Meeting Handouts
January 19, 2021

Updates from the Chair:

- WDFW meeting with Blue Forest Conservation, Jan. 7, 2021

Proviso Strategy:

- Habitat Utilization for Proviso Species Presentation
- Commonality in Fish Passage Project Evaluation Criteria
Introduction to the Forest Resilience Bond
WDFW Fish Passage
January 2021
Goals of the Forest Resilience Bond

1. Collaboration
2. Accelerate and scale
3. Upfront capital
4. Restoration economy
5. Multi-benefit projects
Connecting Investor Capital to Conservation

Forest Resilience Bond

- **Evaluation of Benefits**: Quantifies benefits to stakeholders.
- **Individual Contracts**: Monetizes benefits as payments.
- **Financial Vehicle**: Payments to investor returns.

**Ecosystem Services**
- Multiple benefits of restoration and recovery

**Investor Capital**
- Immense capital for projects
How the Forest Resilience Bond Works
Example Sources of Repayment

Project Cost

Repayment

USFS Contributions

State Contributions including grants

Beneficiary Payments (including interest)

Principal (Upfront capital from investors)
An economic analysis to make the business case

**Revenue enhancement**
- Increased water supply, hydropower
- Tax revenue from recreation-based tourism

**Cost avoidance or risk mitigation**
- Sediment build up in a reservoir
- Delay in developing new water sources
- Decreased risk of severe wildfire

**Regulatory efficiencies**
- Aquatic habitat obligations
- NPDES permit limits
- Environmental markets
The Yuba Project, Tahoe NF
Yuba Project

Map created by Tahoe NF
Yuba Restoration Project

<table>
<thead>
<tr>
<th>Project Proposal</th>
<th>Acres</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aspen Work</td>
<td>404</td>
</tr>
<tr>
<td>Invasive Treatment</td>
<td>89</td>
</tr>
<tr>
<td>Meadow Restoration</td>
<td>345</td>
</tr>
<tr>
<td>Powerline Hazard Tree/Veg Removal</td>
<td>323</td>
</tr>
<tr>
<td>Prescribed Burn</td>
<td>4,104</td>
</tr>
<tr>
<td>Thinning</td>
<td>1,848</td>
</tr>
<tr>
<td><strong>Total Treatment</strong></td>
<td><strong>7,114</strong></td>
</tr>
</tbody>
</table>

*Partial List*
Diverse benefits to California, Sierra County, and Yuba Water Agency

► Protect 50k acre-feet of water annually for 5 years

► Generate 70k MWh of hydropower annually for 5 years

► Avoid 50k metric tons of CO₂ emissions over 40 years

► Create 79 jobs in local communities over 5 years

► WRI found $8.8M in economic value over 20 years
Pilot FRB: Structure & Stakeholders

Legend:
Green = cash flows
Orange = contracts

0% Loan + Grant

Grant Agreement

0% Loan Agreement

0% Loan Repayment

Stewardship Agreement
“Typically, a large restoration project such as Yuba would take over ten years, if ever fully implemented. Instead, we will complete it within three years. This means a healthier, more resilient forest before insects, disease or wildfire negate our planning and before our communities are adversely impacted.”

- Alonzo “Lon” Henderson, District Ranger, Tahoe National Forest
Opportunity: Snoquera Project
Snoquera: A priority landscape

- Over 120k acres in the Mt. Baker-Snoqualmie NF in the Upper Green and White River Watersheds (WRIA 9 and WRIA 10)
- Landscape-scale restoration project supported by multiple local groups
- Identified as one of 16 Western WA priority landscapes by WA DNR Forest Action Plan
- Project components:
  - Stream health including fish passage
  - Forest management
  - Recreation
  - Community Resilience
## Snoquera Planned Actions and Benefits

<table>
<thead>
<tr>
<th>Ecological Restoration</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Variable Density Thinning</td>
<td>Up to 12,245 acres</td>
</tr>
<tr>
<td>Elk Forage</td>
<td>Up to 389 acres</td>
</tr>
<tr>
<td>Huckleberry Enhancement</td>
<td>Up to 400 acres</td>
</tr>
<tr>
<td>Perennial Fish Bearing Stream Restoration</td>
<td>~8 stream miles</td>
</tr>
<tr>
<td>Road maintenance</td>
<td>~262 miles</td>
</tr>
<tr>
<td>Road Stormproofing</td>
<td>~54 miles</td>
</tr>
<tr>
<td>Aquatic Organism Passage</td>
<td>53 sites (49 in Puyallup-White, 4 in Green-Duwamish) opening 16 stream miles of habitat</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Recreation</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Trailhead expansion/re-establishishment</td>
<td>3 trailheads</td>
</tr>
<tr>
<td>Dispersed Camping / Riparian Restoration</td>
<td>~24 miles</td>
</tr>
</tbody>
</table>
## AOP Locations

<table>
<thead>
<tr>
<th>HUC 12 Subwatershed(s)</th>
<th># AOP</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lower Greenwater River</td>
<td>20</td>
</tr>
<tr>
<td>West Twin Creek - White River</td>
<td>1</td>
</tr>
<tr>
<td>Silver Creek – White River, Headwater White River</td>
<td>10</td>
</tr>
<tr>
<td>Huckleberry Creek</td>
<td>7</td>
</tr>
<tr>
<td>Upper and Lower West Fork White River</td>
<td>11</td>
</tr>
<tr>
<td>Lester Creek – Green River</td>
<td>0</td>
</tr>
<tr>
<td>Sunday Creek - Green River</td>
<td>3</td>
</tr>
<tr>
<td>Twin Camp Creek – Green River</td>
<td>0</td>
</tr>
<tr>
<td>Headwater Green River</td>
<td>1</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>53</strong></td>
</tr>
</tbody>
</table>
Example Snoquera Project
Contracts and Agreements

