Grande Ronde
Restoration Partnership

Upper Grande Ronde Initiative

VISION

The Grande Ronde Restoration Partnership envisions creating a healthy ecosystem with abundant, productive, and diverse populations of aquatic and terrestrial species, which will support sustainable resource-based activities that contribute to the social, cultural, and economic well-being of the communities within the subbasin and the Pacific Northwest.

PARTNERSHIP MEMBERS

Core implementing members:

- Grande Ronde Model Watershed
- Confederated Tribes of the Umatilla Indian Reservation
- Oregon Department of Fish and Wildlife
- Union Soil and Water Conservation District
- US Forest Service

Other active partners that support the Initiative:

- NOAA Fisheries
- US Fish and Wildlife Service
- The Freshwater Trust
- Natural Resource Conservation Service
- Watershed Councils

ECOLOGICAL PRIORITY

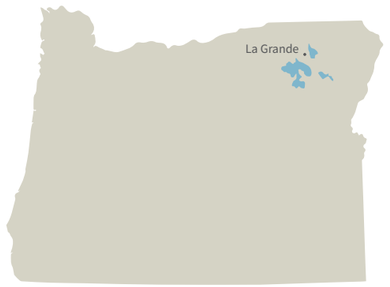
Aquatic Habitat for Native Fish Species

FOCAL SPECIES

Summer steelhead

Chinook salmon

Bull trout



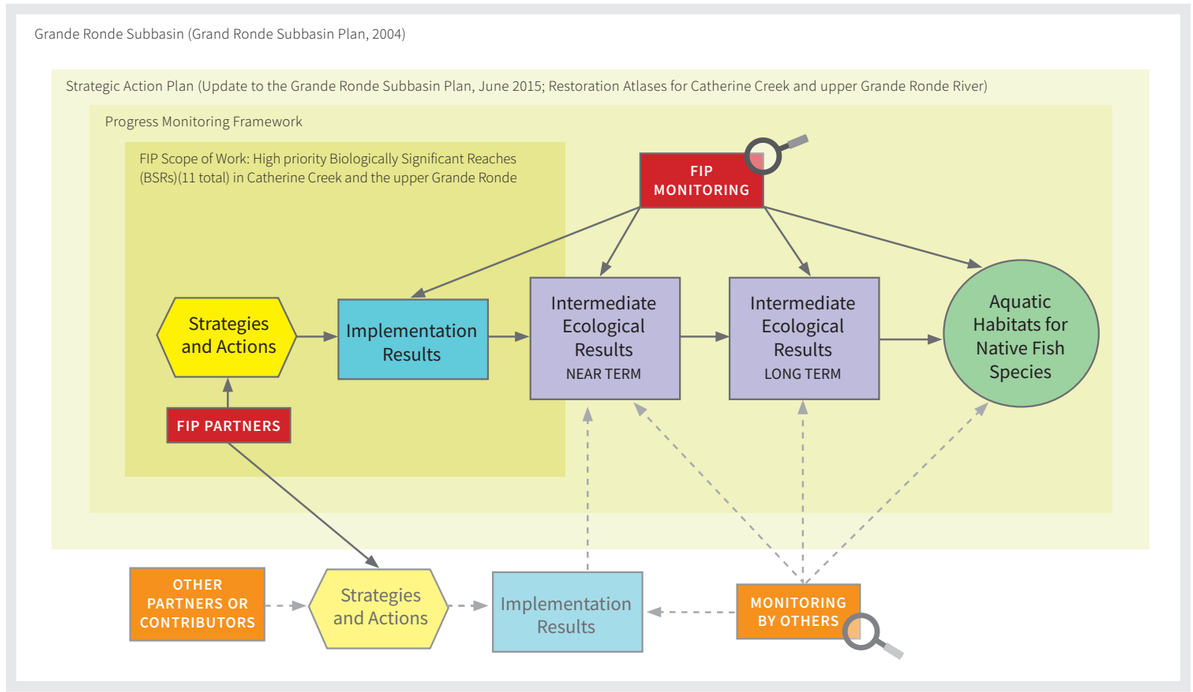
GEOGRAPHIC SCOPE

The Partnership is focused on eleven prioritized reaches of the upper Grande Ronde subbasin, which includes the Grande Ronde River and all its tributaries upstream of the confluence with the Wallowa River. These reaches contain approximately 33 percent of the total acres in the upper Grande Ronde subbasin.

