Chehalis Basin Board Meeting

CHEHALIS BASIN STRATEGY

08/03/23

Oh, YES,
You Can!

By: Sam Imperati, CBB Facilitator

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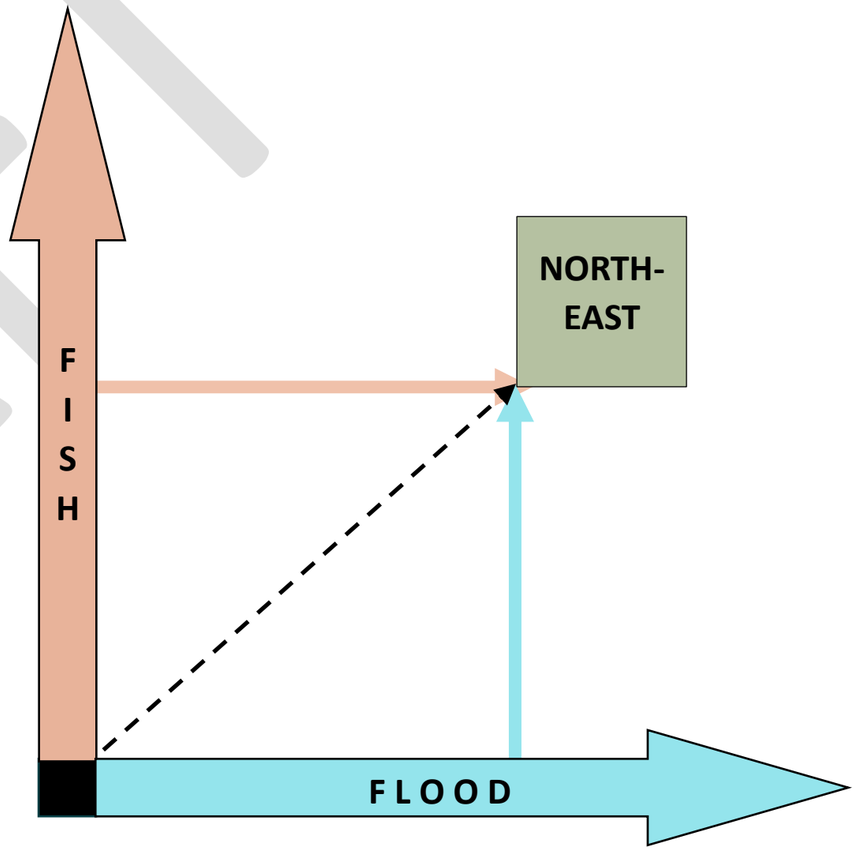
PREFACE

1) This document is lengthy and complicated at first blush. As a result, it has been divided into four parts: I. Overview, II. High-Level Hypothetical, Appendix A (contains more detailed reference material,) and Appendix B (contains a Detailed Hypothetical Example.) We will cover the first two parts during the August meeting. The two Appendices are provided for those who want to see more specifics. While this proposed draft process will evolve, the potential for success is increased if the Board agrees to a general conceptual process in advance. That is the goal of today's meeting. The Board will refine the details between now and the end of the year.

2) "Fish and Flood" has been the process "mantra," which was reaffirmed by the Umbrella Question. This requires establishing a strategy that maximizes both the "Fish and Flood" goals. Facilitators call this, "Finding Northeast." This is the agreement from which any further change will only advance the interests of one goal at the expense of the other. Unless directed otherwise, Sam Imperati will be facilitating toward the "Northeast."

Graphically, it looks like this.



3) The Board has agreed to a comparative analysis approach to develop a long-term integrated strategy (Strategy) to give each option a "fair shot." The target delivery range is between the fourth quarter of 2024 and the fourth quarter of 2026. Starting with the 2017 Programmatic EIS (https://chehalisbasinstrategy.com/wp-content/uploads/2017/06/Chehalis-Basin-Strategy-EIS-Executive-Summary.pdf,) this approach will look at updated and more refined packages, a combination of options with "Common Elements" in order to determine their integrated performance and isolate the key infrastructure decisions. For example, each package will have an early warning element and a raised structures element. As a result, they should be included in each package; otherwise, you have an "apples to oranges" comparison as to performance and cost.

4) The Board has also tentatively recognized any such analysis will necessarily include less detail than an EIS. While the Board will consider the current EIS processes, it should not be restricted by them. Ultimately, whether a project proceeds will depend on permits, etc., so the Board has acknowledged any decision will be conditional; thus, a contingent decision tree approach.

5) The draft comparative package analysis will be tailored to the Board's direction in subsequent meetings. The major process-development steps could include:

a) Board approves the high-level comparative analysis structure (August Board meeting)
b) Board brainstorms tentative packages, evaluation factors, metrics, and common elements. Discusses allocation of Board's work, update process timeline, and Public Outreach/Involvement (September Meeting/Retreat)
c) Given the Board's direction, staff and consultants provide more detail and tee-up the discussions on Climate Change, Mitigation, Spring Chinook ESA, and Benefit-Cost Assumptions (For October and November Board meetings)
d) Board refines tentative packages, evaluation factors, metrics, and Common Elements (November Meeting/Retreat)
e) Staff and consultants further refine the details given the Board's direction (For December Board meeting)
f) Board authorizes the formal gathering of data, to start in January 2023, including "truing up" data assumptions like cost because not all the elements are at the same development levels (December meeting)
g) Board considers data as it arrives and modifies process accordingly. (TBD 2024 – 2026)
h) Board finalizes the Integrated Long-term Strategy (Between fourth quarter of 2024 and fourth quarter of 2026.)

ACTION ITEM 1: Do you want to change or confirm its June decision to proceed with a level of information less than an EIS for purposes of the comparative analysis?
ACTION ITEM 2: Do you generally support moving forward with this 10-Step conceptual framework?
ACTION ITEM 3: Recognizing the iterative nature of this process, do you direct the OCB to begin implementing the following process-development steps, which the Board can refine as the process unfolds?

a) Board approves the high-level comparative analysis structure (August Board meeting)
b) Board brainstorms tentative packages, evaluation factors, metrics, and common elements. Discusses allocation of Board's work, update process timeline, and Public Outreach/Involvement (September Meeting/Retreat)
c) Given the Board's direction, staff and consultants to provide additional information and tee-up requests for specific Board direction on topics like Climate Change, Spring Chinook ESA, Mitigation, and Benefit-Cost Assumptions (For October and November Board meetings)
d) Board refines tentative packages, evaluation factors, metrics, and Common Elements (November Meeting/Retreat)
e) Staff and consultants further refine the details given the Board's direction (For December Board meeting)
f) Board authorizes the formal gathering of data, to start in January 2024, including "truing up" data assumptions like cost because not all the elements are at the same development levels (December meeting)
g) Board considers data as it arrives and modifies process accordingly. (TBD 2024 – 2026)
h) Board finalizes the Integrated Long-term Strategy (Between fourth quarter of 2024 and fourth quarter of 2026.)

I. OVERVIEW

A. Agenda

10:00 to 10:45

Part I. Overview

Please write down your questions, comments, and suggestions for improvement for discussion.

Part II. High-Level HYPO Example

10:45 to 11:00

Break

11:00 to 12:15

Part II. Continued

Board Discussion, Action Items, and Next Steps

Preview 11:45 Action Items

1) Do you want to change or confirm the Board's June decision to proceed with a level of information less than an EIS?

2) Do you generally support moving forward with this 10-Step conceptual framework?

3) Recognizing the iterative nature of this process, do you direct the OCB to implement the major process-development steps described below?

B. Status of Key Process Questions

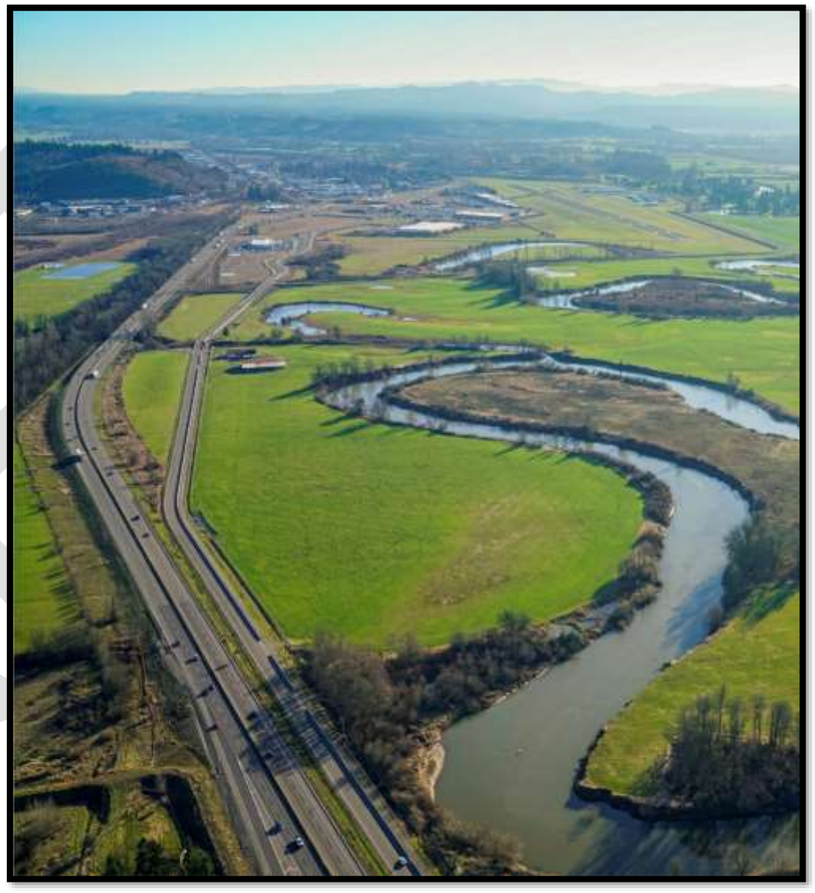
1) **Integrated L-T Strategy Delivery Date?**
   - **a)** 6/23 Board Decision: Q4 2024 through Q4 2026 (Quinault supported post-meeting)

2) **What Specifically will be Compared?**
   - **a)** 6/23 Board Direction: Comparative Analyses of packages that include a combination of flood, fish, and dual-purpose actions.

3) **What Level of Detail and Info Certainty is Needed?**
   - **a)** 6/23 Board Direction Pending Quinault Input: Less than EIS. (Discuss today.)

4) **What Comparative Analysis Tool will be Used and How?**
   - **a)** 6/23 Board Direction: Given all the contingencies, use a conditional (decision tree-like) approach.