Legend:
Green = cash flows
Orange = contracts
Project Development Framework

1. Introduce Forest Resilience Bond
2. Identify and Scope Potential Projects
3. Explore Stakeholder Interest
4. Develop Proposal with Economic Analyses
5. Engage Investors
6. Finalize Contracts
7. Implement Projects & Communicate Progress

We are here

This is next
Project Proposal Development Example—Eldorado Project

Projected benefits to Sacramento Municipal Utility District

<table>
<thead>
<tr>
<th></th>
<th>Water Quantity</th>
<th>Wildfire Risk Reduction</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>10,950-14,590 acre-feet/year for 10 years</td>
<td>Reduction in average 20-30 year wildfire risk from 10.1% to 7.7%-9.1%</td>
</tr>
<tr>
<td></td>
<td></td>
<td>$9.5M in additional hydropower revenue</td>
</tr>
</tbody>
</table>

Up to $7.2M in avoided wildfire liability

$10-20M total
Working together- Snoquera

- We want to work with you to understand project benefits
- With your confirmed interest, there will be a more credible analysis to see if there is actually an economic benefit to your entity
- Economic analysis is at no cost to your entity, only some staff time and maybe data
- Letter of interest or MOU expressing your commitment to working together (but not committing financially)
Habitat Utilization Characteristics for **ALL** Proviso Species

**Spawning Habitat**
- Continuous clean and cool water
- Large quantities and areas of clean, rounded gravels
- Channel complexity
- Cover

**Rearing Habitat**
- Cool, clean, oxygenated, continuous flow
- Overhanging vegetation and Large Woody Material (LWM)
- Diversity of Accessible Habitat Types
Habitat Utilization Characteristics for Chinook Salmon

Spawning Habitat
• Mainstem spawners that need a lot of space
• Large, deep, slow moving, low gradient streams
• 14-15 weeks of consistent, cool clean flow for optimal survival to emergence

Rearing Habitat
• Large, natal streams with nearby tributaries.
• Freshwater Residence: 1 year
• Estuarine habitat is critical for transition to tidal waters.
Habitat Utilization Characteristics for Chum Salmon

Spawning Habitat
• Medium to large, slow moving, very low gradient streams
• Spawn in margins and side channels of mainstems and in small streams
• 24 weeks of consistent, cool clean flow for optimal survival to emergence

Rearing Habitat
• Immediately move to tidal waters upon emergence.
• Freshwater Residence: a few days
• Critical need is intact nearshore and estuary habitat.
Habitat Utilization Characteristics for Coho Salmon

Spawning Habitat
• Any size stream with access
• Spawn in margins and side channels of mainstems and in small streams
• 8-10 weeks of consistent, cool clean flow for optimal survival to emergence

Rearing Habitat
• All accessible waters.
• Freshwater Residence: 2 years
• Upper reaches of streams and off-channel habitats critical.
Habitat Utilization Characteristics for Steelhead Trout

Spawning Habitat
• Any size stream with access
• Spawn in upper reaches of accessible stream habitat that has space
• 5-8 weeks of consistent, cool clean flow for optimal survival to emergence

Rearing Habitat
• All accessible waters
• Freshwater Residence: 1-4 years
• Diverse habitats throughout systems critical.
Thank You

Thomas P. Jameson
thomas.jameson@dfw.wa.gov
360-688-4963

Matt Curtis
matthew.curtis@dfw.wa.gov
360-972-0190
• Prioritizes barrier corrections based on the greatest amount of potential salmon and/or steelhead habitat upstream.
• Prioritizes multiple projects together for efficiency
• Based on an informal agreement between the Stevens Treaty Tribes and WSDOT, newly identified barriers will be addressed after 2030, likely prioritized based on potential gain.
• State must maintain and monitor culverts for fish passage in perpetuity
The Injunction - WDFW, DNR, & State Parks

- All but DNR met deadline to complete their list of court ordered correction by October 31, 2016 (DNR has 2 remaining)
- Newly identified barriers are to be completed within 6 years of discovery.
- New barriers averaging 1 or 2 a biennium so no prioritization scheme is required.
- State must maintain and monitor culverts for fish passage in perpetuity
The Brian Abbott Fish Barrier Removal Board (FBRB)

- Barrier severity and linear habitat gain
- Clearly outlined anticipated costs
- Project readiness, i.e., design level, permits, sponsor capacity, etc.
- Habitat quality
- Design approach and climate change resilience
- Absence of downstream barriers
- Number of anadromous species affected by the barrier
- Occurring in a designated priority watershed
The Family Forest Fish Passage Program (FFFPP)

- Amount and quality of habitat opened by the project.
- Number of fish species which would benefit.
- Other upstream and downstream barriers.
- Project cost
USDA’s Natural Resources Conservation Service (NRCS)

- Two Programs: Environmental Quality Incentives Program (EQIP) & The Regional Conservation Partnership Program (RCPP)
- Ranking criteria changes annually and is not set by the local NRCS regions
- Fish passage projects compete against all other practices that NRCS funds (fencing, manure ponds, high tunnels, tree planting...)
- Projects with District Conservationist support usually get funded
The Salmon Recovery Funding Board (SRFB)

- High benefit to salmon.
- High likelihood of being successful.
- Costs that don’t outweigh the anticipated benefits of the project.
King County

- Quality and amount of fish habitat that could be restored
- Current Condition of the crossing structure
- Other factors
Thurston County

- Anadromous fish access
- Potential habitat gain
- Barrier status
- Culvert condition
- Maintenance history
Thank You

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