Operational Context

The Initiative is nested within a larger regional effort to recover ESA listed Snake River spring/summer run Chinook salmon and steelhead in the Grand Ronde Subbasin. Strategies and actions are contained in the Strategic Action Plan which is encompassed in both the 2015 Update to the Grande Ronde Subbasin Plan and Restoration Atlases for Catherine Creek and the upper Grande Ronde watersheds. These strategies and actions are funded by OWEB and others, including the Bonneville Power Administration (BPA) within the Initiative geography as well as the larger Grande Ronde Subbasin. These actions contribute to and are required to achieve the desired near and long-term ecological outcomes contained in the results chain *(Figures 1 and 2)*.

Figure 1: *Operational context of the OWEB-funded Focused Investment Partnership Initiative*



Theory of Change.

SITUATION

Land use in the upper Grande Ronde subbasin since the late 1800s, including poorly managed logging and grazing, construction of roads and railroads, and urbanization, as well as irrigation withdrawals, has resulted in degraded stream and floodplain conditions and fish habitat. Specific factors limiting fish populations and their habitat are:

- Reduced channel complexity and sinuosity and increased width-to-depth ratios
- Increased sediment resulting in reduced spawning habitat quality
- Increased stream temperature and suspended sediment
- Low late-season flows
- Reduced habitat quantity resulting from fish passage barriers and stream channelization
- Degraded riparian conditions
- Disconnected floodplains and floodplain infrastructure (roads, railroad grades, levees).

APPROACH

The results chain *(Figure 2)* articulates the partnership's theory of change by displaying the relationships between strategies, implementation results, and the intermediate ecological results partners predict will occur in response to strategy implementation that will ultimately lead to restoration of the FIPs ecological priorities.

Numbered results identified in *Figure 2* are those the partnership has highlighted as part of a monitoring approach. They will allow the partnership to measure progress in both the near (e.g. 6-year FIP timeframe) and long term, and to identify where key uncertainties might exist with regards to confidence of predicted outcomes or relationships between results.

Each numbered implementation result is associated with the corresponding objective in the Strategic Action Plan *(Tables 1 and 2)*. For intermediate ecological results, objectives are included if identified; however, for many ecological results, the degree (and timeframe) to which they will be achieved is not yet well understood. Given this complexity, continued assessment and planning will be required to support development of specific, measureable objectives for the desired ecological outcomes.

The narrative below summarizes the resulting theory of change. Implementation results and ecological results prioritized for monitoring during the six-year FIP timeline are indexed to correspond to the results chain *(Figure 2)* and measuring progress tables *(Tables 1 and 2)*.

STRATEGIES

Strategies in the 2015 Grand Ronde Subbasin Plan Update address the limiting factors listed above and reduce historical, current, and future threats that have and will impact health of both aquatic species and ecological functions. The long-term desired ecological outcome is increased habitat quality supporting all life stages of spring Chinook, summer steelhead, and other native species including lamprey, freshwater mussels, and resident trout, among others. This outcome will be accomplished by protecting and restoring watershed processes and function, cold-water refugia, and diverse, complex instream and floodplain habitats. It also will be achieved by improving habitat quality and diversity (large wood structures, side channels, pools) for all life stages of spring-summer Chinook, summer steelhead, and other native species. *Strategies that are designed to produce these outcomes include:*

- Strategy 1: **Conduct research** to fill knowledge gaps regarding juvenile fish mortality and wild and domestic mammal impacts on riparian restoration
- Strategy 2.1: **Remediate partial fish passage barriers** to connect habitat
- Strategy 2.2: **Create additional aquatic habitat**
- Strategy 3.1: **Restore flow** during critical periods
- Strategy 3.2: **Restore natural habitat complexity and processes**
- Strategy 4: **Inform, educate and engage relevant landowners and residents** in the Grande Ronde subbasin

STRATEGIES

1 Conduct research to fill knowledge gaps

The partnership will assist the Oregon Department of Fish and Wildlife in identifying causes of mortality of out-migrating juvenile salmonids, and will assist US Forest Service Pacific Northwest Research Station staff in studying the impacts of ungulates, small mammals, and pollinators on riparian restoration.

Theory of Change.
Funding and implementation of an ungulate study[10] and installation of PIT tag arrays[11] will improve understanding of factors:

- impacting restored riparian areas, and
- affecting survival of wild spring-summer Chinook salmon, summer steelhead, and bull trout.

This knowledge will help to inform the development and implementation of restoration strategies to address those factors.

2.1 Remediate partial barriers

The partners will remove or replace existing partial fish passage barriers associated with road networks, railroad grades, and levees to improve the ability for native fish to access habitat.