5) **What is the target date for the major process development steps?**
   - **a)** Facilitator's Suggestion is no later than the December meeting. (Discuss today.)
   - **b)** Retreats in September and November. (Discuss today.)



C. Preview of Comparative Evaluation Steps

1) **STEP ONE:** Identify the goal.
2) **STEP TWO:** Preliminarily identify common elements, baseline, package alternatives, and other unique elements.
3) **STEP THREE:** Preliminarily establishes evaluation factor.
4) **STEP FOUR:** Preliminarily weigh evaluation factors.
5) **STEP FIVE:** Consultants gather data for metrics for Board review of packages.
6) **STEP SIX:** Preliminarily evaluate each package against each evaluation factor's metrics.
7) **STEP SEVEN:** Facilitator calculates preliminary results for Board discussion.
8) **STEP EIGHT:** Explore initial polling results, reevaluate the packages, and select the conditionally preferred package(s).
9) **STEP NINE:** Finalize sequential decision tree strategy and overall funding approach, implementation, and adaptive management.
10) **STEP TEN:** Celebrate and promote success!

NOTE: Iterative. Steps 1 through 4 discussed preliminarily between now and December 2023 meeting.

D. Preview of Related Topics

1) Common Elements

(Pg 25)

Examples include:

○ Acquisition Program	○ Flood Warning System
○ Additional Analyses of Forest Practices	○ Floodplain Management/Land Use Planning Improvements
○ Agricultural Resiliency ○ Erosion Management Program	○ Resiliency Program ○ Basin Wide Transportation System and Accessibility Improvements
○ Flood Authority Projects	○ Other?

High-Medium-Low scaling levels to follow.

2) Overarching Issues Across the 10 Steps

a) Climate Change (Pg 25)
b) Mitigation (Pg 26)
c) Spring Chinook ESA Listing Potential (Pg 26)
d) Benefit-Cost Assumptions (Pg 26)

3) Metrics

a) Environmental (Pg 23)
b) Economic (Pg 24)
c) Social/EJ (Pg 25)
d) Transportation Impacts (Pg 25)

II. HIGH-LEVEL HYPOTHETICAL EXAMPLE

A. The 10 Steps

1) STEP ONE: Identify the Goal

(Basis for Comparative Evaluation of Packages and Evaluation Criteria in Yellow).

Board's Current Draft

Recognizing the clear urgency to take effective, integrated actions that are timely, practical, politically viable, and cost-effective;

How can we work with and incentivize basin stakeholders to voluntarily support protecting and restoring natural habitat and native aquatic species, support self-sustaining, abundant, harvestable fish populations, and protect cultural resources in the face of a changing climate and population growth;

While at the same time, reducing basin-wide flood damage to human infrastructure and aquatic habitat before the next catastrophic event and in the face of an increasing threat of flooding due to a changing climate;

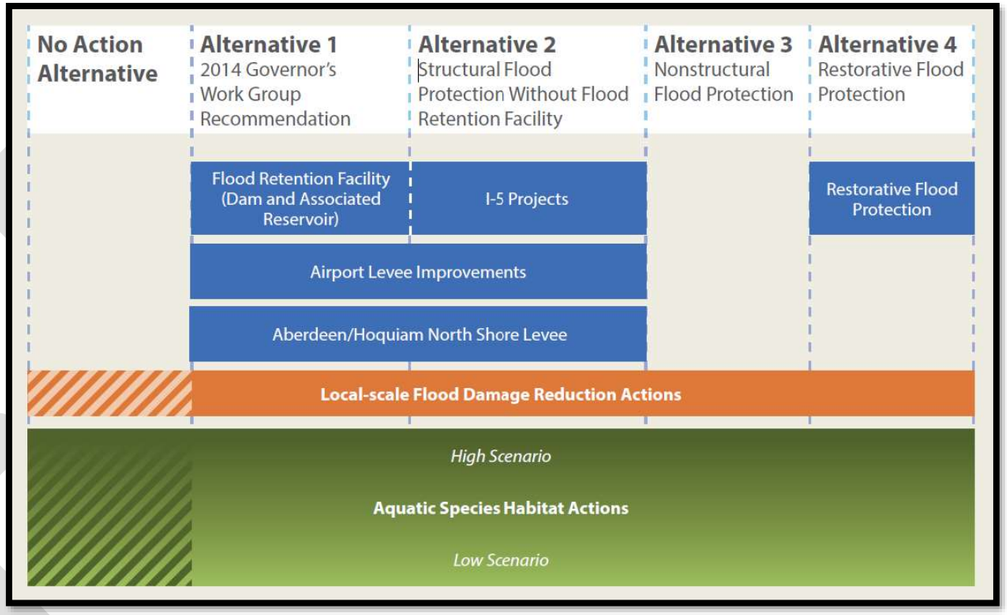
Thereby creating an equitable, balanced, and sustainable long-term strategy that supports a net improvement for all those who live, work, recreate, and have an interest in the Chehalis Basin while simultaneously avoiding, minimizing, and mitigating any associated negative consequences?

Yellow = Conceptual criteria corresponding with the below goals/metrics. Defer further refinement for now.

2) STEP TWO: Preliminarily Identify Common Elements, Status Quo and Baseline, Package Alternatives, and Other Unique Elements.

- Like the others, this step will likely be iterative, conducted in coordination with the consultant team and subject matter expert.

a) Reminder: 2017 Packages



https://chehalisbasinstrategy.com/wp-content/uploads/2017/06/Chehalis-Basin-Strategy-EIS-Executive-Summary.pdf

b) Hypothetical Core Work Elements with Scaled Options

	Hypothetical Core Work Elements with Scaled Options								Common Elements
Core Work Elements	**FRE**	**Levees**	**Diversion / Conveyance with Associated Transportation Improvements**	**Floodproofing Elevation Acquisition**	**Skookumchuck Dam**	**ASRP: Habitat**	**Other Aquatic Species Actions: Other Hs and Predation**	**Unique Elements**	**Common Elements: Scalable** {Pg 22, HERE for Details}
With Scaled Options	Yes Modified No	High: All Levees Low: Airport Levee Only None	All Fewer/Smaller (TBD) None	High Medium Low None	Fish Passage Only Combo Fish/Flood Removal / Off-channel Storage Dam Removal As Is	Ph. 1 Scenario 3 Ph. 1 Scenario 2 Ph. 1 Scenario 1 Other - TBD None	High Medium Low None	_____ _____ _____ _____	

c) *Hypothetical Packages*

Each package will contain different combinations of Work Elements with scaled options to create a representative range of options for further study.

0) Baseline/No Strategy *
1) FRE-Centric
2) Between FRE and Levee (Could Defer until Step 8)
3) Levee-Centric
4) Between Levee and Non-Structural (Could Defer until Step 8)
5) Non-Structural

***Baseline with No Strategy =** Includes designed and funded projects, including those underway and those funded for implementation/scheduled for implementation during this biennium, to address flood damage and/or aquatic species.

d) *Common Elements*

First, you will agree on an initial list. Examples include:

a) Acquisition Program (e.g., farm pads, multi-benefit and/or independent acquisitions that don't neatly fit in another program)
b) Additional Analyses TBD for Strategy development (e.g., forest practices)
c) Agricultural Resiliency (e.g., floodproofing, farm pads, flood fences, existing WSCC programs, SW Growers Co-Op, Initiative for Working Lands)
d) Erosion Management Program
e) Flood Authority Projects
f) Flood Warning System
g) Floodplain Management/Land Use Planning Improvements
h) Raised Structures
i) Resiliency Program (e.g., equipment positioning, emergency access planning, etc.)
j) Basin Wide Transportation System and Accessibility Improvements
k) Other?

Second, you will agree on the scales for each item.

3) STEP THREE: Preliminarily Establish Evaluation Factors

- Board Preliminarily Establishes Evaluation Factor Categories (Row A) With Both Quantitative and Qualitative Metrics (Row B)
- This will be an iterative process conducted with the consultant team and subject matter experts to inform the Benefit-Cost Analysis and prepare for Step Four.
- (The **blue** factors and metrics are more likely to be quantitative and the **purple** will be a mixture of quantitative and qualitative.)

HYPOTHETICAL EXAMPLE

	Evaluation Factors	Environmental {Pg 23, HERE for Details}	Economic {Pg 24, HERE for Details}	Social/EJ {Pg 25, HERE for Details}	Transportation Impacts {Pg 25, HERE for Details}	Other _____	Cost		Benefit/Cost		Political Acceptability	Fundability	Legal Regulatory Ease
A	Broad Categories	Wildlife Fish Habitat Other Aq. Sp.	Flood Damage Business Loss Public Assist.	Environmental Justice Advanced	Transportation systems	(E.g., Speed of Achieving Goal)		➡	Ratios Narrative/ Qualitative Information	➡	Local Sponsorship	Likelihood of Securing at Local, State, and Federal Levels	Treaty Rights Section 106 ESA Permitting Land Use
B	Prior Goals, which will be converted to measurable metrics	Increase the abundance of native aquatic species and salmon/ steelhead Enhance tribal and non-tribal fisheries Improve Resiliency of natural floodplain processes and ecosystems	Protect valuable structures from mainstem, catastrophic flooding Protect critical facilities Protect farmland and rural structures	Who benefits, and who is impacted disproportionally?	Reduce disruption in transportation systems, including closures of I-5 and local and regional transportation systems	Sooner Mid Longer			a) Basin-Wide b) State c) Federal d) Tribal		High Medium Low None	High Medium Low None	No Reg. Easy Medium Hard

a) Metrics

Historical "Metrics" from Prior Work (ASRP, LAP/LAND, 2017 BCA, and PEIS) for reference only. Selection Reserved for Future Discussions

1. Environmental (Wildlife/Fish/Habitat/Other Aquatic Species) (Pg 23)
2. Economic (Flood Damage/Business Loss/Public Assistance) (Pg 24)
3. Social/EJ (Environmental Justice Advanced) (Pg 25)
4. Transportation Impacts (Disruption In Transportation Systems) (Pg 25)

NOTE: Metrics have a dual purpose: 1) helping pick the "best" package and 2) serving as the base condition for monitoring and adaptive management.

