Investigations: Rocky Reach Pacific Lamprey Management Plan, June, 2011".
- The RRFF also funded ($?) for a workshop and resulting paper from Wade and Beamish "Pacific Lamprey Breeding and Rearing Methodologies – Recommendations for Chelan County PUD."
- Why would we do this if we weren't thinking about propagation??

CCPUD supports, along with RRFF, making approximately $XX available to the USFWS (Abernathy Lab) YN and CTUIR for advancements in propagation over the next 3-Years, upon RRFF approval of study plans consistent with above document findings.

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What's the Deal?

Regional Baseline – Status and Trend: Objective 6

Supports Objective 9 and Recovery

Both NNI and Regional Coordination Settlement Agreement language is consistent in establishing baseline information for species.

- Baseline = (1) adult counts at mainstem count windows, (2) juvenile relative abundance in Index Sites and (3) distribution of spawning and rearing locations.
- YN already identifying index sites and proceeding with research planning (in review).
- Baseline coincides with translocation / propagation success objectives and will be cost-shared with ongoing YN Accords and USFWS research funding.
- Electro-shocking surveys and genetic analysis are main tools.

Upon approval of RME design from Mid-C Forums, Support YN – USFWS field investigations / monitoring for 7 years. $XX Total.

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2017 - 2020
Primary Objectives
Objective 3: Fate of Adults in Reservoirs
Objective 4: Predation of Juveniles in Tailrace
Objective 5: Juvenile Occupancy and Use of Reservoir Habitats.
Objective 8: Juvenile Entrainment: Dryden / Other Irrigation Structures
Ongoing Objectives
Objective 6: Baseline – Status and Trend
Objective 9: Translocation
Objective 10: Artificial Propagation
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2017 – 2020
Primary Objectives
Objective 3: Fate of Adults in Reservoirs
– Do not know how to proceed at this time.
– Sturgeon predation? Spawning / success? Entry into tributaries? How do we evaluate? What would be a management action?
Objective 4: Predation of Juveniles in Tailrace
– "Hypothesis" about effect is speculation but with probable cause.
– Reduction of predators in turbine boils is likely best / only solution.
– Need juveniles and tags before methods tested and employed.
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2017 – 2020
Primary Objectives

Objective 5: Juvenile Occupancy and Use of Reservoir Habitats.

- Initial yet very inconclusive work has been implemented.
- Focus is understanding if/how juveniles use reservoirs successfully, and if reservoir elevation changes are related to mortality.
- Recommend letting USACE take the lead in figuring out basic science – methods.

Objective 8: Juvenile Entrainment: Dryden / Other Irrigation Structures

- Entrainment exists – but solution is not available.
- Recommend waiting for USGS / YN-CTUIR-BOR work to advance, then recommend solution options.

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Conclusion

The Yakama Nation, Umatilla Tribes, Colville Tribes, WDFW and USFWS believes the framework provided represents a reasonable and feasible plan that moves lamprey mitigation and recovery forward with regional cost-sharing and in a cost effective manner.

These measures provide all Parties of the Forums a higher level of direction in process and certainty in costs and outcomes.

The elements in this framework are consistent with each of the Mid-C License Agreements and during the next 7-years, meet the intent of No Net Impact and Regional Coordination / Cooperation.

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