Theory of Change.
Removal of artificial aquatic species passage barriers[1] reduces the impact of roads and associated stream crossings, increasing aquatic species access to formerly inaccessible habitats.

Increased aquatic species access to formerly inaccessible habitats results in increased spatial distribution of native aquatic species[12], which helps those populations become more viable, e.g., through increased food resources, increased rearing habitat, and reduced competition.

2.2 Create additional aquatic habitat

Implementing partners will recreate stream channel and floodplain/wetland habitat on Catherine Creek and the Upper Grande Ronde River in areas where these habitats have been lost due to channel straightening, draining and/or filling wetlands, and removing beavers.

Theory of Change.
Construction of new main and side channels[2] and floodplain/wetland complexes (3) in areas historically impacted by railroad infrastructure, agricultural practices, or urbanization promotes:

- re-establishment of floodplain connectivity,
- recovery of channel and floodplain structure, complexity, and function, and
- improved riparian plant community structure.

Restoration of processes that increase the extent, structure and function of aquatic and riparian habitats[13], and the resulting use of restored habitats by aquatic species, ultimately increases their spatial distribution[12], improving their viability.

3.1 Restore Flow

Members of the partnership will work with core partners to improve irrigation efficiencies and secure water rights to restore flow during critical months (July-September) of the year.

Theory of Change.
Implementation of irrigation efficiency projects[4] and purchase or lease of water from willing water rights holders[5] will result in more retention of water in stream channels and increase late season flow[15].

Higher late season flow will result in reduced stream temperature[16], improve access to habitat for aquatic species, and contribute to an increase in their spatial distribution[12] which helps those populations become more viable, e.g., through increased food resources, increased rearing habitat, and reduced competition.

3.2 Restore natural habitat complexity and processes

Restoration partners will construct or enhance high-quality pools and habitats along the stream edge, install large wood and boulder habitat structures, install bioengineered stream bank stabilization features, and restore and protect riparian plant communities.

Theory of Change.
Construction of habitat function and structural elements[6] will increase habitat complexity, contributing to the restoration of habitat forming and maintaining processes historically interrupted by road and railroad infrastructure, agricultural, livestock grazing, and timber harvest practices, and urbanization.

Improved habitat complexity and connectivity will contribute to:

- increased spatial distribution of native aquatic species and salmonids[12], which provides increased food resources, increased rearing habitat, and reduced competition, and
- improved channel structure, form, and processes that maintain habitat[13].

Improved condition and complexity of aquatic habitat will increase critical rearing, holding, and spawning habitat for aquatic species.

Construction of habitat function and structural elements[6] will also promote bank stabilization and reduce sedimentation rates, resulting in improved spawning habitat quality[14]. Improved spawning habitat will increase the reproductive success of aquatic species.

Improved riparian plant community structure and function resulting from riparian vegetation planting will contribute to reduced stream temperatures[16] and serve as a filter to reduce fine sediments in streams.

4 Inform, educate, and engage relevant landowners and residents

The partnership will increase outreach to the public on watershed health by hosting education/outreach events, presenting to civic groups, and establishing new working relationships with landowners through coordinated outreach with core partners and by attending agricultural meetings.

Theory of Change.
New and strengthened relationships with landowners[7] and presentations delivered to students and communities[8] increase awareness and engagement of stakeholders and community members regarding aquatic ecosystem and salmon recovery[9]. Stronger relationships and increased awareness and understanding of restoration efforts help build trusting relationships with private landowners and public land managers and promote long-term ecologically-based conservation ethics.