4) STEP FOUR: Preliminarily Weigh Evaluation Factors

HYPOTHETICAL WEIGHTS TEMPLATE

	Evaluation Factors	Environmental {Pg 23, HERE for Details}	Economic {Pg 24, HERE for Details}	Social/EJ {Pg 25, HERE for Details}	Transportation Impacts {Pg 25, HERE for Details}	Other _____	Cost		Benefit/Cost		Political Acceptability	Fundability	Legal Regulatory Ease	Totals
	(Categories)	Wildlife Fish Habitat Other Aq. Sp.	Flood Damage Business Loss Public Assist.	Environmental Justice Advanced	Transportation systems	(E.g., Speed of Achieving Goal)			Ratios Narrative/ Qualitative Information		Local Sponsorship	Likelihood of Securing at Local, State, and Federal Levels	Treaty Rights Section 106 ESA Permitting Land Use	
	***Initial* Factor Weights**	10%	10%	10%	10%	10%	10%		10%		10%	10%	10%	100%
A	**Board Preliminary Weights** 6 to 1 Scale Converted to Percentages	X%	X%	X%	X%	X%	X%		X%		X%	X%	X%	100%

SCALE:

6 = Extremely Important

5 = Very Important

4 = Important

3 = Somewhat Important

2 = Slightly Important

1 = Not Important

NOTE: "Polling" does not equal "Voting"

NOTE: Anonymous distributions provided

5) STEP FIVE: Consultants Gather Data for Metrics for Board Review of Packages

- Consultants Gather Data for Metrics for Board Review of Packages (Row A)
- The consultants will collect information and analyze the Packages identified in Step Two based on the evaluation factors/metrics identified in Step Three.
- The consultants will collect information and analyze the Packages identified in Step Two based on the evaluation factors/metrics identified in Step Three.

HYPOTHETICAL EXAMPLE

	Evaluation Factors	Environmental {Pg 23, HERE for Details}	Economic {Pg 24, HERE for Details}	Social/EJ {Pg 25, HERE for Details}	Transportation Impacts {Pg 25, HERE for Details}	Other _____	Cost		Benefit/Cost		Political Acceptability	Fundability	Legal Regulatory Ease
	(Categories)	Wildlife Fish Habitat Other Aq. Sp.	Flood Damage Business Loss Public Assist.	Environmental Justice Advanced	Transportation systems	(E.g., Speed of Achieving Goal)		→	Ratios Narrative/ Qualitative Information	→	Local Sponsorship	Likelihood of Securing at Local, State, and Federal Levels	Treaty Rights Section 106 ESA Permitting Land Use
A	Data For Each Agreed-Upon Metrics												

6) STEP SIX: Preliminarily Evaluate Each Package Against Each Evaluation Factor's Metrics

- Board members will be encouraged to consult and engage with their subject matter experts within the Board defined time.
- The Board will first look at the **blue** factors/metrics and then the **purple** ones.
- Further evaluation will occur in Step Eight.

SCORING:

5 = Very Favorable

4 = Favorable

3 = Neutral

2 = Unfavorable

1 = Very Unfavorable

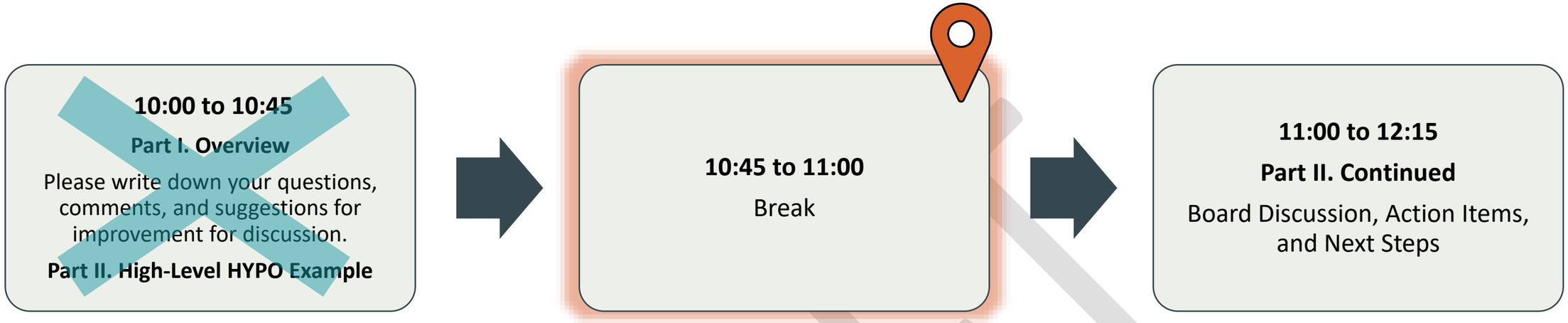
HYPOTHETICAL PACKAGE EVALUATION TEMPLATE

	Evaluation Factors	Environmental {Pg 23, HERE for Details}	Economic {Pg 24, HERE for Details}	Social/EJ {Pg 25, HERE for Details}	Transportation Impacts {Pg 25, HERE for Details}	Other _____	Cost		Benefit/Cost		Political Acceptability	Fundability	Legal Regulatory Ease	Board Average Results	Preliminary Package Ranking 1-5
	(Categories)	Wildlife Fish Habitat Other Aq. Sp.	Flood Damage Business Loss Public Assist.	Environmental Justice Advanced	Transportation systems	(E.g., Speed of Achieving Goal)		➡	Ratios Narrative/ Qualitative Information	➡	Local Sponsorship	Likelihood of Securing at Local, State, and Federal Levels	Treaty Rights Section 106 ESA Permitting Land Use	(Step 4 Weights x Step 6 scores = Weighted Averages)	
A	0) Baseline/No Strategy *	X	X	X	X	X	X		X		X	X	X	X	X
	1) FRE-Centric	X	X	X	X	X	X		X		X	X	X	X	X
	2) Between FRE and Levee **	X	X	X	X	X	X		X		X	X	X	X	X
	3) Levee-Centric	X	X	X	X	X	X		X		X	X	X	X	X
	4) Between Levee and Non-Structural **	X	X	X	X	X	X		X		X	X	X	X	X
	5) Non-Structural	X	X	X	X	X	X		X		X	X	X	X	X

*Baseline with No Strategy = Includes designed and funded projects, including those underway and those funded for implementation/scheduled for implementation during this biennium, to address flood damage and/or aquatic species.

** = Keep in mind but probably defer until Step 8.

B. Overarching Issues Across The Ten Steps



11:00 Board Discussion

1) **Questions for Clarification**
2) **Comments and Suggestions for Improvement**

11:15 Action Items

ACTION ITEM 1: Do you want to change or confirm its June decision to proceed with a level of information less than an EIS for purposes of the comparative analysis?
ACTION ITEM 2: Do you generally support moving forward with this 10-Step conceptual framework?
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g. Board considers data as it arrives, considers "in-between" packages, and modifies the process accordingly. (TBD 2024 – 2026)

Board finalizes the Integrated Long-term Strategy (Between the fourth quarter of 2024 and the fourth quarter of 2026.)

11:35 Next Steps

1) Board direction the amount of Board time to be spent on the comparative analysis work versus the ongoing work.
2) Review updated process timeline.
3) Board direction on public outreach/involvement during the comparative analysis process using the following IAP^2 Spectrum. (Pyramid will be here in September.)

APPENDIX A:

A. Common Elements

1) First, you will agree on an initial list. Examples include:

a) Acquisition Program (e.g., farm pads, multi-benefit and/or independent acquisitions that don't neatly fit in another program)
b) Additional Analyses TBD for Strategy development (e.g., forest practices)
c) Agricultural Resiliency (e.g., floodproofing, farm pads, flood fences, existing WSCC programs, SW Growers Co-Op, Initiative for Working Lands)
d) Erosion Management Program
e) Flood Authority Projects
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g) Floodplain Management/Land Use Planning Improvements
h) Raised Structures
i) Resiliency Program (e.g., equipment positioning, emergency access planning, etc.)
j) Basin Wide Transportation System and Accessibility Improvements
k) Other?

2) Second, you will agree on the scales for each item.

a) Like the packages above, each has scaled options (e.g., High, Medium, Low, No Action, etc.)
b) The Board will decide between the following common approaches:
    1) Select the same scaled action for each of the Package Alternatives (e.g., all High), or
    2) Pick a unique scale for each Common Element within each Package Alternative
    3) Other?

B. Metrics

Historical GOALS/METRICS from Prior Work (ASRP, LAP/LAND, 2017 BCA, and PEIS) for Reference Only. Selection Reserved for Future Discussions

(Step Three)

Examples from Prior Work (ASRP, LAP/LAND, 2017 BCA, and PEIS) for reference only. Selection Reserved for Future Discussions

- **NOTE 1:** Metrics have a dual purpose: 1) helping pick the "best" package and 2) serving as the base condition for monitoring and adaptive management.

- **NOTE 2:** Several examples below are goals/objectives – not metrics, per se. Metrics are measurable, either objectively or subjectively. Here is a good example of the distinction from the below list. "Protect critical facilities [Goal], e.g., the percent reduction in critical facilities vulnerable to flood damage in the 2080 predicted 100-year flood levels [metric.]"

- **NOTE 3:** Consider having Board give general guidance and then have staff and consultants refine suggested metrics for Board consideration. The number of metrics per Evaluation Factor will be a function of need, time, and cost. A full list should be non-duplicative and help differentiate alternatives. (It's common to select five to seven that will feed into the Benefit/Cost analysis. Restated, if all of the packages perform the same on a given metric, it is helpful information, but it doesn't assist the Board in picking the "preferred" package.

1) Environmental (Wildlife/Fish/Habitat/Other Aquatic Species)

- Build recognition of and support for ASRP actions and the ways the ASRP supports resilient human communities, e.g., the number of landowners participating in ASRP projects.
- Enhance tribal and non-tribal fisheries.
- Improve Resiliency of natural floodplain processes and ecosystems.
- Increase abundance of native aquatic species, including increased populations of healthy and harvestable salmon and steelhead.
- Increase the quality and quantity of habitats for aquatic species in priority areas, e.g., miles of riparian and stream habitat restored; acres of invasive vegetation treated; acres of native plants installed.
- Increase watershed Resiliency to climate change by protecting and improving natural water quantity and timing characteristics and water quality characteristics, e.g., reduction in summer water temperatures.
- Protect and restore aquatic species viability, e.g., the number of juvenile salmon produced and adults returning.
- Protect and restore natural habitat-forming processes within the watershed, e.g., acres of floodplain habitat reconnected to the rivers; miles made newly accessible through barrier corrections.

NOTE 1: The **ASRP 2022 Annual Report** states the following goals were developed to guide the ASRP strategies, actions, and restoration scenarios:

- Protect and restore natural habitat-forming processes within the Chehalis Basin watershed context.
- Increase the quality and quantity of habitats for aquatic species in priority areas.
- Protect and restore aquatic species viability considering viable species population parameters.
- Increase resiliency to climate change by protecting and improving natural water quantity, water timing, and water quality characteristics.
- Build recognition of and support for ASRP actions and the ways the ASRP supports resilient human communities.