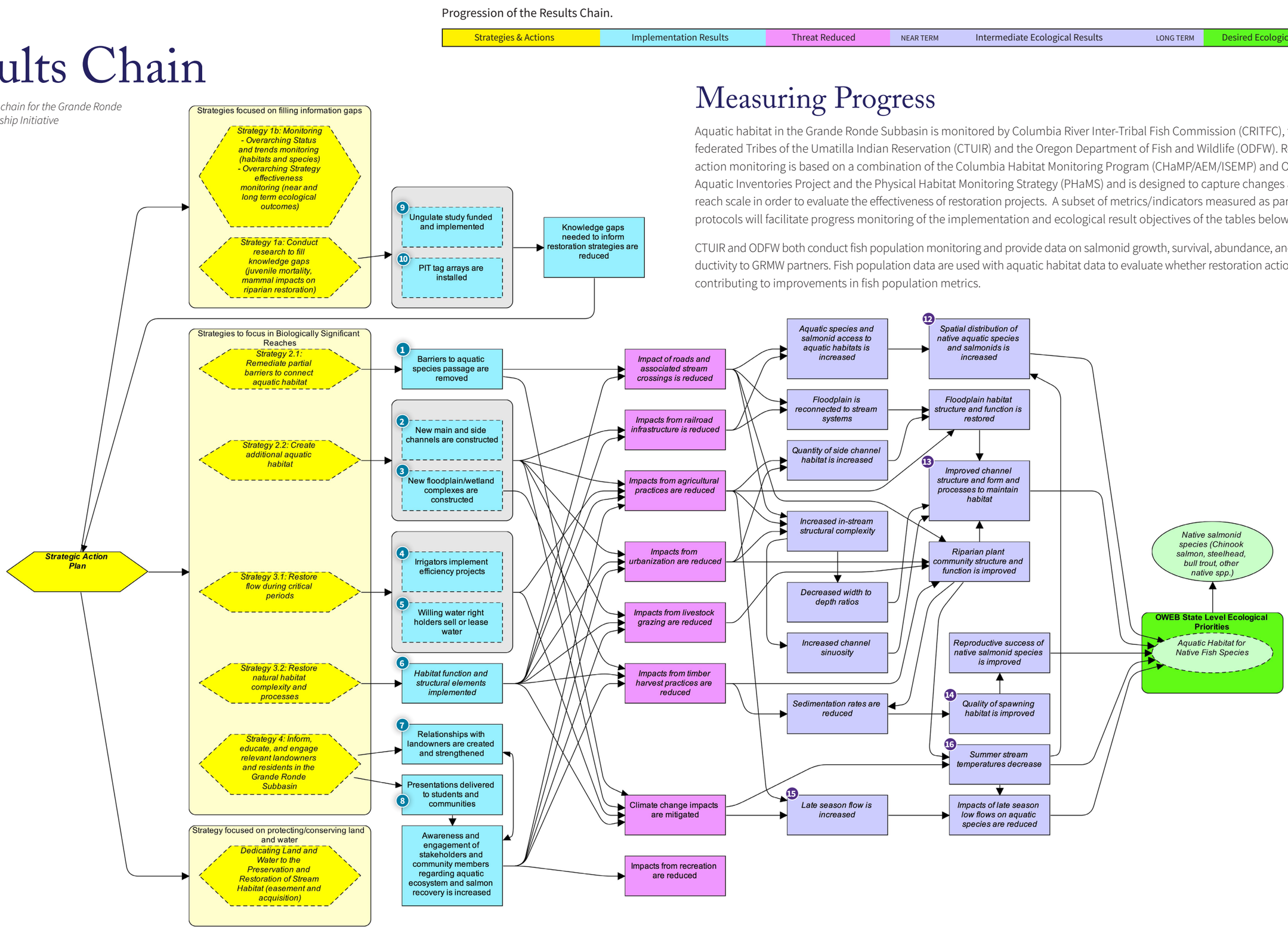
Increased awareness and engagement of stakeholders and community members regarding aquatic ecosystem and salmon recovery[9] creates and strengthens relationships with landowners[7].

Increased awareness and engagement of stakeholders and community members regarding aquatic ecosystem and salmon recovery[9] contributes to new agricultural, livestock grazing, and timber harvest practices and recreational activities that are grounded in a conservation ethic and are compatible with stream and floodplain function.

Superscript numbers [1-16] can be cross referenced on the Results Chain diagram and the Implementation Progress/Ecological Progress tables on the following pages.

Results Chain

Figure 2: Results chain for the Grande Ronde Partnership Initiative



Measuring Progress

Aquatic habitat in the Grande Ronde Subbasin is monitored by Columbia River Inter-Tribal Fish Commission (CRITFC), the Confederated Tribes of the Umatilla Indian Reservation (CTUIR) and the Oregon Department of Fish and Wildlife (ODFW). Restoration action monitoring is based on a combination of the Columbia Habitat Monitoring Program (CHaMP/AEM/ISEMP) and ODFW's Aquatic Inventories Project and the Physical Habitat Monitoring Strategy (PHaMS) and is designed to capture changes at the reach scale in order to evaluate the effectiveness of restoration projects. A subset of metrics/indicators measured as part of these protocols will facilitate progress monitoring of the implementation and ecological result objectives of the tables below.

CTUIR and ODFW both conduct fish population monitoring and provide data on salmonid growth, survival, abundance, and productivity to GRMW partners. Fish population data are used with aquatic habitat data to evaluate whether restoration actions are contributing to improvements in fish population metrics.

OUTPUTS

Implementation Progress

Table 1. Implementation results objectives and metrics. The result numbers correspond to results shown in the results chain (Figure 2) and theories of change.