NOTE 2: To support these goals, a handful of "Measures of Implementation Progress" are being tracked and include, but are not limited to:

- Amphibian Habitat Restored (acres)
- Floodplain Protected (acres)
- Floodplain Restored (acres)
- Invasives Treated (acres)
- Streams Made Accessible (river miles)
- River Miles Restored (river miles)

2) Economic (Flood Damage/Business Loss/Public Assistance)

- No new structures would have been developed that are vulnerable to channel erosion or mainstem or tributary flooding from 2080 predicted 100-year flood levels because all basin local governments have adopted model floodplain management ordinances that exceed the State and National Flood Insurance Programs' minimum requirements; all local government construction and building code standards support flood damage risk reduction through measures such as subdivision set-asides, filling restrictions, freeboard height of new buildings, critical facility placement and protection, and non-conversion agreements; and incentives direct future development out of harm's way.
- Protect critical facilities, e.g., the percent reduction in critical facilities vulnerable to flood damage in the 2080 predicted 100-year flood levels.
- Protect farmland and rural structures, e.g., reduction of risk to economically productive lands due to migrating river channels and bank erosion; no damage to commercial agricultural operations above that which occurred in the 1990 flood.
- Protect homes and businesses from seasonal urban flooding, e.g., municipal stormwater systems would be capable of adequately accommodating stormwater runoff levels and protecting homes and businesses from seasonal flood damage.
- Protect lower basin properties and businesses from coastal storm surges.
- Protect transportation routes, e.g., substantial reduction in the overtopping and closure of I-5, State Highways 6 and 12, and BNSF rail mainline due to flooding; no closures to key county and city intersections and interchanges due to flooding; alternative routes available to minimize negative effects and prevent emergency service interruptions.
- Protect valuable structures from mainstem, catastrophic flooding, e.g., the percent reduction in structures vulnerable to flood damage in 2080, predicted 100-year flood levels.
- The number of locations where migrating river channels and bank erosion pose a high risk of near-term damage to valuable structures or loss of economically productive land uses would be significantly reduced while protecting ecological processes.

- **Quantified Impacts from Previous BCA:**
  - Agricultural losses, which consist of crop damage and the delayed ability to use agricultural lands due to flooding.
  - Business interruption
  - Cleanup costs
  - Emergency aid, which consists of temporary relocation assistance, and public assistance.
    - Report will clarify that the costs are for acquisition at an assessed value only; it will describe other costs that are not included (relocation, for example)
  - Structure, content, and inventory
  - Transportation delays on Interstate 5
  - Vehicle damage

3) Social/EJ (Environmental Justice Advanced)

- Advance environmental justice, e.g., communities with environmental justice concerns would suffer less hardship and damage from flooding, would not be disproportionately burdened by actions to reduce flood damage, and would be improved by flood solutions.

4) Transportation Impacts (Disruption In Transportation Systems)

- A substantial reduction in State Highways 6 and 12 closures due to flooding would be achieved, and alternative routes would be available to ensure emergency services are not interrupted and minimize the negative effects of closures on freight mobility and commerce.
- A substantial reduction in the overtopping and closure of I-5 and the BNSF rail mainline would be achieved for 2080 predicted 100-year flood levels, and alternative routes would be available to minimize the negative effects of closures on freight mobility and commerce.
- Cost of reopening
- Disruption in transportation systems, including closures of I-5 and local and regional transportation systems.
- Key county and city intersections and interchanges would not be closed due to flooding, and for flood events that result in short-term closures, alternative routes would be available to ensure emergency services are not interrupted. Length and duration of road closures.

C. Overarching Issues Across the 10 Steps

1) Climate Change

Does the Board want to update the projections for the basin with the new climate information? Need out-year and planning horizon date(s) and agreement on assumptions, etc.

1) Use prior modeling, 2023 modeling, or combo for fish and/or flood.
2) Use the same assumptions for all or different assumptions depending on the expected life of major infrastructure elements (FRE, ASRP, Levees, Skookumchuck dam)
   a. High and/or Low Flow

   b. High, Median, or Low for each
   c. 25, 50, or 100 Year
3) Discuss and agree on the sequencing of modeling.
4) Discuss and decide on the number of Package Alternatives that will be modeled for what purposes.

5) Mitigation

1) How should the Strategy account for restoration actions implemented as part of the Strategy in relation to different elements like ASRP, LAND, FRE, Skookumchuck Dam, etc.?
2) How will FRE and/or diversion/conveyance and levee mitigation be modeled for the comparative evaluation?

6) Spring Chinook ESA Listing Potential

1) How will Strategy consider a potential Chinook ESA listing?

7) Benefit-Cost Assumptions

What does the benefit-cost work look like? Socioeconomic/EJ? Evaluation of just the LAND and FRE? Relative costs and flood benefits? Model impacts on aquatic habitat/species?

The Board will work in consultation with the consultant hired to complete the BCA to determine the following: e.g.,

1) Use Metrics From the Above Decision Table
2) Perspectives: e.g., geographic or entity-based?
   a. Basin-Wide (Cities and/or Counties)
   b. State
   c. Federal
   d. Tribal
3) Consider benefits and impacts.
4) Study Period: 25, 50, or 100 Years
5) Costs:
   a. Capital, operations, maintenance, and interest.
   b. 2024 Dollars
   c. Interest at X%
6) Uncertainty Analysis

APPENDIX B: DETAILED HYPOTHETICAL EXAMPLE

A. The Ten Steps

1) STEP ONE: Identify the Goal with an Umbrella Question

(Basis for Comparative Evaluation of Packages and Evaluation Criteria in Yellow).

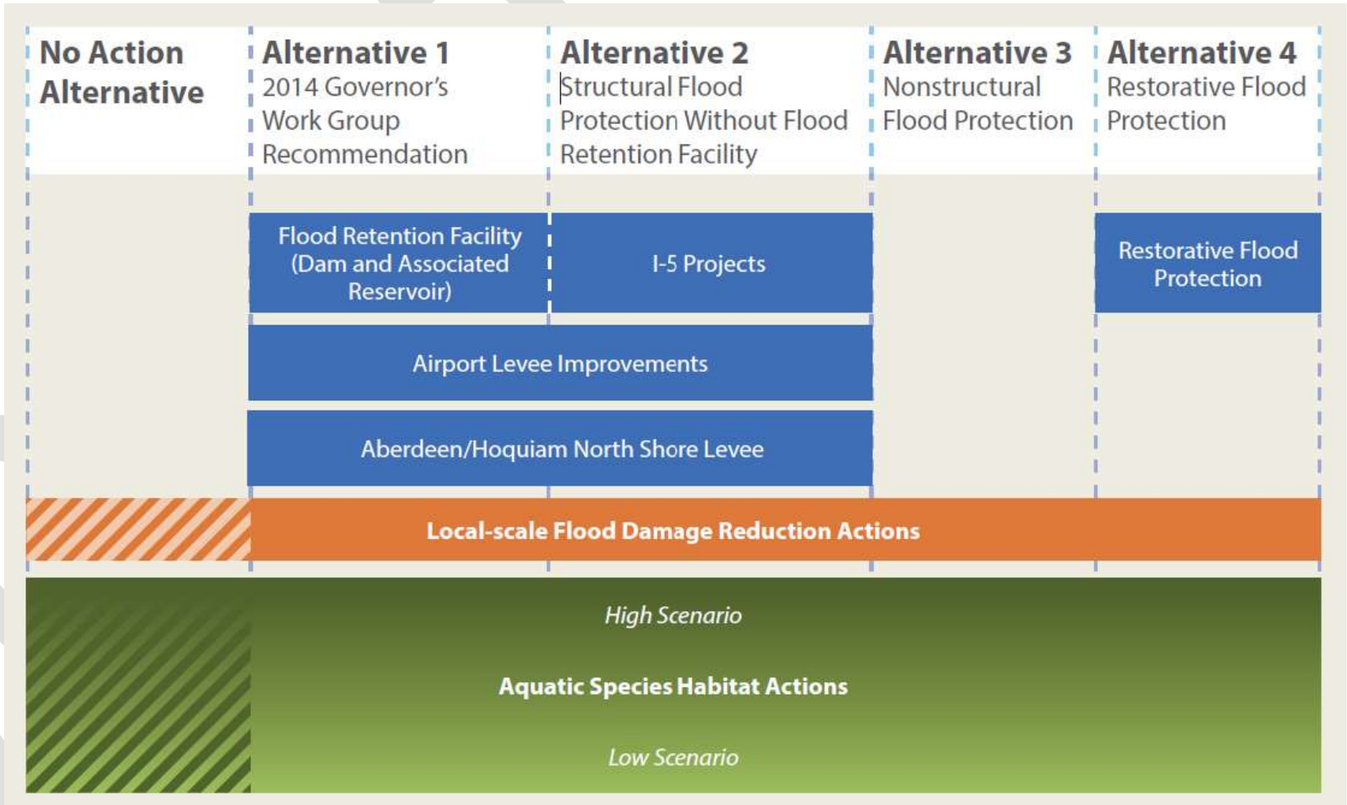
Board's Current Draft	Updated Draft Umbrella Question For Board Consideration (post input from partners… includes board themes with different formatting for ease of review) *
Recognizing the clear urgency to take effective, integrated actions that are timely, practical, politically viable, and cost-effective; How can we work with and incentivize basin stakeholders to voluntarily support protecting and restoring natural habitat and native aquatic species, support self-sustaining, abundant, harvestable fish populations, and protect cultural resources in the face of a changing climate and population growth; While at the same time, reducing basin-wide flood damage to human infrastructure and aquatic habitat before the next catastrophic event and in the face of an increasing threat of flooding due to a changing climate; Thereby creating an equitable, balanced, and sustainable long-term strategy that supports a net improvement for all those who live, work, recreate, and have an interest in the Chehalis Basin while simultaneously avoiding, minimizing, and mitigating any associated negative consequences?	Recognizing the climate-driven urgency to take effective actions to simultaneously protect and restore native aquatic species and protect against increasing flooding dangers and acknowledging that collaborative and integrated approaches create sustainable basin-wide solutions, how can we: • Work with and incentivize our communities to steward, protect, and restore native aquatic species and their habitat, • Support abundant, self-sustaining, harvestable fish populations and the protection of cultural and tribal resources and lifeways, • Utilize a network of flood protection measures to keep our infrastructure and aquatic habitat safe from increasingly frequent flooding disasters, • Integrate our unique characteristics, landscapes, communities, and cultures into impactful projects and programs, and • Use practical, politically viable, and wise investments to leverage opportunities backed by actionable climate change data and ongoing monitoring/adaptive management to have the greatest environmental, social, and economic benefits; So we have a healthy, prosperous, and resilient Chehalis Basin Strategy that supports equitable net benefits for future generations of people, fish, and wildlife?

Yellow = Conceptual Criteria (They correspond with the goals/metrics.) * = Defer further refinement for now.

2) STEP TWO: Board Preliminarily Identifies Common Elements, Status Quo and Baseline, Package Alternatives, and Other Unique Elements.

- Like the others, this step will likely be iterative, conducted in coordination with the consultant team and subject matter expert.

a) Reminder: 2017 Packages



https://chehalisbasinstrategy.com/wp-content/uploads/2017/06/Chehalis-Basin-Strategy-EIS-Executive-Summary.pdf

	Hypothetical Core Work Elements with Scaled Options								Common Elements
Core Work Elements	**FRE**	**Levees**	**Diversion / Conveyance with Associated Transportation Improvements**	**Floodproofing Elevation Acquisition**	**Skookumchuck Dam**	**ASRP: Habitat**	**Other Aquatic Species Actions: Other Hs and Predation**	**Unique Elements**	**Common Elements: Scalable** {Pg 30, HERE for Details}
With Scaled Options	Yes Modified No	High: All Levees Low: Airport Levee Only None	All Fewer/Smaller (TBD) None	High Medium Low None	Fish Passage Only Combo Fish/Flood Removal / Off-channel Storage Dam Removal As Is	Ph. 1 Scenario 3 Ph. 1 Scenario 2 Ph. 1 Scenario 1 Other - TBD None	High Medium Low None	_____ _____ _____ _____	
0) Baseline/No Strategy *	*No	None	Few to None	Low to None	As Is	Low	Low to None	TBD	Varied
1) FRE-Centric	X	X	X	X	X	X	X	X	X
2) Between FRE and Levee **	X	X	X	X	X	X	X	X	X
3) Levee-Centric	X	X	X	X	X	X	X	X	X
4) Between Levee and Non-Structural) **	X	X	X	X	X	X	X	X	X
5) Non-Structural	X	X	X	X	X	X	X	X	X

*Baseline with No Strategy = Includes designed and funded projects, including those underway and those funded for implementation/scheduled for implementation during this biennium, to address flood damage and/or aquatic species.

** = Keep in mind but probably defer until Step 8.

b) Common Elements

1) First, you will agree on an initial list. Examples include:

- **a)** Acquisition Program (e.g., farm pads, multi-benefit and/or independent acquisitions that don't neatly fit in another program)
- **b)** Additional Analyses TBD for Strategy development (e.g., forest practices)
- **c)** Agricultural Resiliency (e.g., floodproofing, farm pads, flood fences, existing WSCC programs, SW Growers Co-Op, Initiative for Working Lands)
- **d)** Erosion Management Program
- **e)** Flood Authority Projects
- **f)** Flood Warning System
- **g)** Floodplain Management/Land Use Planning Improvements
- **h)** Raised Structures
- **i)** Resiliency Program (e.g., equipment positioning, emergency access planning, etc.)
- **j)** Basin Wide Transportation System and Accessibility Improvements
- **k)** Other?

2) Second, you will agree on the scales for each item.

- **a)** Like the packages above, each has scaled options (e.g., High, Medium, Low, No Action, etc.)
- **b)** The Board will decide between the following common approaches:
  - **(1)** Select the same scaled action for each of the Package Alternatives (e.g., all High), or
  - **(2)** Pick a unique scale for each Common Element within each Package Alternative
  - **(3)** Other?

3) STEP THREE: Board Preliminarily Establishes Evaluation Factors With Both Quantitative and Qualitative Metrics

- Board Preliminarily Establishes Evaluation Factor Categories (Row A) With Both Quantitative and Qualitative Metrics (Row B)
- This will be an iterative process conducted with the consultant team and subject matter experts to inform the Benefit-Cost Analysis and prepare for Step Four.
- (The **blue** factors and metrics are more likely to be quantitative and the **purple** will be a mixture of quantitative and qualitative.)

HYPOTHETICAL EXAMPLE

	Evaluation Factors	Environmental {Pg 32, HERE for Details}	Economic {Pg 33, HERE for Details}	Social/EJ {Pg 34, HERE for Details}	Transportation Impacts {Pg 34, HERE for Details}	Other _____	Cost		Benefit/Cost		Political Acceptability	Fundability	Legal Regulatory Ease
A	Broad Categories	Wildlife Fish Habitat Other Aq. Sp.	Flood Damage Business Loss Public Assist.	Environmental Justice Advanced	Transportation systems	(E.g., Speed of Achieving Goal)			Ratios Narrative/ Qualitative Information		Local Sponsorship	Likelihood of Securing at Local, State, and Federal Levels	Treaty Rights Section 106 ESA Permitting Land Use
B	Prior Goals, which will be converted to measurable metrics	Increase the abundance of native aquatic species and salmon/ steelhead. Enhance tribal and non-tribal fisheries. Improve Resiliency of natural floodplain processes and ecosystems.	Protect valuable structures from mainstem, catastrophic flooding. Protect critical facilities. Protect farmland and rural structures.	Who benefits, and who is impacted disproportionally?	Reduce disruption in transportation systems, including closures of I-5 and local and regional transportation systems.	Sooner Mid Longer		➡	Basin-Wide State Federal Tribal	➡	High Medium Low None	High Medium Low None	No Reg. Easy Medium Hard

Historical GOALS/METRICS from Prior Work (ASRP, LAP/LAND, 2017 BCA, and PEIS) for Reference Only. Selection Reserved for Future Discussions

(Step Three)

Examples from Prior Work (ASRP, LAP/LAND, 2017 BCA, and PEIS) for reference only. Selection Reserved for Future Discussions

- **NOTE 1:** Metrics have a dual purpose: 1) helping pick the "best" package and 2) serving as the base condition for monitoring and adaptive management.

- **NOTE 2:** Several examples below are goals/objectives – not metrics, per se. Example: "Enhance tribal and non-tribal fisheries" is a goal. The associated metrics may be the Number of New Fisheries, the Number of Fish Produced, etc. Restated, metrics are measurable, either objectively or subjectively. Here is a good example from the below list. "Protect critical facilities [Goal], e.g., the percent reduction in critical facilities vulnerable to flood damage in the 2080 predicted 100-year flood levels [metric.]"

- **NOTE 3:** Consider having Board give general guidance and then have staff and consultants refine suggested metrics for Board consideration. The number of metrics per Evaluation Factor will be a function of need, time, and cost. A full list should be non-duplicative and help differentiate alternatives. (It's common to select five to seven that will feed into the Benefit/Cost analysis. Restated, if all of the packages perform the same on a given metric, it is helpful information, but it doesn't assist the Board in picking the "preferred" package.

a) Environmental (Wildlife/Fish/Habitat/Other Aquatic Species)

- Build recognition of and support for ASRP actions and the ways the ASRP supports resilient human communities, e.g., the number of landowners participating in ASRP projects.
- Enhance tribal and non-tribal fisheries.
- Improve Resiliency of natural floodplain processes and ecosystems.
- Increase abundance of native aquatic species, including increased populations of healthy and harvestable salmon and steelhead.
- Increase the quality and quantity of habitats for aquatic species in priority areas, e.g., miles of riparian and stream habitat restored; acres of invasive vegetation treated; acres of native plants installed.
- Increase watershed Resiliency to climate change by protecting and improving natural water quantity and timing characteristics and water quality characteristics, e.g., reduction in summer water temperatures.
- Protect and restore aquatic species viability, e.g., the number of juvenile salmon produced and adults returning.
- Protect and restore natural habitat-forming processes within the watershed, e.g., acres of floodplain habitat reconnected to the rivers; miles made newly accessible through barrier corrections.

NOTE 1: The **ASRP 2022 Annual Report** states the following goals The following goals were developed to guide the ASRP strategies, actions, and restoration scenarios:

- Protect and restore natural habitat-forming processes within the Chehalis Basin watershed context.
- Increase the quality and quantity of habitats for aquatic species in priority areas.

- Protect and restore aquatic species viability considering viable species population parameters.
- Increase resiliency to climate change by protecting and improving natural water quantity, water timing, and water quality characteristics.
- Build recognition of and support for ASRP actions and the ways the ASRP supports resilient human communities.

NOTE 2: To support these goals, a handful of "Measures of Implementation Progress" are being tracked and include, but are not limited to:

- Amphibian Habitat Restored (acres)
- Floodplain Protected (acres)
- Floodplain Restored (acres)
- Invasives Treated (acres)
- Streams Made Accessible (river miles)
- River Miles Restored (river miles)

b) Economic (Flood Damage/Business Loss/Public Assistance)

- No new structures would have been developed that are vulnerable to channel erosion or mainstem or tributary flooding from 2080 predicted 100-year flood levels because all basin local governments have adopted model floodplain management ordinances that exceed the State and National Flood Insurance Programs' minimum requirements; all local government construction and building code standards support flood damage risk reduction through measures such as subdivision set-asides, filling restrictions, freeboard height of new buildings, critical facility placement and protection, and non-conversion agreements; and incentives direct future development out of harm's way.
- Protect critical facilities, e.g., the percent reduction in critical facilities vulnerable to flood damage in the 2080 predicted 100-year flood levels.
- Protect farmland and rural structures, e.g., reduction of risk to economically productive lands due to migrating river channels and bank erosion; no damage to commercial agricultural operations above that which occurred in the 1990 flood.
- Protect homes and businesses from seasonal urban flooding, e.g., municipal stormwater systems would be capable of adequately accommodating stormwater runoff levels and protecting homes and businesses from seasonal flood damage.
- Protect lower basin properties and businesses from coastal storm surges.
- Protect transportation routes, e.g., substantial reduction in the overtopping and closure of I-5, State Highways 6 and 12, and BNSF rail mainline due to flooding; no closures to key county and city intersections and interchanges due to flooding; alternative routes available to minimize negative effects and prevent emergency service interruptions.
- Protect valuable structures from mainstem, catastrophic flooding, e.g., the percent reduction in structures vulnerable to flood damage in 2080, predicted 100-year flood levels.
- The number of locations where migrating river channels and bank erosion pose a high risk of near-term damage to valuable structures or loss of economically productive land uses would be significantly reduced while protecting ecological processes.