	IMPLEMENTATION RESULTS	OBJECTIVES	METRICS
1	Barriers to aquatic species passage are removed	By 2021, eight existing partial barriers to aquatic species passage have been removed or replaced. By 2021, 1000 feet of railroad grade along the Grande Ronde River between river miles 144 and 145 have been removed	Number of barriers removed Linear feet of railroad grade removed
2	New main and side channels are constructed	By 2021, at least 13,500 feet of new main and side channel alignment have been constructed.	Linear feet of new main and side channel constructed
3	New floodplain/wetland complexes are constructed	By 2021, at least 15 acres of new floodplain/wetland complexes have been constructed	Acres of new floodplain/ wetlands created
4	Irrigators implement efficiency projects	By 2021, 1.0 cfs of water savings for in-stream use is secured through upgraded irrigation efficiency projects.	Water savings (cfs) from irrigation efficiency projects
5	Willing water right holders sell or lease water	By 2021, at least an additional 3 cfs of flow have been secured within the initiative area during July-September	Flow (cfs) secured during July-September
6	Habitat function and structural elements implemented	By 2022, 70 additional high-quality pools have been constructed along 20 miles of stream. By 2022, 13 units of alcove (peripheral) habitat have been constructed or enhanced. By 2022, large wood and boulder habitat structures have been installed along 33 miles of stream. By 2022, six sections of bank along 1 mile of stream have been stabilized. By 2022, native trees, shrubs and grasses have been planted along the upper Grand Ronde River and basin tributaries. By 2022, riparian fences have been built and are maintained along 20 miles of riparian area.	# of high-quality pools # of alcove units constructed or enhanced # or density of large wood and boulder structures installed Sections of bank stabilized Linear miles of riparian area planted Linear miles of riparian fenced
7	Relationships with landowners are created and strengthened	By 2018, contact is initiated and frequent communication is maintained with 15 landowners in high-priority restoration areas, and core partners have collaborated with all funding sources to develop funding for projects on private lands.	# of landowners contacted in high-priority restoration areas
8	Presentations delivered to students and communities	By 2018, presentations have been delivered to six grade-school classes, three civic groups and commodity groups annually.	# of presentations made to each target audience
9	Ungulate study funded and implemented	By 2018, funding for Starkey Experimental Forest ungulate exclusion study is provided.	% funding secured
10	PIT tag arrays are installed	By 2018, six PIT tag arrays are installed in the basin	# of PIT tag arrays installed

Table 2. Ecological results potential objectives and potential metrics. The result numbers correspond to results shown in the results chain (Figure 1) and theories of change.

Given the complexity of ecosystems, continued assessments and planning will be required to support development of specific, measurable objectives for desired ecological outcomes.

OUTCOMES

Ecological Progress

	LIMITING FACTOR REDUCTION OR INTERMEDIATE ECOLOGICAL RESULTS	POTENTIAL OBJECTIVES[1]	POTENTIAL METRICS
12	Spatial distribution of native aquatic species and salmonids is increased	*By 20__, spatial distribution of native aquatic species and salmonids will increase by __*	Stream miles of available habitat occupied (snorkel surveys)
13	Improved channel structure and form and processes to maintain habitat	*By 20__, channel structure and form and processes to maintain habitat are restored in treated reaches*	CHaMP and Aquatic Inventory Project indicators for the following attributes in treated BSRs: channel morphology, habitat, substrate, and wood
14	Quality of spawning habitat is improved	*By 20__, quality of spawning habitat in treated biologically significant reaches is improved by __*	CHaMP and Aquatic Inventory Project indicators for substrate
15	Late season flow is increased	*By 20__, late season flow is increased by __ cfs*	Post water right/lease transaction flows
16	Stream temperature is decreased	*By 20__, stream temperature in treated biologically significant reaches falls within desired range of __ degrees C*	Year round temperature monitoring

Status & Trends

ECOLOGICAL PRIORITIES

Aquatic Habitat for Native Species

Native salmonid species
(Chinook salmon, steelhead, bull trout, other native spp.)

Monitoring the status and trends of ecological priority habitats and focal species will include coordination with agencies or conservation organizations operating at the appropriate landscape or population scales. FIP partners will work with these entities to establish a process for integrating their monitoring framework with existing status and trends monitoring programs (if they occur) or to establish an approach for identifying key ecological attributes that should be measured to document and communicate change in the status and trajectory of ecological priority habitats and focal species populations.

[1] *Years and degrees of change that have not been specified will be determined through preliminary post-project monitoring.*