- **Quantified Impacts from Previous BCA:**
    - Agricultural losses, which consist of crop damage and the delayed ability to use agricultural lands due to flooding.
    - Business interruption
    - Cleanup costs
    - Emergency aid, which consists of temporary relocation assistance, and public assistance.
    - Report will clarify that the costs are for acquisition at an assessed value only; it will describe other costs that are not included (relocation, for example)
    - Structure, content, and inventory
    - Transportation delays on Interstate 5
    - Vehicle damage

c) Social/EJ (Environmental Justice Advanced)

- Advance environmental justice, e.g., communities with environmental justice concerns would suffer less hardship and damage from flooding, would not be disproportionately burdened by actions to reduce flood damage, and would be improved by flood solutions.

d) Transportation Impacts (Disruption In Transportation Systems)

- A substantial reduction in State Highways 6 and 12 closures due to flooding would be achieved, and alternative routes would be available to ensure emergency services are not interrupted and minimize the negative effects of closures on freight mobility and commerce.
- A substantial reduction in the overtopping and closure of I-5 and the BNSF rail mainline would be achieved for 2080 predicted 100-year flood levels, and alternative routes would be available to minimize the negative effects of closures on freight mobility and commerce.
- Cost of reopening
- Disruption in transportation systems, including closures of I-5 and local and regional transportation systems.
- Key county and city intersections and interchanges would not be closed due to flooding, and for flood events that result in short-term closures, alternative routes would be available to ensure emergency services are not interrupted. Length and duration of road closures.

4) STEP FOUR: Board Preliminarily Weighs Evaluation Factors, and Then Facilitator Works with Board to Preliminarily Agree on Weights

SCALE:

6 = Extremely Important

5 = Very Important

4 = Important

3 = Somewhat Important

2 = Slightly Important

The Ex-Officio members will poll before the Board meeting. The Ex-Officio data will be averaged and presented (Row A) to the Board at the meeting. Then, the Board will poll. Their polling results will appear in Row B. The facilitator will lead a Board discussion to establish preliminary weights for purposes of moving forward (Row C).

How Polling Works: Each member will Poll 1 to 6 on each evaluation factor to indicate how important they think it is relative to the other factors. After discussion, the Board agrees to Preliminary Weights for the first round of comparative analysis, with subsequent rounds to follow. (See Step Eight below)

- This will likely be an iterative process coordinated with the consultant team and subject matter experts. Consider public involvement polling on the allocation of Preliminary Weights. If yes, the results will be included below for reference. "Taking Your Pulse" – Informal and Anonymous Polling – Not Formal Voting!

HYPOTHETICAL WEIGHTS TEMPLATE

	Evaluation Factors	Environmental {Pg 32, HERE for Details}	Economic {Pg 33, HERE for Details}	Social/EJ {Pg 34, HERE for Details}	Transportation Impacts {Pg 34, HERE for Details}	Other _____	Cost		Benefit/Cost		Political Acceptability	Fundability	Legal Regulatory Ease	
	(Categories)	Wildlife Fish Habitat Other Aq. Sp.	Flood Damage Business Loss Public Assist.	Environmental Justice Advanced	Transportation systems	(E.g., Speed of Achieving Goal)		→	Ratios Narrative/ Qualitative Information	→	Local Sponsorship	Likelihood of Securing at Local, State, and Federal Levels	Treaty Rights Section 106 ESA Permitting Land Use	**Totals**
	***Initial* Factor Weights**	10%	10%	10%	10%	10%	10%		10%		10%	10%	10%	100%
A	Ex-Officio Weights	X%	X%	X%	X%	X%	X%		X%		X%	X%	X%	100%
B	Board Weights	X%	X%	X%	X%	X%	X%		X%		X%	X%	X%	100%
C	Board Preliminary Weights Converted to Percentages	X%	X%	X%	X%	X%	X%		X%		X%	X%	X%	100%

Anonymous Weights Distribution Example: The polling results can be attributed to each specific member now or during Step 8 (e.g., What-If Discussion with Different Assumed Weights to Test Emerging Consensus)

Ex-Officio Dummy Distribution Data

	Evaluation Factors	Environmental {Pg 32, HERE for Details}	Economic {Pg 33, HERE for Details}	Social/EJ {Pg 34, HERE for Details}	Transportation Impacts {Pg 34, HERE for Details}	Other _____	Cost	Benefit/Cost	Political Acceptability	Fundability	Legal Regulatory Ease	Totals
A	Ex-Officio 1	6	3	4	6	4	2	6	3	2	1	37
	Ex-Officio 2	3	2	2	6	5	6	2	1	3	6	36
	Ex-Officio 3	1	2	2	3	5	6	6	6	4	5	40
	Ex-Officio 4	2	4	5	6	4	4	2	6	6	5	44
	Ex-Officio 5	1	6	5	4	6	5	3	4	2	1	37
	Facilitator Converts to Percentages											
	Ex-Officio 1	16%	8%	11%	16%	11%	5%	16%	8%	5%	3%	100%
	Ex-Officio 2	8%	6%	6%	17%	14%	17%	6%	3%	8%	17%	100%
	Ex-Officio 3	3%	5%	5%	8%	13%	15%	15%	15%	10%	13%	100%
	Ex-Officio 4	5%	9%	11%	14%	9%	9%	5%	14%	14%	11%	100%
	Ex-Officio 5	3%	16%	14%	11%	16%	14%	8%	11%	5%	3%	100%
	Average Ex-Officio Weights:	**7%**	**9%**	**9%**	**13%**	**13%**	**12%**	**10%**	**10%**	**9%**	**9%**	**100%**

Board Member Dummy Distribution Data

	Evaluation Factors	Environmental {Pg 32, HERE for Details}	Economic {Pg 33, HERE for Details}	Social/EJ {Pg 34, HERE for Details}	Transportation Impacts {Pg 34, HERE for Details}	Other _____	Cost	Benefit/Cost	Political Acceptability	Fundability	Legal Regulatory Ease	Totals
	Board Member 1	6	3	4	6	4	5	5	3	1	3	40
	Board Member 2	3	2	6	5	5	6	2	5	3	5	42
	Board Member 3	6	3	5	6	1	2	5	1	6	4	39
	Board Member 4	3	1	2	1	5	1	1	4	1	1	20
	Board Member 5	5	6	6	4	4	6	6	6	5	3	51
	Board Member 6	4	1	2	3	6	1	4	1	5	4	31
	Board Member 7	1	3	4	6	6	5	5	5	3	6	44
	Facilitator Converts to Percentages											
A	Board Member 1	15%	8%	10%	15%	10%	13%	13%	8%	3%	8%	100%
	Board Member 2	7%	5%	14%	12%	12%	14%	5%	12%	7%	12%	100%
	Board Member 3	15%	8%	13%	15%	3%	5%	13%	3%	15%	10%	100%
	Board Member 4	15%	5%	10%	5%	25%	5%	5%	20%	5%	5%	100%
	Board Member 5	10%	12%	12%	8%	8%	12%	12%	12%	10%	6%	100%
	Board Member 6	13%	3%	6%	10%	19%	3%	13%	3%	16%	13%	100%
	Board Member 7	2%	7%	9%	14%	14%	11%	11%	11%	7%	14%	100%
	Average Board Weights:	**11%**	**7%**	**11%**	**11%**	**13%**	**9%**	**10%**	**10%**	**9%**	**10%**	**100%**

SUMMARY OF DUMMY WEIGHTS RESULTS

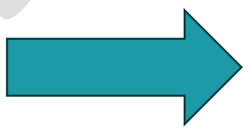
	Evaluation Factors	Environmental {Pg 32, HERE for Details}	Economic {Pg 33, HERE for Details}	Social/EJ {Pg 34, HERE for Details}	Transportation Impacts {Pg 34, HERE for Details}	Other _____	Cost		Benefit/Cost		Political Acceptability	Fundability	Legal Regulatory Ease	
	(Categories)	Wildlife Fish Habitat Other Aq. Sp.	Flood Damage Business Loss Public Assist.	Environmental Justice Advanced	Transportation systems	(E.g., Speed of Achieving Goal)			Ratios Narrative/ Qualitative Information		Local Sponsorship	Likelihood of Securing at Local, State, and Federal Levels	Treaty Rights Section 106 ESA Permitting Land Use	**Totals**
	***Initial* Factor Weights**	10%	10%	10%	10%	10%	10%		10%		10%	10%	10%	100%
A	**Board Preliminary Weights** Converted to Percentages	**11%**	**7%**	**11%**	**11%**	**13%**	**9%**		**10%**		**10%**	**9%**	**10%**	100%

5) STEP FIVE: Consultants Gather Data for Metrics for Board Review of Packages

1. Consultants Gather Data for Metrics for Board Review of Packages (Row A)
2. The consultants will collect information and analyze the Packages identified in Step Two based on the evaluation factors/metrics identified in Step Three.
3. The consultants will collect information and analyze the Packages identified in Step Two based on the evaluation factors/metrics identified in Step Three.

HYPOTHETICAL TEMPLATE

	Evaluation Factors	Environmental {Pg 32, HERE for Details}	Economic {Pg 33, HERE for Details}	Social/EJ {Pg 34, HERE for Details}	Transportation Impacts {Pg 34, HERE for Details}	Other _____	Cost		Benefit/Cost		Political Acceptability	Fundability	Legal Regulatory Ease
	(Categories)	Wildlife Fish Habitat Other Aq. Sp.	Flood Damage Business Loss Public Assist.	Environmental Justice Advanced	Transportation systems	(E.g., Speed of Achieving Goal)			Ratios Narrative/ Qualitative Information		Local Sponsorship	Likelihood of Securing at Local, State, and Federal Levels	Treaty Rights Section 106 ESA Permitting Land Use
A	Data For Each Agreed-Upon Metrics												



6) STEP SIX: Each Board Member Preliminarily Evaluates Each Package Against Each Evaluation Factor's Metrics

- Each Board Member Preliminarily Evaluates Each Package Against Each Evaluation Factor's Metrics (Row A)
- Same approach as above.
- Board members will be encouraged to consult and engage with their subject matter experts within the Board defined time.
- The Board will first look at the **blue** factors/metrics, and then, the **purple** ones.
- Further evaluation will occur in Step Eight.

(Step 4 Weights x Step 6 scores = Weighted Averages)

HYPOTHETICAL PACKAGE EVALUATION TEMPLATE

		Environmental {Pg 32, HERE for Details}	Economic {Pg 33, HERE for Details}	Social/EJ {Pg 34, HERE for Details}	Transportation Impacts {Pg 34, HERE for Details}	Other _____	Cost		Benefit /Cost		Political Acceptability	Fundability	Legal Regulatory Ease	Board Average Results	Preliminary Package Ranking 1-6
A	0) Baseline/No Strategy *	0	0	0	0	0	0	→	0	→	0	0	0	0	0
	1) FRE-Centric	X	X	X	X	X	X	→	X	→	X	X	X	X	X
	2) Between FRE and Levee **	X	X	X	X	X	X	→	X	→	X	X	X	X	X
	3) Levee-Centric	X	X	X	X	X	X	→	X	→	X	X	X	X	X
	4) Between Levee and Non-Structural **	X	X	X	X	X	X	→	X	→	X	X	X	X	X
	5) Non-Structural	X	X	X	X	X	X	→	X	→	X	X	X	X	X

Note: like the weights identified in step four, we will show how the ex-officio and board members polled (Polling does not equal voting) through anonymous distributions

***Baseline with No Strategy =** Includes designed and funded projects, including those underway and those funded for implementation/scheduled for implementation during this biennium, to address flood damage and/or aquatic species.

** = Keep in mind, but could defer until Step 8.

SCORING:

5 = Very Favorable

4 = Favorable

3 = Neutral

2 = Unfavorable

1 = Very Unfavorable

Ex-Officio Dummy Package Evaluation Data

1) FRE-Centric	Environmental	Economic	Social/EJ	Transportation Impacts	Other	Cost	Benefit/ Cost	Political Acceptability	Fundability	Legal Regulatory Ease	Totals
Ex-Officio 1	5	3	4	3	4	2	1	3	2	1	**28**
Ex-Officio 2	5	5	5	5	5	5	5	5	5	5	**50**
Ex-Officio 3	1	2	1	3	1	1	5	2	4	2	**22**
Ex-Officio 4	2	4	5	1	4	4	2	2	2	5	**31**
Ex-Officio 5	1	5	5	4	5	5	3	4	2	1	**35**
Average Score:	**2.80**	**3.80**	**4.00**	**3.20**	**3.80**	**3.40**	**3.20**	**3.20**	**3.00**	**2.80**	
2) Between FRE and Levee **	**Environmental**	**Economic**	**Social/EJ**	**Transportation Impacts**	**Other**	**Cost**	**Benefit/ Cost**	**Political Acceptability**	**Fundability**	**Legal Regulatory Ease**	**Totals**
Ex-Officio 1	4	3	5	5	5	5	5	5	5	5	**47**
Ex-Officio 2	1	2	2	5	5	3	5	5	1	2	**31**
Ex-Officio 3	1	5	1	3	5	1	4	2	5	5	**32**
Ex-Officio 4	1	2	3	5	3	3	1	1	5	5	**29**
Ex-Officio 5	5	3	4	4	4	4	3	1	2	3	**33**
Average Score:	**2.40**	**3.00**	**3.00**	**4.40**	**4.40**	**3.20**	**3.60**	**2.80**	**3.60**	**4.00**	
3) Levee-Centric	**Environmental**	**Economic**	**Social/EJ**	**Transportation Impacts**	**Other**	**Cost**	**Benefit/ Cost**	**Political Acceptability**	**Fundability**	**Legal Regulatory Ease**	**Totals**
Ex-Officio 1	5	3	4	3	4	2	1	3	5	1	**31**
Ex-Officio 2	2	1	2	5	5	3	5	5	3	3	**34**
Ex-Officio 3	2	2	1	3	5	1	3	2	4	5	**28**
Ex-Officio 4	2	3	1	5	3	3	2	2	5	5	**31**
Ex-Officio 5	1	1	4	4	3	5	3	1	2	1	**25**
Average Score:	**2.40**	**2.00**	**2.40**	**4.00**	**4.00**	**2.80**	**2.80**	**2.60**	**3.80**	**3.00**	
4) Between Levee and Non-Structural **	**Environmental**	**Economic**	**Social/EJ**	**Transportation Impacts**	**Other**	**Cost**	**Benefit/ Cost**	**Political Acceptability**	**Fundability**	**Legal Regulatory Ease**	**Totals**
Ex-Officio 1	5	3	4	3	4	2	1	3	5	1	**31**
Ex-Officio 2	3	3	3	3	4	1	3	2	1	5	**28**
Ex-Officio 3	4	2	1	3	5	4	3	3	4	5	**34**
Ex-Officio 4	2	1	5	2	2	3	4	4	3	2	**28**
Ex-Officio 5	1	1	4	4	3	5	3	1	2	1	**25**
Average Score:	**3.00**	**2.00**	**3.40**	**3.00**	**3.60**	**3.00**	**2.80**	**2.60**	**3.00**	**2.80**	

5) Non-Structural	Environmental	Economic	Social/EJ	Transportation Impacts	Other	Cost	Benefit/ Cost	Political Acceptability	Fundability	Legal Regulatory Ease	Totals
Ex-Officio 1	5	3	1	1	1	2	1	3	5	1	**23**
Ex-Officio 2	1	1	2	5	5	3	5	5	3	3	**33**
Ex-Officio 3	4	2	4	3	1	3	3	2	1	3	**26**
Ex-Officio 4	5	3	1	4	2	2	2	2	1	3	**25**
Ex-Officio 5	2	1	2	4	3	1	2	1	2	1	**19**
Average Score:	**3.40**	**2.00**	**2.00**	**3.40**	**2.40**	**2.20**	**2.60**	**2.60**	**2.40**	**2.20**	

** = Keep in mind, but could defer until Step 8.

Facilitator calculates package score for Board Discussion: Ex-Officio Dummy Evaluation Data

1) FRE-Centric	Environmental	Economic	Social/EJ	Transportation Impacts	Other	Cost	Benefit/ Cost	Political Acceptability	Fundability	Legal Regulatory Ease	Totals
Average Weights:	**7%**	**9%**	**9%**	**13%**	**13%**	**12%**	**10%**	**10%**	**9%**	**9%**	**100%**
Average Score:	**2.80**	**3.80**	**4.00**	**3.20**	**3.80**	**3.40**	**3.20**	**3.20**	**3.00**	**2.80**	
Weight x Average =	**0.20**	**0.34**	**0.36**	**0.42**	**0.49**	**0.41**	**0.32**	**0.32**	**0.27**	**0.25**	**3.38**
2) Between FRE and Levee **	**Environmental**	**Economic**	**Social/EJ**	**Transportation Impacts**	**Other**	**Cost**	**Benefit/ Cost**	**Political Acceptability**	**Fundability**	**Legal Regulatory Ease**	**Totals**
Average Weights:	**7%**	**9%**	**9%**	**13%**	**13%**	**12%**	**10%**	**10%**	**9%**	**9%**	**100%**
Average Score:	**2.40**	**3.00**	**3.00**	**4.40**	**4.40**	**3.20**	**3.60**	**2.80**	**3.60**	**4.00**	
Weight x Average =	**0.17**	**0.27**	**0.27**	**0.57**	**0.57**	**0.38**	**0.36**	**0.28**	**0.32**	**0.36**	**3.56**
3) Levee-Centric	**Environmental**	**Economic**	**Social/EJ**	**Transportation Impacts**	**Other**	**Cost**	**Benefit/ Cost**	**Political Acceptability**	**Fundability**	**Legal**	**Totals**
Average Weights:	**7%**	**9%**	**9%**	**13%**	**13%**	**12%**	**10%**	**10%**	**9%**	**9%**	**100%**
Average Score:	**2.40**	**2.00**	**2.40**	**4.00**	**4.00**	**2.80**	**2.80**	**2.60**	**3.80**	**3.00**	
Weight x Average =	**0.17**	**0.18**	**0.22**	**0.52**	**0.52**	**0.34**	**0.28**	**0.26**	**0.34**	**0.27**	**3.09**
4) Between Levee and Non-Structural **	**Environmental**	**Economic**	**Social/EJ**	**Transportation Impacts**	**Other**	**Cost**	**Benefit/ Cost**	**Political Acceptability**	**Fundability**	**Legal Regulatory Ease**	**Totals**
Average Weights:	**7%**	**9%**	**9%**	**13%**	**13%**	**12%**	**10%**	**10%**	**9%**	**9%**	**100%**
Average Score:	**3.00**	**2.00**	**3.40**	**3.00**	**3.60**	**3.00**	**2.80**	**2.60**	**3.00**	**2.80**	
Weight x Average =	**0.21**	**0.18**	**0.31**	**0.39**	**0.47**	**0.36**	**0.28**	**0.26**	**0.27**	**0.25**	**2.98**
5) Non-Structural	**Environmental**	**Economic**	**Social/EJ**	**Transportation Impacts**	**Other**	**Cost**	**Benefit/ Cost**	**Political Acceptability**	**Fundability**	**Legal**	**Totals**

Average Weights:	7%	9%	9%	13%	13%	12%	10%	10%	9%	9%	100%
Average Score:	3.40	2.00	2.00	3.40	2.40	2.20	2.60	2.60	2.40	2.20	
Weight x Average =	0.24	0.18	0.18	0.44	0.31	0.26	0.26	0.26	0.22	0.20	2.55

** = Keep in mind, but could defer until Step 8.

Board Member Dummy Package Evaluation Data

1) FRE-Centric	Environmental	Economic	Social/EJ	Transportation Impacts	Other	Cost	Benefit/ Cost	Political Acceptability	Fundability	Legal Regulatory Ease	Totals
Board Member 1	1	3	4	1	4	5	5	3	1	3	**30**
Board Member 2	5	2	5	5	5	4	2	5	3	5	**41**
Board Member 3	3	3	1	2	1	2	5	1	4	2	**24**
Board Member 4	2	4	2	1	5	1	1	4	1	3	**24**
Board Member 5	2	5	1	4	4	4	3	1	5	4	**33**
Board Member 6	2	4	3	3	3	3	5	5	5	1	**34**
Board Member 7	1	3	4	3	4	5	5	5	3	2	**35**
Average Score:	**2.29**	**3.43**	**2.86**	**2.71**	**3.71**	**3.43**	**3.71**	**3.43**	**3.14**	**2.86**	
2) Between FRE and Levee **	**Environmental**	**Economic**	**Social/EJ**	**Transportation Impacts**	**Other**	**Cost**	**Benefit/ Cost**	**Political Acceptability**	**Fundability**	**Legal Regulatory Ease**	**Totals**
Board Member 1	5	5	5	5	5	5	5	5	3	3	**46**
Board Member 2	5	3	3	3	4	4	2	4	3	4	**35**
Board Member 3	2	3	1	2	3	2	5	1	4	2	**25**
Board Member 4	4	4	2	1	5	1	2	3	1	3	**26**
Board Member 5	5	3	2	2	4	4	3	4	5	4	**36**
Board Member 6	1	2	3	3	3	3	5	4	5	1	**30**
Board Member 7	1	5	4	5	4	5	5	5	5	2	**41**
Average Score:	**3.29**	**3.57**	**2.86**	**3.00**	**4.00**	**3.43**	**3.86**	**3.71**	**3.71**	**2.71**	
3) Levee-Centric	**Environmental**	**Economic**	**Social/EJ**	**Transportation Impacts**	**Other**	**Cost**	**Benefit/ Cost**	**Political Acceptability**	**Fundability**	**Legal Regulatory Ease**	**Totals**
Board Member 1	1	3	4	1	4	5	5	3	1	3	**30**
Board Member 2	5	2	1	1	1	4	2	2	3	5	**26**
Board Member 3	4	4	4	4	4	4	4	4	4	4	**40**
Board Member 4	3	3	3	1	2	3	3	3	3	3	**27**

Board Member 5	5	3	4	1	2	4	5	5	2	3	**34**
Board Member 6	5	4	5	4	5	4	5	4	5	4	**45**
Board Member 7	3	4	4	5	4	2	1	1	4	5	**33**
Average Score:	**3.71**	**3.29**	**3.57**	**2.43**	**3.14**	**3.71**	**3.57**	**3.14**	**3.14**	**3.86**	
4) Between Levee and Non-Structural **	**Environmental**	**Economic**	**Social/EJ**	**Transportation Impacts**	**Other**	**Cost**	**Benefit/ Cost**	**Political Acceptability**	**Fundability**	**Legal Regulatory Ease**	**Totals**
Board Member 1	5	3	4	3	4	3	5	2	4	2	**35**
Board Member 2	2	2	5	4	5	2	5	2	4	1	**32**
Board Member 3	2	3	1	5	5	2	3	1	2	3	**27**
Board Member 4	4	1	2	5	5	1	4	4	3	1	**30**
Board Member 5	2	5	1	5	5	3	5	1	5	2	**34**
Board Member 6	2	5	3	5	5	1	3	2	5	2	**33**
Board Member 7	1	3	4	3	4	1	4	2	3	2	**27**
Average Score:	**2.57**	**3.14**	**2.86**	**4.29**	**4.71**	**1.86**	**4.14**	**2.00**	**3.71**	**1.86**	
5) Non-Structural	**Environmental**	**Economic**	**Social/EJ**	**Transportation Impacts**	**Other**	**Cost**	**Benefit/ Cost**	**Political Acceptability**	**Fundability**	**Legal Regulatory Ease**	**Totals**
Board Member 1	3	1	4	5	2	2	1	3	1	4	**26**
Board Member 2	5	2	5	5	5	4	2	5	3	5	**41**
Board Member 3	3	3	4	5	1	2	3	4	5	1	**31**
Board Member 4	5	4	3	2	1	5	4	3	2	1	**30**
Board Member 5	1	3	5	2	4	1	3	5	2	4	**30**
Board Member 6	2	4	3	3	3	3	5	5	5	1	**34**
Board Member 7	1	3	4	3	4	5	5	5	3	2	**35**
Average Score:	**2.86**	**2.86**	**4.00**	**3.57**	**2.86**	**3.14**	**3.29**	**4.29**	**3.00**	**2.57**	

** = Keep in mind, but could defer until Step 8.

Facilitator calculates package scores for Board Discussion: Board Members Dummy Evaluation Data

1) FRE-Centric	Environmental	Economic	Social/EJ	Transportation Impacts	Other	Cost	Benefit/ Cost	Political Acceptability	Fundability	Legal Regulatory Ease	Totals
Average Weights:	11%	7%	11%	11%	13%	9%	10%	10%	9%	10%	100%
Average Score:	2.29	3.43	2.86	2.71	3.71	3.43	3.71	3.43	3.14	2.86	
Weight x Average =	0.25	0.24	0.31	0.30	0.48	0.31	0.37	0.34	0.28	0.29	3.18
2) Between FRE and Levee **	**Environmental**	**Economic**	**Social/EJ**	**Transportation Impacts**	**Other**	**Cost**	**Benefit/ Cost**	**Political Acceptability**	**Fundability**	**Legal Regulatory Ease**	**Totals**
Average Weights:	11%	7%	11%	11%	13%	9%	10%	10%	9%	10%	100%
Average Score:	3.29	3.57	2.86	3.00	4.00	3.43	3.86	3.71	3.71	2.71	
Weight x Average =	0.36	0.25	0.31	0.33	0.52	0.31	0.39	0.37	0.33	0.27	3.45
3) Levee-Centric	**Environmental**	**Economic**	**Social/EJ**	**Transportation Impacts**	**Other**	**Cost**	**Benefit/ Cost**	**Political Acceptability**	**Fundability**	**Legal Regulatory Ease**	**Totals**
Average Weights:	11%	7%	11%	11%	13%	9%	10%	10%	9%	10%	100%
Average Score:	3.71	3.29	3.57	2.43	3.14	3.71	3.57	3.14	3.14	3.86	
Weight x Average =	0.41	0.23	0.39	0.27	0.41	0.33	0.36	0.31	0.28	0.39	3.38
4) Between Levee and Non-Structural **	**Environmental**	**Economic**	**Social/EJ**	**Transportation Impacts**	**Other**	**Cost**	**Benefit/ Cost**	**Political Acceptability**	**Fundability**	**Legal Regulatory Ease**	**Totals**
Average Weights:	11%	7%	11%	11%	13%	9%	10%	10%	9%	10%	100%
Average Score:	2.57	3.14	2.86	4.29	4.71	1.86	4.14	2.00	3.71	1.86	
Weight x Average =	0.28	0.22	0.31	0.47	0.61	0.17	0.41	0.20	0.33	0.19	3.20
5) Non-Structural	**Environmental**	**Economic**	**Social/EJ**	**Transportation Impacts**	**Other**	**Cost**	**Benefit/ Cost**	**Political Acceptability**	**Fundability**	**Legal Regulatory Ease**	**Totals**
Average Weights:	11%	7%	11%	11%	13%	9%	10%	10%	9%	10%	100%
Average Score:	2.86	2.86	4.00	3.57	2.86	3.14	3.29	4.29	3.00	2.57	
Weight x Average =	0.31	0.20	0.44	0.39	0.37	0.28	0.33	0.43	0.27	0.26	3.29

** = Keep in mind, but could defer until Step 8.

Summary Results of Dummy Data Results for Board Discussion

Board Member Dummy Data Results			Board Member Dummy Data Results		
Evaluation Factors	Weighted Score	Preliminary Rankings	Evaluation Factors	Weighted Score	Preliminary Rankings
0) Baseline/No Strategy	0	0	0) Baseline/No Strategy	0	0
1) FRE-Centric	3.38	4	1) FRE-Centric	3.18	1
2) Between FRE and Levee **	3.56	5	2) Between FRE and Levee **	3.45	5
3) Levee-Centric	3.09	3	3) Levee-Centric	3.38	4
4) Between Levee and Non-Structural **	2.98	2	4) Between Levee and Non-Structural **	3.20	2
5) Non-Structural	2.55	1	5) Non-Structural	3.29	3

** = Keep in mind, but could defer until Step 8.

7) STEP SEVEN: Facilitator calculates preliminary weighted average and preliminary relative ranking with the distribution of scores for Board discussion.

- Facilitator calculates preliminary weighted average and preliminary relative ranking with the distribution of scores for discussion. (Two Right Columns, above)

8) STEP EIGHT: Board explores initial polling results, reevaluates the packages, and selects the conditionally preferred package(s).

- The highest Polled result does NOT win. It is the starting point for the Board's discussions on What-If Discussions, package refinement and repackaging in order for it to select the most promising package(s) for Sequencing in Step Nine

9) STEP NINE: Board finalizes sequential decision tree strategy and funding approach, implementation, and adaptive management.

a) Select Preferred Package
  i. Select Backup Package(s)
b) Determine Offramps (Decision Trees)
  i. If Package X gets regulatory approvals (e.g., can be effectively mitigated), garners political support, honors treaty rights, & receives funding, etc., do Package X
  ii. If it does not, modify Package X (if feasible), do Package Y, or develop a new Package.
c) Finalize Overall Funding Approach
d) Implement Strategy
e) Monitor Each Element Against Success Criteria (Often the Above Matrices) and consider new scientific information.
f) Adaptively Manage and/or amend the Strategy if different actions/issues/events happen or don't happen in X years, reconvene to change underperforming or infeasible element(s), and/or create a whole new Strategy.

10) STEP TEN: Celebrate and Promote Success!

B. Overarching Issues Across the 10 Steps

1) Climate Change

Does the Board want to update the projections for the basin with the new climate information? Need out-year and planning horizon date(s) and agreement on assumptions, etc.

1) Use prior modeling, 2023 modeling, or combo for fish and/or flood.
2) Use the same assumptions for all or different assumptions depending on the expected life of major infrastructure elements (FRE, ASRP, Levees, Skookumchuck dam)
  a. High and/or Low Flow
  b. High, Median, or Low for each
  c. 25, 50, or 100 Year
3) Discuss and agree on the sequencing of modeling.

4) Discuss and decide on the number of Package Alternatives that will be modeled for what purposes.

2) Mitigation

1) How should the Strategy account for restoration actions implemented as part of the Strategy in relation to different elements like ASRP, LAND, FRE, Skookumchuck Dam, etc.?
2) How will FRE and/or diversion/conveyance and levee mitigation be modeled for the comparative evaluation?

3) Spring Chinook ESA Listing Potential

1) How will Strategy consider a potential Chinook ESA listing?

4) Benefit-Cost Assumptions

What does the benefit-cost work look like? Socioeconomic/EJ? Evaluation of just the LAND and FRE? Relative costs and flood benefits? Model impacts on aquatic habitat/species?

The Board will work in consultation with the consultant hired to complete the BCA to determine the following: e.g.,

1) Use Metrics From the Above Decision Table
2) Perspectives: e.g., geographic or entity-based?
  a) Basin-Wide (Cities and/or Counties)
  b) State
  c) Federal
  d) Tribal
3) Consider benefits and impacts.
4) Study Period: 25, 50, or 100 Years
5) Costs:
  a) Capital, operations, maintenance, and interest.
  b) 2024 Dollars
  c) Interest at X%
6) Uncertainty Analysis